

Evidence-Based Scale Worksheets

Number Sense and Operations

MA.912.NSO.1.1 Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to rewrite radicals as rational exponents and how to evaluate expressions involving rational exponents. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Evaluate expressions involving radicals using rational exponents. Simplify expressions involving rational exponents. | <p>a. Evaluate $\sqrt{4^4}$.</p> <p>b. Evaluate $\sqrt[3]{125^4}$.</p> <p>c. Evaluate $\sqrt[4]{16^3}$.</p> <p>d. Simplify $8^{3/4} \cdot 8^{5/4}$.</p> <p>e. Simplify $(3^{-1/2})^2$. Write your answer using only positive exponents.</p> <p>f. Simplify $\frac{5^{2/3}}{5^{7/3}}$. Write your answer using only positive exponents.</p> |

MA.912.NSO.1.1 (continued)

| | Description | Evidence |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Rewrite a radical as a rational exponent. | <p>Rewrite the radical expression using rational exponents.</p> <p>a. $\sqrt{2}$</p> <p>b. $\sqrt[3]{5}$</p> <p>c. $\sqrt{4^7}$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Evaluate exponents. | <p>Evaluate the expression.</p> <p>a. 4^2</p> <p>b. 2^3</p> <p>c. 3^{-2}</p> <p>d. $\frac{1}{8^{-2}}$</p> |

MA.912.NSO.1.2 (continued)

| | Description | Evidence |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Use the properties of exponents to simplify expressions involving integer exponents. | <p>Simplify the expression. Write your answer using positive exponents.</p> <p>a. $\frac{m^2x^{-3}}{m^0x^2}$</p> <p>b. $(m^{-2} \cdot x^4)^2$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Evaluate exponents. | <p>Evaluate the expression.</p> <p>a. 3^{-3}</p> <p>b. 4^2</p> <p>c. $\left(\frac{1}{2}\right)^3$</p> <p>d. $\frac{2}{2^{-4}}$</p> |

Evidence-Based Scale Worksheets

Number Sense and Operations

MA.912.NSO.1.4 Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Solve a word problem using the properties of radicals. | <p>The electric current I (in amperes) an appliance uses is given by the formula $I = \sqrt{\frac{P}{R}}$, where P is the power (in watts) and R is the resistance (in ohms). Find the electric current an appliance uses when the power is 216 watts and the resistance is 8 ohms.</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Add, subtract, multiply, and divide radicals. | <p>Simplify the expression.</p> <p>a. $5\sqrt{12} + 6\sqrt{27}$</p> <p>b. $9\sqrt{50} - 2\sqrt{72}$</p> <p>c. $\sqrt{3} \cdot 9\sqrt{5}$</p> <p>d. $\sqrt[3]{120} \div \sqrt[3]{3}$</p> |

MA.912.NSO.1.4 (continued)

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 2 | I understand some parts, but not the entire standard. <ul style="list-style-type: none">• Add and subtract radicals. | Simplify the expression. a. $6\sqrt{2} - 4\sqrt{2}$ b. $10\sqrt{3} + 18\sqrt{3}$ |
| 1 | I understand the basic skills needed to begin learning this standard. <ul style="list-style-type: none">• Use properties of radicals to simplify square roots. | Simplify the expression. a. $\sqrt{80}$ b. $-\sqrt{54}$ c. $\sqrt{216}$ |

MA.912.AR.1.1 (continued)

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Interpret parts of expressions, such as terms, factors or coefficients. | <p>You are hiring a catering company to serve meals to guests at a wedding reception. The company charges a deposit and cost per guest. The total cost of the company you hired can be modeled by the function $y = 500 + 20x$. Explain what each term might represent.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Write expressions that represent quantities. | <p>You buy g pounds of grapes and a pounds of apples for a fruit salad. Grapes cost \$2.50 per pound, and apples cost \$3 per pound. Write an expression that represents the total amount you spend on grapes and apples.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.1.2 Rearrange equations or formulas to isolate a quantity of interest.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem involving the rearrangement of an equation or formula to solve for a specific quantity of interest. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Rearrange equations or formulas to isolate a quantity of interest. | <p>a. Solve the literal equation for x.</p> $2x + 6y = 4$ <p>b. Solve the formula for v_0</p> $a = \frac{v_1 - v_0}{t}$ <p>c. Solve the formula for y.</p> $Ax + By = C$ |

MA.912.AR.1.2 (continued)

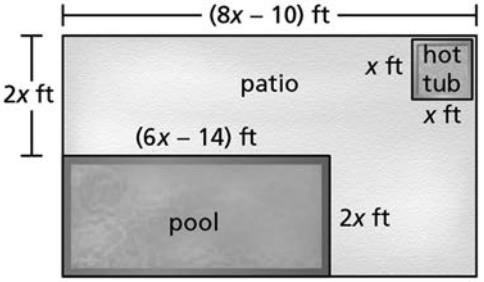
| | Description | Evidence |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Solve multi-step equations that have one variable. | <p>Solve the equation.</p> <p>a. $11 = \frac{x}{3} + 8$</p> <p>b. $-20 = 2x - 4$</p> <p>c. $3(x - 2) = -27$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Solve one-step equations that have one variable. | <p>Solve the equation.</p> <p>a. $76 = 19x$</p> <p>b. $x + 24 = -38$</p> <p>c. $-16 = \frac{x}{4}$</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.1.3 Add, subtract and multiply polynomial expressions with rational number coefficients.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Solve word problems involving operations with polynomials. | <p>A hotel installs a new swimming pool and a new hot tub. Write a polynomial in standard form that represents how much more area the pool covers than the hot tub.</p>  |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Add, subtract, and multiply polynomial expressions with rational numbers. | <p>Find the sum, difference, or product.</p> <p>a. $\left(\frac{1}{2}x - \frac{2}{3}\right)\left(\frac{1}{4}x + \frac{1}{3}\right)$</p> <p>b. $\left(\frac{2}{3}x^2 + 4x\right) + \left(-\frac{1}{4}x^2 + x + \frac{1}{2}\right)$</p> <p>c. $\left(-\frac{3}{5}x^2 + \frac{1}{10}x - 5\right) - \left(\frac{4}{5}x^2 + \frac{7}{10}x + 10\right)$</p> |

MA.912.AR.1.3 (continued)

| | Description | Evidence |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Add, subtract, and multiply polynomial expressions with integer coefficients. | <p>Find the sum, difference, or product.</p> <p>a. $(x + 1)(5x + 2)$</p> <p>b. $(5x^3 + 4x^2) + (-x^2 - 2x + 19)$</p> <p>c. $(3x^2 + 7x - 15) - (2x^2 - 3x + 20)$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Identify like terms. | <p>Determine if each term can be combined with $-9x^2$.</p> <p>a. -9 b. $7x$ c. $\frac{9}{13}x^2$</p> <p>d. $-\frac{1}{2}x$ e. 18 f. $8x^2$</p> |

**Evidence-
Based Scale
Worksheets**
Algebraic Reasoning
MA.912.AR.1.4 Divide a polynomial expression by a monomial expression with rational number coefficients.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | I can go beyond the standard. <ul style="list-style-type: none"> Solve word problems involving dividing a polynomial expression by a monomial expression. | The volume of a rectangular prism is $\frac{1}{2}x^3 + 4x^2 - 9x$ cubic units. The product of the length and the width of the prism is $\frac{3}{2}x$ square units. What is the height of the prism? |
| 3 | I understand the entire standard. <ul style="list-style-type: none"> Divide a polynomial expression by a monomial expression with rational number coefficients. | Find the quotient. <p>a. $\frac{64a^4 + 32a^3 - 16a^2}{-8a^2}$</p> <p>b. $\frac{c^3 - 8c^2 + 7c}{-\frac{1}{3}c}$</p> <p>c. $\frac{-6z^5 + 2z^4 - 4z^3}{\frac{1}{2}z^3}$</p> |

MA.912.AR.1.4 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Divide a polynomial expression by an integer. | <p>Find the quotient.</p> <p>a. $\frac{5x^2 + 25x + 30}{5}$</p> <p>b. $\frac{-4y^2 - 8y + 28}{4}$</p> <p>c. $\frac{6z^2 - 12z + 27}{-3}$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Perform long division. | <p>Find the quotient.</p> <p>a. $522 \div 9$</p> <p>b. $1064 \div 14$</p> <p>c. $3475 \div 25$</p> |

MA.912.AR.1.7 (continued)

| | Description | Evidence |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Multiply polynomial expressions. | <p>Find the product.</p> <p>a. $(3x + 2)(2x - 1)$</p> <p>b. $(4x + 3y)(3x + 4y)$</p> <p>c. $(-2ab + 5c)(10ab - 3c)$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• List the factor pairs of a number. | <p>List all the factor pairs of the number.</p> <p>a. 9</p> <p>b. 20</p> <p>c. 36</p> <p>d. 63</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.2.1 Given a real-world context, write and solve one-variable multi-step linear equations.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem involving a one-variable multi-step linear equation. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write and solve a one-variable multi-step linear equation for a real-life situation. | <p>You purchase 4 tickets to a basketball game for a total of \$216.80. In addition to the cost per ticket, there is an arena fee of \$3.50 per ticket and a flat fee of \$3.00 to access all the tickets on a mobile device. Write and solve an equation to find the cost of each ticket x.</p> |

MA.912.AR.2.1 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Make a plan to write and solve a one-variable multi-step linear equation for a real-life situation. | <p>Make a plan for how to write and solve the equation for this word problem.</p> <p>A plumber charges a customer \$89 for a service call and \$78 for parts. The plumber also charges the customer \$50 per hour he is at the house. The customer's final bill is \$292. Write and solve an equation to find the number of hours the plumber was at the house.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Solve multi-step linear equations. | <p>Solve the equation.</p> <p>a. $4(2 - x) = 3 + 2x$</p> <p>b. $9 - 6(x + 1) = -5x$</p> <p>c. $8 + x = 2x - 3(3 - x)$</p> |

Evidence-Based Scale Worksheets

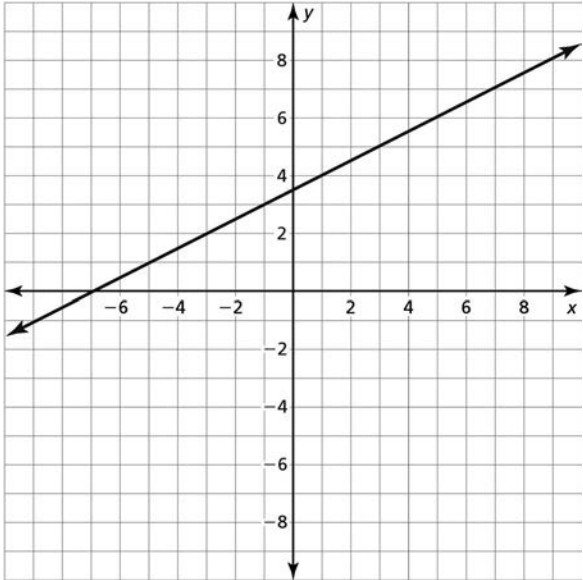
Algebraic Reasoning

MA.912.AR.2.2 Write a linear two-variable equation to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | | | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------|----|------|----|------|----|------|----|------|----|------|----|------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem that involves writing a linear two-variable equation to represent the relationship between two quantities. | | | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write linear two-variable equations to represent the relationships between quantities in a real-life situation. | <p>a. A recording studio charges musicians an initial fee of \$100 to record an album. Studio time costs an additional \$60 per hour. Write an equation that represents the total cost y of recording an album for x hours.</p> <p>b. The table shows the number of gallons of water remaining in a pool as it drains. Write an equation that represents the number y of gallons of water remaining in the pool after x minutes.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Minutes</th> <th style="text-align: center;">Gallons Remaining</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">10</td> <td style="text-align: center;">9800</td> </tr> <tr> <td style="text-align: center;">20</td> <td style="text-align: center;">9600</td> </tr> <tr> <td style="text-align: center;">30</td> <td style="text-align: center;">9400</td> </tr> <tr> <td style="text-align: center;">40</td> <td style="text-align: center;">9200</td> </tr> <tr> <td style="text-align: center;">50</td> <td style="text-align: center;">9000</td> </tr> <tr> <td style="text-align: center;">60</td> <td style="text-align: center;">8800</td> </tr> </tbody> </table> | Minutes | Gallons Remaining | 10 | 9800 | 20 | 9600 | 30 | 9400 | 40 | 9200 | 50 | 9000 | 60 | 8800 |
| Minutes | Gallons Remaining | | | | | | | | | | | | | | | |
| 10 | 9800 | | | | | | | | | | | | | | | |
| 20 | 9600 | | | | | | | | | | | | | | | |
| 30 | 9400 | | | | | | | | | | | | | | | |
| 40 | 9200 | | | | | | | | | | | | | | | |
| 50 | 9000 | | | | | | | | | | | | | | | |
| 60 | 8800 | | | | | | | | | | | | | | | |

MA.912.AR.2.2 (continued)

| | Description | Evidence | | | | | | | | | | | | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|---|---|---|----------|---|---|---|---|----|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Write linear two-variable equations to represent relationships between two quantities. | <p>a. Write a linear equation in standard form for the line shown.</p>  <p>b. Write an equation in standard form of the line that passes through the points in the table.</p> <table border="1" data-bbox="796 1182 1284 1304"> <tbody> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">-8</td> <td style="text-align: center;">-4</td> <td style="text-align: center;">0</td> <td style="text-align: center;">4</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">y</td> <td style="text-align: center;">9</td> <td style="text-align: center;">6</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">-3</td> </tr> </tbody> </table> | x | -8 | -4 | 0 | 4 | 8 | y | 9 | 6 | 3 | 0 | -3 |
| x | -8 | -4 | 0 | 4 | 8 | | | | | | | | | |
| y | 9 | 6 | 3 | 0 | -3 | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Write an algebraic expression. | <p>Write the phrase as an expression.</p> <p>a. the sum of a number x and 2</p> <p>b. the product of -3 and a number y</p> | | | | | | | | | | | | |

**Evidence-
Based Scale
Worksheets**

Algebraic Reasoning

MA.912.AR.2.3 Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Teach someone how to identify parallel and perpendicular lines from their equations. | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write an equation of a line that is parallel to a given line and passes through a given point. • Write a linear equation of a line that is perpendicular to a given line and passes through a given point. | <p>a. Write an equation of a line that is parallel to the line $3x - 2y = 8$ and passes through the point $(4, 6)$.</p> <p>b. Write an equation of a line that is perpendicular to the line $-4x + 4y = 12$ and passes through the point $(-5, -1)$.</p> |

MA.912.AR.2.3 (continued)

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Find the slope of a line that is parallel to a given line. • Find the slope of a line that is perpendicular to a given line. | <p>a. Line <i>a</i> is parallel to $y = 3x + 1$ and passes through the point $(-2, -1)$. Find the slope of line <i>a</i>.</p> <p>b. Line <i>b</i> is perpendicular to $y = 3x + 1$ and passes through the point $(0, 4)$. Find the slope of line <i>b</i>.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Write a linear equation that has a given slope and passes through a given point. | <p>Write an equation in slope-intercept form of the line that has the given slope and passes through the given point.</p> <p>a. slope: 4, point: $(-2, -5)$</p> <p>b. slope: $-\frac{2}{3}$, point: $(4, -1)$</p> |

**Evidence-
Based Scale
Worksheets**

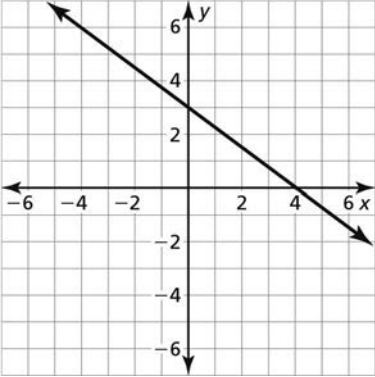
Algebraic Reasoning

MA.912.AR.2.4 Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|---|---|----------|---|-----|------|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Describe the domain and range of every linear function. | <p>What is the domain and range of every linear function?</p> | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a table, an equation, or a written description, graph a linear function and identify its key features. | <p>Graph the linear function represented by the table, equation, or written description. Find the domain and range of the function. Then identify the intercepts and slope of the function.</p> <p>a.</p> <table border="1" style="margin-left: 40px;"> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">-2</td> <td style="text-align: center;">-1</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">y</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">-3.5</td> <td style="text-align: center;">-6</td> </tr> </table> <p>b. $y = \frac{1}{2}x - 3$</p> <p>c. a linear function in which the dependent variable increases 3 units for every 4 units the independent variable increases; The function passes through (4, 1).</p> | x | -2 | -1 | 1 | 2 | y | 4 | 1.5 | -3.5 | -6 |
| x | -2 | -1 | 1 | 2 | | | | | | | | |
| y | 4 | 1.5 | -3.5 | -6 | | | | | | | | |

MA.912.AR.2.4 (continued)

| | Description | Evidence |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Given a graph of a linear function, identify the intercepts and rate of change of the function. | <p>The graph of a linear function is shown. Identify the intercepts and rate of change of the function.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Graph a linear function. | <p>Graph $y = -\frac{3}{2}x + 4$.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.2.5 Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine domain constraints in terms of the context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a real-life problem that can be modeled by a linear function and has a domain constraint. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Graph a real-life problem that is modeled by a linear function. • Interpret key features of a function and determine domain constraints in terms of a context. | <p>The cost of using a ride-sharing service can be represented by the function $C(x) = 1.25x + 6.75$, where $C(x)$ represents the total cost of riding x miles using the service. You want to spend no more than \$100 for a ride.</p> <ol style="list-style-type: none"> Graph the function in terms of the context. Find and interpret the domain in this context. Find and interpret the range in this context. Identify and interpret the y-intercept of the graph. Identify and interpret the rate of change of the graph. |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.2.6 Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create word problems involving a linear inequality in one variable. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write and solve one-variable inequalities to solve real-life problems. Represent the solutions algebraically and graphically. | <p>a. You save \$15 per week to purchase a bike. You already have \$45 saved up. Write and solve an inequality to find the number of weeks you need to save to purchase a bike if it costs at least \$120. Graph the solution.</p> <p>b. A sleeping bag is rated for temperatures -20°C to 25°C. Write and solve an inequality that represents the temperature rating (in degrees Fahrenheit) of the sleeping bag. Graph the solution.</p> |

Evidence-Based Scale Worksheets

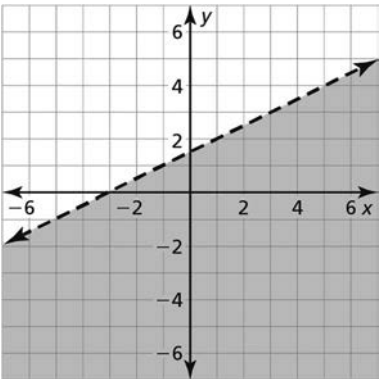
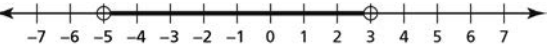
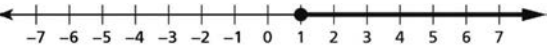
Algebraic Reasoning

MA.912.AR.2.7 Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem that involves writing a two-variable linear inequality to represent the relationship between two quantities. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a real-life context. | <p>a. You can work 50 hours between two different jobs. Write an inequality that represents the graph.</p> <div data-bbox="922 898 1343 1318" data-label="Figure"> </div> <p>b. You have a budget of \$250 to buy clothes. Each shirt costs \$15 and each pair of pants costs \$20. Write an inequality to represent the possible number x of shirts and the number y of pants you can buy.</p> |

MA.912.AR.2.7 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical context. | <p>a. Write an inequality that represents the graph.</p>  <p>b. Write an inequality that represents the written description. The points $(-2, 0)$ and $(0, 4)$ lie on the boundary line of an inequality. The points $(0, 0)$ and $(-2, 0)$ are solutions of the inequality.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Write an inequality to represent a graph on a number line. | <p>Write an inequality that represents the graph.</p> <p>a. </p> <p>b. </p> |

**Evidence-
Based Scale
Worksheets**

Algebraic Reasoning

MA.912.AR.2.8 Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Identify possible solutions of an inequality that represents a real-life situation. | <p>On a road trip with a friend, you drive about 65 miles per hour, and your friend drives about 80 miles per hour. The plan is to drive less than 12 hours and at least 500 miles each day. Your friend will drive more hours than you. What is one possible combination of hours you and your friend can drive?</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a real-world context, graph the solution set of a two-variable linear inequality. | <p>A store sells books for \$20 each and magazines for \$5 each. The store collects at least \$1000 a day for selling books and magazines. Graph an inequality that represents the amounts of books and magazines the store can sell.</p> |

MA.912.AR.2.8 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">Given a mathematical context, graph the solution set of a two-variable linear inequality. | <p>Graph the inequality $-\frac{4}{3}x + y \geq 6$ in a coordinate plane.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">Tell whether a value is a solution of an inequality. | <p>Tell whether the value is a solution of the inequality.</p> <p>a. $x = 1; 3 < 6x - 3$</p> <p>b. $x = 2; 2 \geq -\frac{1}{2}x + 2$</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.3.1 Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Write a real-life word problem that involves writing and solving a quadratic equation. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a real-world context, write and solve a one-variable quadratic equation over the real number system. | <p>A rectangular picture has a height that is 4 times its width. The picture is enlarged so the area of the picture is 196 square inches. Write and solve an equation to find the dimensions of the large picture.</p> |

MA.912.AR.3.1 (continued)

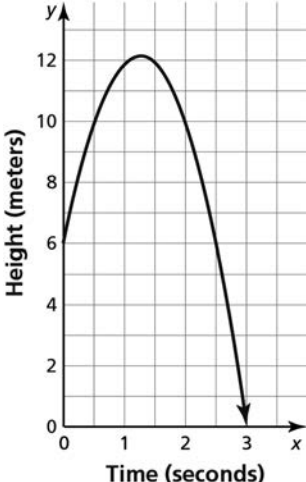
| | Description | Evidence |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">Solve one-variable quadratic equations. | <p>Solve the quadratic equation.</p> <p>a. $-3x^2 + 2x = -6$</p> <p>b. $2x^2 + 16x = 0$</p> <p>c. $2x^2 - 2x - 4 = 0$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">Factor polynomials. | <p>Factor the polynomial.</p> <p>a. $x^2 + 18x + 81$</p> <p>b. $x^2 - 5x - 6$</p> <p>c. $2x^2 - 11x + 12$</p> |

Evidence-Based Scale Worksheets

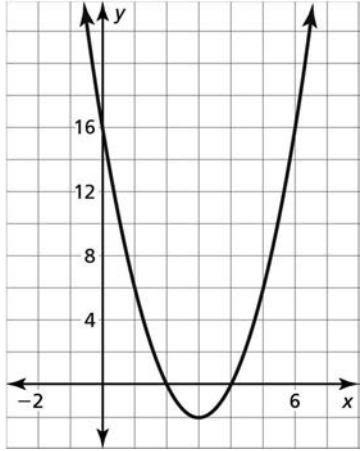
Algebraic Reasoning

MA.912.AR.3.4 Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|----|----|----|--------|------|------|------|------|------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Write a quadratic function that represents the relationship between two quantities from a written description within a real-world context. | <p>A rocket is launched from the ground and travels in a parabolic path until it hits the ground. Write a quadratic function that models the path of the rocket with a maximum height of 100 feet, represented by a vertex of (2.5, 100), and hitting the ground at the point (5, 0).</p> | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Write a quadratic function that represents the relationship between two quantities from a graph or a table of values within a real-world context. | <p>a. A ball is thrown into the air. The graph shows the path of the ball after it is thrown. Write a quadratic function that models the height $f(x)$ (in meters) of the ball x seconds after it is thrown.</p>  <p>b. The table shows the area of a rectangular fenced-in area being built against a house, where w is the width (in feet) of the fenced-in area, and $A(w)$ is the area (in square feet) of the fenced-in area. Write a quadratic function that models the data.</p> <table border="1" data-bbox="919 1766 1479 1871"> <tbody> <tr> <td>w</td> <td>40</td> <td>45</td> <td>50</td> <td>55</td> <td>60</td> </tr> <tr> <td>$A(w)$</td> <td>4800</td> <td>4950</td> <td>5000</td> <td>4950</td> <td>4800</td> </tr> </tbody> </table> | w | 40 | 45 | 50 | 55 | 60 | $A(w)$ | 4800 | 4950 | 5000 | 4950 | 4800 |
| w | 40 | 45 | 50 | 55 | 60 | | | | | | | | | |
| $A(w)$ | 4800 | 4950 | 5000 | 4950 | 4800 | | | | | | | | | |

MA.912.AR.3.4 (continued)

| | Description | Evidence | | | | | | | | | | | | |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|---|---|---|---|----------|---|---|---|---|---|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Write a quadratic function that represents the relationship between two quantities from a graph or a table of values within a mathematical context. | <p>Write a quadratic function in standard form that models the data.</p> <p>a. </p> <p>b. <table border="1" data-bbox="783 1014 1054 1121"> <tr> <td>x</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>y</td> <td>2</td> <td>3</td> <td>6</td> <td>3</td> <td>2</td> </tr> </table></p> | x | 2 | 3 | 4 | 5 | 6 | y | 2 | 3 | 6 | 3 | 2 |
| x | 2 | 3 | 4 | 5 | 6 | | | | | | | | | |
| y | 2 | 3 | 6 | 3 | 2 | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify quadratic functions. | <p>Is the function a quadratic function?</p> <p>a. $f(x) = x^2 - 8x + 9$</p> <p>b. $f(x) = \frac{1}{2}x + 2$</p> | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.3.5 Given the x -intercepts and another point on the graph of a quadratic function, write the equation for the function.

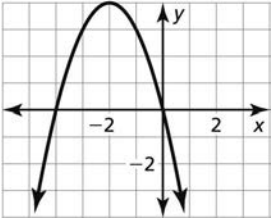
Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Write a quadratic function that models a real-life situation. | <p>A company wants to maximize the profit from a section of seating. The company discovers that if they charge \$30 for each seat, they would not make any profit. If they sell seats for \$10 each, then they will make a profit of \$4000. Letting x represent the price of a seat, write the equation of the quadratic function which represents the profit for this scenario.</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given the x-intercepts and another point on the graph of a quadratic function, write the equation for the function. | <p>Write a quadratic function in standard form whose graph has the given characteristics.</p> <p>a. passes through $(-5, 0)$, $(4, 18)$, and $(3, 0)$</p> <p>b. passes through $(\frac{1}{2}, 0)$, $(5, -9)$, and $(6, 0)$</p> |

MA.912.AR.3.5 (continued)

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|---|---|---|-------------|--|--|--|--|--|----------|----|----|----|----|----|-------------|--|--|--|--|--|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Find the x-intercepts of the graph of a quadratic function in intercept form. | <p>Find the x-intercepts of the graph of the function $f(x) = -2(x - 4)(x + 5)$.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Complete a table of values for a quadratic function. | <p>Use the quadratic function to complete the table.</p> <p>a. $f(x) = 2x^2 - 4x - 3$</p> <table border="1" data-bbox="756 1083 1310 1192"> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">-1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">f(x)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>b. $f(x) = -x^2 - 8x + 12$</p> <table border="1" data-bbox="756 1444 1315 1554"> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">-6</td> <td style="text-align: center;">-5</td> <td style="text-align: center;">-4</td> <td style="text-align: center;">-3</td> <td style="text-align: center;">-2</td> </tr> <tr> <td style="text-align: center;">f(x)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> | x | -1 | 0 | 1 | 2 | 3 | f(x) | | | | | | x | -6 | -5 | -4 | -3 | -2 | f(x) | | | | | |
| x | -1 | 0 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | |
| f(x) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | -6 | -5 | -4 | -3 | -2 | | | | | | | | | | | | | | | | | | | | | |
| f(x) | | | | | | | | | | | | | | | | | | | | | | | | | | |

MA.912.AR.3.6 (continued)

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Make a plan for how to find the vertex and zeros of the graph of a quadratic function within a real-life problem. | <p>Make a plan for how you would find the vertex and the zeros of the function.</p> <p>The path of a golf ball can be modeled by the function $h(t) = -4t^2 + 40t$, where $h(t)$ is the height (in feet) of the ball t seconds after it is hit.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Find the vertex and zeros of the graph of a quadratic function. | <p>Find the vertex and zeros of the graph of the function.</p>  |

Evidence-Based Scale Worksheets

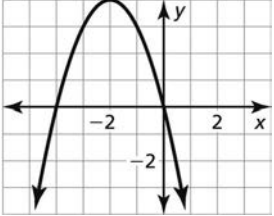
Algebraic Reasoning

MA.912.AR.3.7 Given a table, equation, or written description of a quadratic function, graph that function and determine and interpret its key features.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|---|---|---|---|----------|---|---|---|---|---|
| <p style="text-align: center;">4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Identify the key features of a quadratic function when given the direction of the opening of the function and the vertex. | <p>A quadratic function opens downward and has a vertex of (a, b). Find the domain and range of the function. Then identify the intervals when the function is increasing and decreasing, the end behavior of the function, and the axis of symmetry.</p> | | | | | | | | | | | | |
| <p style="text-align: center;">3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a table, an equation, or written description, graph a quadratic function and identify its key features. | <p>Graph the quadratic function represented by the table, equation, or written description. Identify the characteristics of the quadratic function and its graph.</p> <p>a.</p> <table border="1" data-bbox="927 1056 1331 1180"> <tr> <td>x</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>0</td> <td>3</td> <td>4</td> <td>3</td> <td>0</td> </tr> </table> <p>b. $f(x) = x^2 + 2x - 8$</p> <p>c. a quadratic function that passes through $(-3, 0)$, $(-1, 0)$, and $(1, 8)$</p> | x | -1 | 0 | 1 | 2 | 3 | y | 0 | 3 | 4 | 3 | 0 |
| x | -1 | 0 | 1 | 2 | 3 | | | | | | | | | |
| y | 0 | 3 | 4 | 3 | 0 | | | | | | | | | |

MA.912.AR.3.7 (continued)

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Given a graph of a quadratic function, identify key features of the function. | <p>The graph of a quadratic function is shown. Identify the intervals where the function is increasing, decreasing, positive, and negative. Then identify the end behavior of the function.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Graph a quadratic function. | <p>Graph $y = -2x^2 - 4x$.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.3.8 Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a real-life problem that can be modeled with a quadratic function and has a domain and range constraints. | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Graph a real-life problem modeled by a quadratic function. • Interpret key features of a function and determine constraints in terms of a context. | <p>The profit (in millions of dollars) of a company x years after starting the company is represented by the function $p(x) = 0.01x^2 - 0.5x + 10$.</p> <p>a. Graph the function.</p> <p>b. Identify and interpret characteristics of the function and its graph.</p> |

MA.912.AR.3.8 (continued)

| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Graph a quadratic function. • Identify key features of a graph of a quadratic function. | <p>Graph the function $y = -x^2 + 4x - 3$. Identify characteristics of the function and its graph.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Identify characteristics of a quadratic function from its equation. | <p>Identify the intercepts and vertex of the quadratic function $f(x) = 4x^2 - 10x - 6$.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.4.1 Given a mathematical or real-world context, write and solve one-variable absolute value equations.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach other students why there are always two possible solutions when an absolute value expression equals a non-zero real number. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Write and solve a one-variable absolute value equation for a real-life problem. | <p>The average distance a car can travel using one gallon of gasoline is 28 miles. The actual distance the car can travel using one gallon of gasoline varies from the average by up to 3 miles. Write and solve an absolute value equation to find the minimum and maximum distances the car can travel using one gallon of gasoline.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

H MA.912.AR.4.2 Given a mathematical or real-world context, write and solve one-variable absolute value inequalities. Represent solutions algebraically or graphically.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a real-life word problem that involves writing and solving a one-variable absolute value inequality. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Write and solve a one-variable absolute value inequality for a real-life problem. | <p>The listed weight of a box of cereal is 20.8 ounces. The actual weight of a box can vary from the listed weight by up to 0.35 ounce. Write and solve an absolute value inequality that represents the acceptable weights for the boxes of cereal. Graph the solution.</p> |

H MA.912.AR.4.2 (continued)

| | Description | Evidence |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| 2 | I understand some parts, but not the entire standard. <ul style="list-style-type: none">Solve a one-variable absolute value inequality. | Solve the inequality. Graph the solution. a. $ 2x - 4 \leq 12$ b. $2 3x > 120$ |
| 1 | I understand the basic skills needed to begin learning this standard. <ul style="list-style-type: none">Solve a one-variable absolute value equation. | Solve the equation. a. $3 x - 2 = 9$ b. $ 4x - 5 = 8$ c. $3 3x + 8 - 20 = 46$ |

Evidence-Based Scale Worksheets

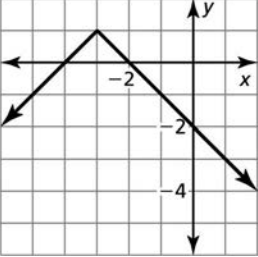
Algebraic Reasoning

MA.912.AR.4.3 Given a table, equation or written description of an absolute value function, graph that function and determine its key features.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|----|----|----|----------|----|---|---|---|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Identify the key features of an absolute function when given the direction of the opening of the function and the vertex. | <p>An absolute value function opens upward and has a vertex of (a, b). Find the domain and range of the function. Then identify the intervals where the function is increasing and decreasing, the end behavior of the function, and the axis of symmetry.</p> | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a table, an equation, or written description, graph an absolute value function and identify its key features. | <p>Graph the absolute value function represented by the table, equation, or written description. Identify characteristics of the absolute value function and its graph.</p> <p>a.</p> <table border="1" style="margin-left: 40px;"> <tr> <td style="padding: 2px 5px;">x</td> <td style="padding: 2px 5px;">-5</td> <td style="padding: 2px 5px;">-4</td> <td style="padding: 2px 5px;">-3</td> <td style="padding: 2px 5px;">-2</td> <td style="padding: 2px 5px;">-1</td> </tr> <tr> <td style="padding: 2px 5px;">y</td> <td style="padding: 2px 5px;">-2</td> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">6</td> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">-2</td> </tr> </table> <p>b. $f(x) = 3 2x - 4 - 5$</p> <p>c. an absolute value function that is a reflection in the x-axis of the graph of $f(x) = x$</p> | x | -5 | -4 | -3 | -2 | -1 | y | -2 | 2 | 6 | 2 | -2 |
| x | -5 | -4 | -3 | -2 | -1 | | | | | | | | | |
| y | -2 | 2 | 6 | 2 | -2 | | | | | | | | | |

MA.912.AR.4.3 (continued)

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Given a graph of an absolute value function, identify its key features. | <p>The graph of an absolute value function is shown. Identify the intervals where the function is positive, negative, increasing, and decreasing. Then identify the end behavior of the function.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Graph an absolute value function. | <p>Graph the function $f(x) = \left \frac{1}{2}x \right - 4$.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.5.3 Given a mathematical or real-world context, classify an exponential function as representing growth or decay.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone how to classify an exponential function as an exponential growth or decay function. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Determine whether a real-life exponential function represents exponential growth or exponential decay. | <p>a. The function $f(x) = 25,000(0.985)^x$ represents the estimated population of a town x years after 2020. Determine whether the function represents <i>exponential growth</i> or <i>exponential decay</i>.</p> <p>b. The function $f(x) = 10,000(1 + 0.02)^x$ represents the amount of interest earned in a bank account annually after x years. Determine whether the function represents <i>exponential growth</i> or <i>exponential decay</i>.</p> |

MA.912.AR.5.3 (continued)

| | Description | Evidence |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">Determine whether an exponential function represents exponential growth or exponential decay. | <p>Determine whether the function represents <i>exponential growth</i> or <i>exponential decay</i>.</p> <p>a. $f(x) = 4(1 + 0.05)^x$</p> <p>b. $g(x) = 3(0.975)^x$</p> <p>c. $h(x) = \frac{1\left(\frac{3}{2}\right)^x}{2\left(\frac{2}{2}\right)^x}$</p> <p>d. $g(x) = 0.9(1 - 0.01)^x$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">Determine whether a function is an exponential function. | <p>Determine whether the function is an exponential function.</p> <p>a. $f(x) = 4(3)^x$</p> <p>b. $g(x) = 5x^2 + 4$</p> <p>c. $h(x) = 3x - 6$</p> <p>d. $g(x) = 2(0.5)^x$</p> |

Evidence-Based Scale Worksheets

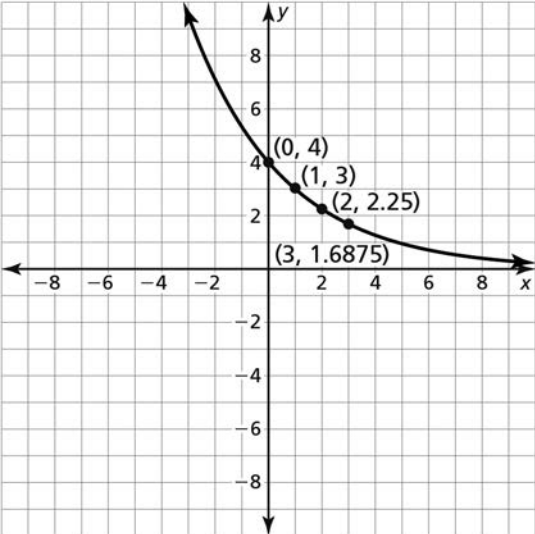
Algebraic Reasoning

MA.912.AR.5.4 Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|---|---|---|--------|---|---|----|----|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach other students how to find the initial value and the growth factor of an exponential function when given a graph, written description, or a table of values for the exponential function. | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Write an exponential function that represents the relationship between two quantities from a description or a table of values within a real-world context. | <p>a. You deposit \$600 in an account that earns 9% annual interest compounded monthly. Write a function m that represents the balance (in dollars) of the account after t years.</p> <p>b. The table shows the bacteria population in a petri dish after t hours. Write an exponential function that models the data.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">t</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">$f(t)$</td> <td style="text-align: center;">4</td> <td style="text-align: center;">8</td> <td style="text-align: center;">16</td> <td style="text-align: center;">32</td> <td style="text-align: center;">64</td> </tr> </table> | t | 0 | 1 | 2 | 3 | 4 | $f(t)$ | 4 | 8 | 16 | 32 | 64 |
| t | 0 | 1 | 2 | 3 | 4 | | | | | | | | | |
| $f(t)$ | 4 | 8 | 16 | 32 | 64 | | | | | | | | | |

MA.912.AR.5.4 (continued)

| | Description | Evidence | | | | | | | | | | | | |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|-----|---|---|---|----------|-----|-----|-----|-----|-----|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Write an exponential function that represents the relationship between two quantities from a graph or a table of values within a mathematical context. | <p>Write an exponential function that models the data.</p> <p>a. </p> <p>b. <table border="1" data-bbox="786 961 1177 1066"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>y</td> <td>0.1</td> <td>0.3</td> <td>0.9</td> <td>2.7</td> <td>8.1</td> </tr> </table></p> | x | 0 | 1 | 2 | 3 | 4 | y | 0.1 | 0.3 | 0.9 | 2.7 | 8.1 |
| x | 0 | 1 | 2 | 3 | 4 | | | | | | | | | |
| y | 0.1 | 0.3 | 0.9 | 2.7 | 8.1 | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Determine whether a function represents a linear or an exponential function. | <p>Determine whether the function represents a <i>linear</i> or an <i>exponential</i> function.</p> <p>a. $f(x) = 4x + 8$</p> <p>b. $g(x) = 2(1.25)^x$</p> <p>c. $h(x) = \frac{1}{2}\left(\frac{3}{4}\right)^x$</p> <p>d. $j(x) = \frac{1}{2}x - 6$</p> | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.5.6 Given a table, equation or written description of an exponential function, graph that function and determine its key features.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|---|---|---|---|----------|----|---|---|---|---|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to graph an exponential function and identify its key features. | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a table, an equation, or a written description, graph an exponential function and identify its key features. | <p>Graph the exponential function represented by the table, equation, or written description. Identify characteristics of the exponential function and its graph.</p> <p>a.</p> <table border="1" style="margin-left: 40px;"> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">y</td> <td style="text-align: center;">16</td> <td style="text-align: center;">8</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> </tr> </table> <p>b. $f(x) = 3(2)^x$</p> <p>c. An exponential function that passes through (0, 2) and has a growth factor of 3.</p> | x | 0 | 1 | 2 | 3 | 4 | y | 16 | 8 | 4 | 2 | 1 |
| x | 0 | 1 | 2 | 3 | 4 | | | | | | | | | |
| y | 16 | 8 | 4 | 2 | 1 | | | | | | | | | |

MA.912.AR.5.6 (continued)

| | Description | Evidence |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">• Graph an exponential function.• Find the domain and range of an exponential function. | <p>Graph $y = 8\left(\frac{1}{4}\right)^x$. Find the domain and range of the function.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">• Identify the percent rate of change of an exponential function. | <p>Identify the percent rate of change of the function.</p> <p>a. $y = 5(0.6)^x$</p> <p>b. $f(x) = 0.2(1.8)^x$</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.9.1 Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a system of linear equations with a given solution. | <p>Create a system of linear equations with a solution of (6, 3).</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Given a real-world context, write and solve a system of two-variable linear equations algebraically or graphically. | <p>a. Adult tickets are \$10 each and child tickets are \$5 each for a concert. Eight hundred people attended the concert and the concert collected \$5000 in ticket sales. Write and solve a system of equations to find how many of each type of ticket were sold?</p> <p>b. A boat traveled 150 miles downstream and back. The trip downstream took 5 hours and the trip upstream took 6 hours. Write and solve a system of equations to find the speed of the boat in still water and the current.</p> |

MA.912.AR.9.1 (continued)

| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Solve a system of two-variable linear equations algebraically or graphically. | <p>a. Solve the system by elimination.</p> $x + y = 7$ $2x - 4y = 14$ <p>b. Solve the system by graphing.</p> $y = x - 7$ $-6x + y = -1$ <p>c. Solve the system by substitution.</p> $x + y = 21$ $5x - 2y = -56$ |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Add linear equations. • Multiply a linear equation by an integer. | <p>a. Add $5x + 3y = 10$ and $2x - 3y = 17$.</p> <p>b. Multiply $3x - 8 = \frac{1}{2}y$ by 4.</p> |

**Evidence-
Based Scale
Worksheets**

Algebraic Reasoning

MA.912.AR.9.4 Graph the solution set of a system of two-variable linear inequalities.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to graph a system of linear inequalities. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Graph a system of linear inequalities. | <p>Graph the system.</p> $2x + 3y > 5$ $x - 4y \leq 8$ |

MA.912.AR.9.4 (continued)

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Determine whether an ordered pair is a solution of a system of linear inequalities. | <p>Determine whether the ordered pair (1, 2) is a solution of the system of linear inequalities.</p> $5x - 4y \leq 20$ $2x + y > 4$ |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Graph a linear inequality in a coordinate plane. | <p>Graph the linear inequality $3x + 2y < 6$ in a coordinate plane.</p> |

Evidence-Based Scale Worksheets

Algebraic Reasoning

MA.912.AR.9.6 Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or non-viable options.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a real-world problem to represent constraints as a system of linear inequalities. Include what solutions to the problem are viable and non-viable. | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Given a real-world context, represent constraints as systems of linear inequalities. • Interpret solutions to problems as viable or non-viable options. | <p>Game laws limit the number of fish you catch each day. The maximum number of perch you can catch each day is 25, and the maximum number of bass you can catch each day is 15. The total maximum number of fish you can catch each day is 30. Write a system of inequalities that represents the situation. Give an example of the numbers of perch and bass you can catch in a day.</p> |

MA.912.AR.9.6 (continued)

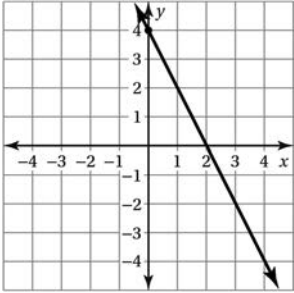
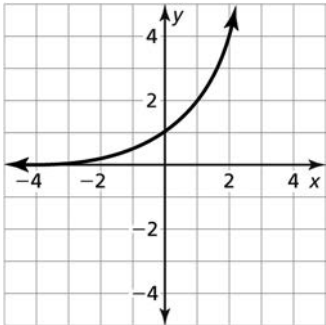
| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Given a real-world context, represent constraints as systems of linear equations. • Interpret solutions to problems as viable or non-viable options. | <p>You have \$8.20 in nickels and dimes. You have 100 coins in total. Write a system of equations that represents the problem. How many of each coin do you have?</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Tell whether an ordered pair is a solution of the linear inequality or system of linear inequalities. | <p>Tell whether the ordered pair is a solution of the linear inequality or system of linear inequalities.</p> <p>a. $(-4, 2); 2x + y < -3$</p> <p>b. $(0, 10); y < 2x$ $y \geq x + 1$</p> |

Evidence-Based Scale Worksheets

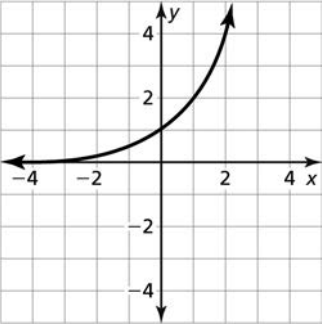
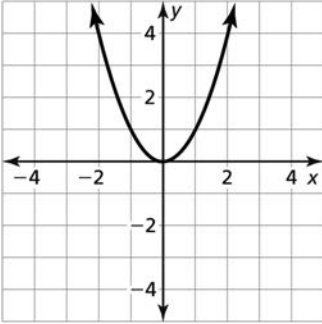
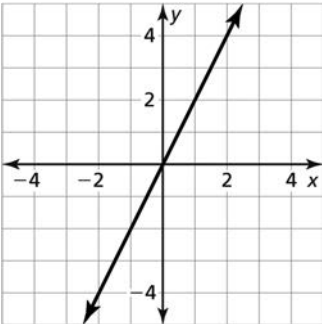
Functions

MA.912.F.1.1 Given an equation or graph that defines a function, determine the function type. Given an input-output table, determine a function type that could represent it.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|---|---|---|----------|---|---|---|----|----|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Explain how to determine which type of function is represented by an equation, graph, or input-output table. | <p>Determine the type of function represented by the equation, graph, or table. Explain your reasoning.</p> <p>a. $y = x^2 + x + 1$</p> <p>b. </p> <p>c. <table border="1" data-bbox="928 957 1359 1066"> <tr> <td>x</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>y</td> <td>1</td> <td>3</td> <td>9</td> <td>27</td> <td>81</td> </tr> </table></p> | x | 1 | 2 | 3 | 4 | 5 | y | 1 | 3 | 9 | 27 | 81 |
| x | 1 | 2 | 3 | 4 | 5 | | | | | | | | | |
| y | 1 | 3 | 9 | 27 | 81 | | | | | | | | | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given an equation, graph, or input-output table that defines a function, determine the function type. | <p>Determine the type of function represented by the equation, graph, or table.</p> <p>a. $y = -3x - 7$</p> <p>b. </p> <p>c. <table border="1" data-bbox="928 1633 1359 1738"> <tr> <td>x</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>y</td> <td>3</td> <td>4</td> <td>6</td> <td>9</td> <td>13</td> </tr> </table></p> | x | 1 | 2 | 3 | 4 | 5 | y | 3 | 4 | 6 | 9 | 13 |
| x | 1 | 2 | 3 | 4 | 5 | | | | | | | | | |
| y | 3 | 4 | 6 | 9 | 13 | | | | | | | | | |

MA.912.F.1.1 (continued)

| | Description | Evidence |
|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Identify function types from equations. | <p>Tell whether each equation represents a <i>linear</i>, <i>exponential</i>, or <i>quadratic</i> function.</p> <p>a. $y = 2x - 1$</p> <p>b. $y = x^2 + 2x$</p> <p>c. $y = 3^x$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify function types from graphs. | <p>Tell whether each graph represents a <i>linear</i>, <i>exponential</i>, or <i>quadratic</i> function.</p> <p>a. </p> <p>b. </p> <p>c. </p> |

**Evidence-
Based Scale
Worksheets****Functions****MA.912.F.1.2** Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.**Circle the scale that best demonstrates your knowledge of the standard.**

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 4 | I can go beyond the standard. <ul style="list-style-type: none">• Teach someone else how to evaluate a function that models a real-life situation for a given input and how to interpret the output of the function. | |
| 3 | I understand the entire standard. <ul style="list-style-type: none">• Evaluate a function that models a real-life situation for a given input and interpret the output of the function. | The function $f(t) = 50t$ represents the distance (in miles) a car travels in t hours. Find and interpret $f(3)$. |

MA.912.F.1.2 (continued)

| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 2 | I understand some parts, but not the entire standard. <ul style="list-style-type: none">Evaluate functions for given inputs. | Evaluate $f(x) = 3x - 5$ when $x = 0, 1,$ and 7 . |
| 1 | I understand the basic skills needed to begin learning this standard. <ul style="list-style-type: none">Evaluate algebraic expressions for a given value. | Evaluate the expression when $x = 3$. a. $5x + 9$ b. $15 - \frac{12}{x}$ c. $4x^2$ |

Evidence-Based Scale Worksheets

Functions

MA.912.F.1.3 Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|---|---|---|--------|---|----|----|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to calculate and interpret the average rate of change of a real-life situation represented graphically, algebraically, or in a table over a specified interval. | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Calculate and interpret the average rate of change of a real-life situation represented algebraically or in a table over a specified interval. | <p>a. The population of a town x years after the year 2000 is given by the function $f(x) = 2500(1.03)^x$. Calculate and interpret the average rate of change from 2010 and 2015.</p> <p>b. The table shows the height $f(t)$ (in feet) of a soccer ball t seconds after it is kicked. Calculate and interpret the average rate of change from 0 seconds to 2 seconds.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>t</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>$f(t)$</td> <td>1</td> <td>37</td> <td>41</td> <td>13</td> </tr> </table> | t | 0 | 1 | 2 | 3 | $f(t)$ | 1 | 37 | 41 | 13 |
| t | 0 | 1 | 2 | 3 | | | | | | | | |
| $f(t)$ | 1 | 37 | 41 | 13 | | | | | | | | |

MA.912.F.1.3 (continued)

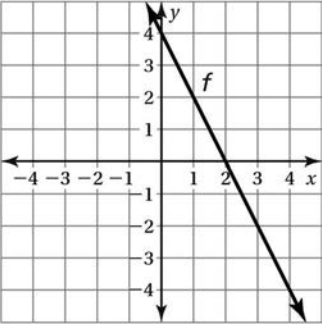
| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 2 | I understand some parts, but not the entire standard. <ul style="list-style-type: none">• Find the slope of a line. | Find the slope of a line that passes through the points (2, 5) and (8, 29). |
| 1 | I understand the basic skills needed to begin learning this standard. <ul style="list-style-type: none">• Find a unit rate. | A jogger ran 4 laps in 12 minutes. If he maintained a constant speed, how many minutes did it take the jogger to run 1 lap? |

Evidence-Based Scale Worksheets

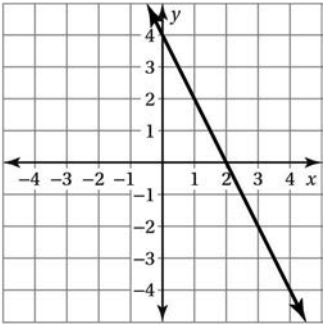
Functions

MA.912.F.1.5 Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|----|---|---|---|--------|---|---|---|---|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to compare key features of linear functions each represented algebraically, graphically, in tables, or written descriptions. | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Compare key features of linear functions each represented algebraically, graphically, in tables, or written descriptions. | <p>a. The graph of the function f is shown. The linear function $g(x)$ passes through the points $(1, 5)$ and $(4, 11)$. Compare the domain, range, and end behavior of the two functions.</p>  <p>b. The function $f(x)$ is represented by $f(x) = \frac{5}{2}x + 1$. The table represents the linear function $g(x)$. Which function has a greater y-intercept? Which function has a greater slope?</p> <table border="1" data-bbox="868 1696 1299 1801"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>$g(x)$</td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> <td>11</td> </tr> </table> | x | 0 | 1 | 2 | 3 | 4 | $g(x)$ | 3 | 5 | 7 | 9 | 11 |
| x | 0 | 1 | 2 | 3 | 4 | | | | | | | | | |
| $g(x)$ | 3 | 5 | 7 | 9 | 11 | | | | | | | | | |

MA.912.F.1.5 (continued)

| | Description | Evidence |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Identify key features of a linear function from its equation. | <p>Find the slope, y-intercept, domain, and range of the graph of $y = \frac{3}{5}x - 2$.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify the intercepts of a linear function from its graph. | <p>What are the x- and y-intercepts of the line?</p>  |

Evidence-Based Scale Worksheets

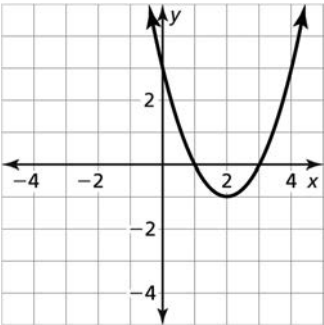
Functions

MA.912.F.1.6 Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables, or written descriptions. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Compare key features of linear and nonlinear functions each represented algebraically, in tables, or written descriptions. | <p>a. The function $f(x)$ is represented by $f(x) = 2^x$. The linear function $g(x)$ passes through the points $(-2, -8)$ and $(1, 7)$. Compare the domain and range of the two functions. On which intervals are the functions increasing or decreasing?</p> <p>b. Consider the functions $f(x) = 10x^2$, $g(x) = 100x$, and $h(x) = 1.2^x$. Compare the intervals where each function is increasing or decreasing. As x continues to grow, which function will have values that exceed all the others?</p> |

MA.912.F.1.6 (continued)

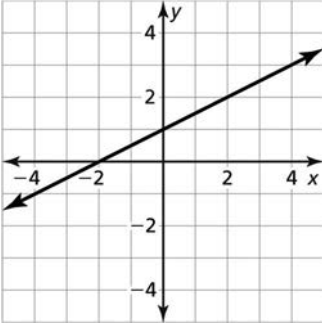
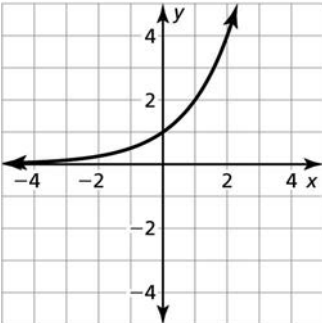
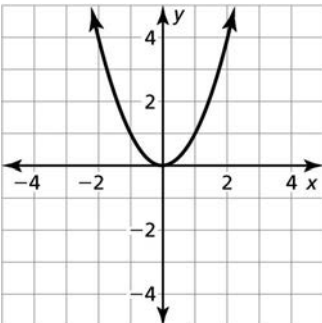
| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Identify key features of a nonlinear function. | <p>Find the intervals where the function is increasing or decreasing. Then identify the maximum or minimum value of the function.</p> $y = -x^2 + 6x - 8$ |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify key features of a nonlinear function from its graph. | <p>The graph of a function is shown. Identify the x- and y-intercepts of the function. Then find the minimum value of the function.</p>  |

**Evidence-
Based Scale
Worksheets**
Functions
MA.912.F.1.8 Determine whether a linear, quadratic or exponential function best models a given real-world situation.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | I can go beyond the standard. <ul style="list-style-type: none"> Teach someone else how to determine whether a linear, a quadratic, or an exponential function best models a given real-world situation. | |
| 3 | I understand the entire standard. <ul style="list-style-type: none"> Determine whether a linear, a quadratic, or an exponential function best models a given real-world situation. | Tell whether the data can be modeled by a <i>linear</i> , a <i>quadratic</i> , or an <i>exponential</i> function. <ul style="list-style-type: none"> a. the population y of a town where 50 new people move into the town each month for x months b. the value y (in dollars) of an account that increases by 2% of its value each year for x years c. the height y (in feet) of a baseball x seconds after it has been thrown straight upwards |

MA.912.F.1.8 (continued)

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|---|---|----|----------|---|---|---|----|----|----------|---|---|---|---|----|----------|----|----|----|----|----|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Determine whether a table of values represents a linear, an exponential, or a quadratic function. | <p>Tell whether the table of values represents a <i>linear</i>, a <i>quadratic</i>, or an <i>exponential</i> function.</p> <p>a.</p> <table border="1" data-bbox="767 411 1198 516"> <tr> <td>x</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>y</td> <td>4</td> <td>6</td> <td>9</td> <td>13</td> <td>18</td> </tr> </table> <p>b.</p> <table border="1" data-bbox="767 558 1198 663"> <tr> <td>x</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>y</td> <td>16</td> <td>24</td> <td>36</td> <td>54</td> <td>81</td> </tr> </table> | x | 2 | 4 | 6 | 8 | 10 | y | 4 | 6 | 9 | 13 | 18 | x | 2 | 4 | 6 | 8 | 10 | y | 16 | 24 | 36 | 54 | 81 |
| x | 2 | 4 | 6 | 8 | 10 | | | | | | | | | | | | | | | | | | | | | |
| y | 4 | 6 | 9 | 13 | 18 | | | | | | | | | | | | | | | | | | | | | |
| x | 2 | 4 | 6 | 8 | 10 | | | | | | | | | | | | | | | | | | | | | |
| y | 16 | 24 | 36 | 54 | 81 | | | | | | | | | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Tell whether a graph represents a linear, a quadratic, or an exponential function. | <p>Tell whether the graph represents a <i>linear</i>, a <i>quadratic</i>, or an <i>exponential</i> function.</p> <p>a.</p>  <p>b.</p>  <p>c.</p>  | | | | | | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Functions

MA.912.F.2.1 Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$ and $f(x + k)$ for specific values of k .

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k. | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Identify the effect on the graph or table of a given function after replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k. | <p>Use the graphs of f and g to describe the transformation from the graph of f to the graph of g.</p> <p>a. $f(x) = x$; $g(x) = f(x) - 2$</p> <p>b. $f(x) = \frac{1}{3}x$; $g(x) = 3f(x)$</p> <p>c. $f(x) = x^2$; $g(x) = f(x + 5)$</p> <p>d. $f(x) = x^2$; $g(x) = -f(x)$</p> <p>e. $f(x) = 2x$; $g(x) = f(-x)$</p> <p>f. $f(x) = x^2$; $g(x) = f\left(\frac{1}{2}x\right)$</p> |

MA.912.F.2.1 (continued)

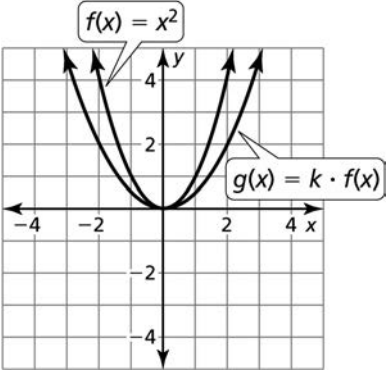
| | Description | Evidence |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">Identify types of transformations from functional representations. | <p>What type of transformation of $f(x) = x^2$ results in each function below.</p> <p>a. $g(x) = x^2 - 3$</p> <p>b. $h(x) = \frac{1}{2}x^2$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">Graph linear, quadratic, and absolute value functions. | <p>Graph the function.</p> <p>a. $y = 2x$</p> <p>b. $y = x^2 + 1$</p> <p>c. $y = x - 2$</p> |

Evidence-Based Scale Worksheets

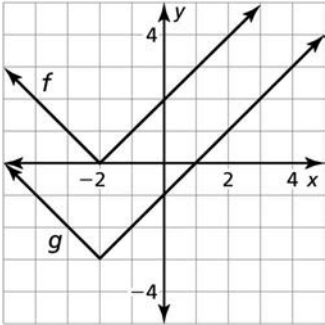
Functions

H MA.912.F.2.3 Given the graph or table of $f(x)$ and the graph or table of $f(x) + k$, $kf(x)$, $f(kx)$ and $f(x + k)$, state the type of transformation and find the value of the real number k .

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----|---|---|---|--------|---|---|---|---|----|-------------------|---|---|---|---|---|-----|----|----|---|---|---|--------|---|---|---|---|---|-------------------|---|---|---|---|---|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to identify the type of transformation and find the real number k when given the graph or table of $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given the graph or table of $f(x)$ and the graph or table $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$, state the type of transformation and find the value of the real number k. | <p>Find the value of k. Then describe the transformation from the graph of f to the graph of g.</p> <p>a.</p>  <p>b.</p> <table border="1" data-bbox="927 1360 1426 1520"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>$f(x)$</td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> <td>11</td> </tr> <tr> <td>$g(x) = f(x + k)$</td> <td>1</td> <td>3</td> <td>5</td> <td>7</td> <td>9</td> </tr> </table> <p>c.</p> <table border="1" data-bbox="935 1667 1418 1829"> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>$f(x)$</td> <td>3</td> <td>2</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>$g(x) = f(x) + k$</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>3</td> </tr> </table> | x | -2 | -1 | 0 | 1 | 2 | $f(x)$ | 3 | 5 | 7 | 9 | 11 | $g(x) = f(x + k)$ | 1 | 3 | 5 | 7 | 9 | x | -2 | -1 | 0 | 1 | 2 | $f(x)$ | 3 | 2 | 1 | 0 | 1 | $g(x) = f(x) + k$ | 5 | 4 | 3 | 2 | 3 |
| x | -2 | -1 | 0 | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $f(x)$ | 3 | 5 | 7 | 9 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $g(x) = f(x + k)$ | 1 | 3 | 5 | 7 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| x | -2 | -1 | 0 | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $f(x)$ | 3 | 2 | 1 | 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| $g(x) = f(x) + k$ | 5 | 4 | 3 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

H MA.912.F.2.3 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Identify the type of transformation from a graph. | <p>Identify the type of transformation from the graph of f to the graph of g.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify the type of transformation functional notation. Find values of $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$. | <p>What type of transformation of $f(x) = 3x^2$ results in each function below?</p> <p>a. $g(x) = f(3x)$</p> <p>b. $g(x) = -f(x)$</p> |

Evidence-Based Scale Worksheets

Functions

H MA.912.F.3.1 Given a mathematical or real-world context, combine two functions, limited to linear and quadratic, using arithmetic operations. When appropriate, include domain restrictions for the new function.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Teach someone else how to combine two functions using arithmetic operations. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Given a real-life context, combine two functions using arithmetic operations. When appropriate, include domain restrictions for the new function. | <p>The dimensions (in feet) of a rectangular patio can be modeled by $f(x) = x^2 + 8$ and $g(x) = x + 10$. Find each of the following.</p> <p>a. $(f + g)(x)$</p> <p>b. $(f - g)(x)$</p> <p>c. $(fg)(x)$</p> |

H MA.912.F.3.1 (continued)

| | Description | Evidence |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none">Given a mathematical context, combine two functions using arithmetic operations. | <p>Let $f(x) = 2x + 5$ and $g(x) = x + 4$. Find each of the following and state the domain.</p> <p>a. $(f + g)(x)$</p> <p>b. $(f - g)(x)$</p> <p>c. $(fg)(x)$</p> <p>d. $\left(\frac{f}{g}\right)(x)$</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none">Simplify algebraic expressions by combining like terms. | <p>Simplify the expression.</p> <p>a. $4x + 5 + 3x - 1$</p> <p>b. $8x - 3 - (x^2 - 2x)$</p> |

Evidence-Based Scale Worksheets

Financial Literacy

MA.912.FL.3.2 Solve real-world problems involving simple, compound and continuously compounded interest.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Solve problems involving comparisons of simple and compound interest. | <p>Account A earns 4.8% annual interest compounded monthly. Account B earns simple interest at an annual rate of 4.8%. Which account will have the greater value after 10 years if \$1000 is initially deposited in each account? How much greater?</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Solve real-life problems involving simple or compound interest. | <p>a. You are saving for a new computer that costs \$900. You deposit \$800 into a savings account that earns simple interest at an annual rate of 6.5%. How many years will it take you to have enough money for the new computer?</p> <p>b. You deposit \$400 in an account that earns 6% annual interest compounded quarterly. What is the balance of the account after 3 years?</p> |

MA.912.FL.3.2 (continued)

| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | I understand some parts, but not the entire standard. <ul style="list-style-type: none">• Solve a real-life simple interest problem. | You deposit \$400 in an account that earns simple interest at an annual interest rate of 9%. How much money will be in the account in 5 years? |
| 1 | I understand the basic skills needed to begin learning this standard. <ul style="list-style-type: none">• Solve a percent problem. | What is 2.5% of \$120? |

Evidence-Based Scale Worksheets

Financial Literacy

MA.912.FL.3.4 Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Teach someone else about the relationship between simple interest and linear growth and the relationship between compound interest and exponential growth. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Explain the relationship between simple interest and linear growth. • Explain the relationship between compound interest and exponential growth. | <p>a. Explain the relationship between simple interest and linear growth.</p> <p>b. Explain the relationship between compound interest and exponential growth.</p> |

MA.912.FL.3.4 (continued)

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|---|---|---|----------|---|---|---|----|----------|---|---|---|---|----------|---|---|----|----|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Identify linear and exponential functions when data is represented in tables | <p>Does the table represent a <i>linear</i> or an <i>exponential</i> function? Explain.</p> <p>a.</p> <table border="1" data-bbox="778 415 1209 520"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>5</td> <td>7</td> <td>9</td> <td>11</td> </tr> </table> <p>b.</p> <table border="1" data-bbox="778 762 1209 867"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>y</td> <td>3</td> <td>6</td> <td>12</td> <td>24</td> </tr> </table> | x | 0 | 1 | 2 | 3 | y | 5 | 7 | 9 | 11 | x | 0 | 1 | 2 | 3 | y | 3 | 6 | 12 | 24 |
| x | 0 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | |
| y | 5 | 7 | 9 | 11 | | | | | | | | | | | | | | | | | | |
| x | 0 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | |
| y | 3 | 6 | 12 | 24 | | | | | | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Write the simple interest formula. Write the compound interest formula. | <p>a. Write the simple interest formula.</p> <p>b. Write the compound interest formula.</p> | | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

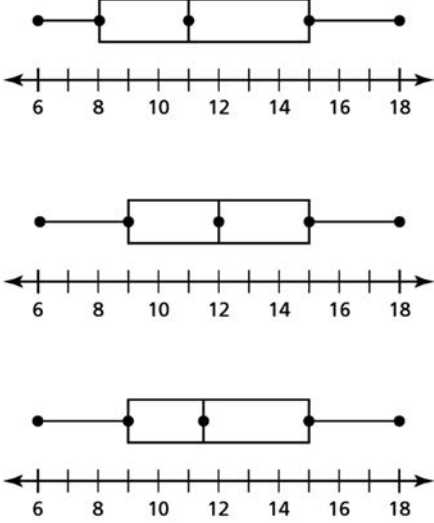
Data Analysis and Probability

MA.912.DP.1.1 Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|-------|-----------|-------|---|-------|---|-------|----|-------|---|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Collect real-life data. Create an appropriate data display for the data and explain the choice of display. | <p>Measure the heights of students in two different classes. Create an appropriate data display that best represents the data. Explain your reasoning.</p> | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a set of data, choose an appropriate display to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate. | <p>Analyze the data and then create a display that appropriately represents the data. Explain your reasoning.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2" style="text-align: center;">Test Scores</th> </tr> <tr> <th style="text-align: center;">Score</th> <th style="text-align: center;">Frequency</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">60–69</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">70–79</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">80–89</td> <td style="text-align: center;">12</td> </tr> <tr> <td style="text-align: center;">90–99</td> <td style="text-align: center;">5</td> </tr> </tbody> </table> | Test Scores | | Score | Frequency | 60–69 | 2 | 70–79 | 8 | 80–89 | 12 | 90–99 | 5 |
| Test Scores | | | | | | | | | | | | | | |
| Score | Frequency | | | | | | | | | | | | | |
| 60–69 | 2 | | | | | | | | | | | | | |
| 70–79 | 8 | | | | | | | | | | | | | |
| 80–89 | 12 | | | | | | | | | | | | | |
| 90–99 | 5 | | | | | | | | | | | | | |

MA.912.DP.1.1 (continued)

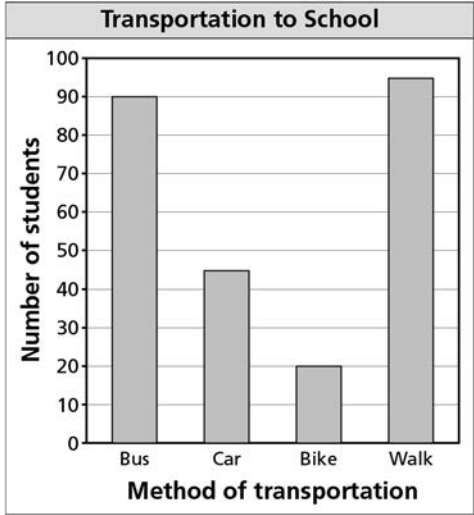
| | Description | Evidence | | | | | | | | | | | | | | | | | | | | |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---|---|---|---|---|---|--|--|--|---|---|---|---|---|---|---|---|---|---|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Create a dot plot to represent a given set of data. | <p>The table shows the number of pencils each student in a class brought to school. Create a dot plot to represent the data.</p> <table border="1" data-bbox="699 399 1337 504"> <thead> <tr> <th colspan="10">Number of Pencils</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3</td> <td>2</td> <td>2</td> <td>1</td> <td>4</td> <td>2</td> <td>3</td> <td>2</td> <td>1</td> </tr> </tbody> </table> | Number of Pencils | | | | | | | | | | 1 | 3 | 2 | 2 | 1 | 4 | 2 | 3 | 2 | 1 |
| Number of Pencils | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3 | 2 | 2 | 1 | 4 | 2 | 3 | 2 | 1 | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Identify a box-and-whisker plot that correctly represents a given set of data. | <p>Which box-and-whisker plot represents the given data?</p> <p>6, 8, 8, 10, 11, 13, 14, 16, 18</p>  | | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

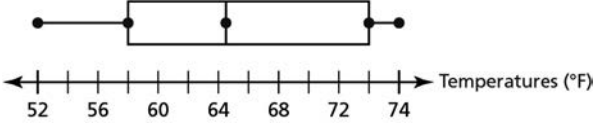
Data Analysis and Probability

MA.912.DP.1.2 Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------|-----|----|-----|----|------|----|------|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to interpret data distributions represented in various ways, including whether the data is numerical or categorical, whether it is univariate or bivariate, as well as how to interpret the different components and quantities in the display. | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Interpret a data distribution. Tell whether the data is numerical or categorical, whether it is univariate or bivariate, and interpret the different components and quantities in the display. | <p>The bar graph shows the various ways that students in your grade get to school. Tell whether the data is <i>numerical</i> or <i>categorical</i> and whether it is <i>univariate</i> or <i>bivariate</i>. Then state which methods of transportation are the most common and the least common.</p>  <table border="1"> <caption>Transportation to School</caption> <thead> <tr> <th>Method of transportation</th> <th>Number of students</th> </tr> </thead> <tbody> <tr> <td>Bus</td> <td>90</td> </tr> <tr> <td>Car</td> <td>45</td> </tr> <tr> <td>Bike</td> <td>20</td> </tr> <tr> <td>Walk</td> <td>95</td> </tr> </tbody> </table> | Method of transportation | Number of students | Bus | 90 | Car | 45 | Bike | 20 | Walk | 95 |
| Method of transportation | Number of students | | | | | | | | | | | |
| Bus | 90 | | | | | | | | | | | |
| Car | 45 | | | | | | | | | | | |
| Bike | 20 | | | | | | | | | | | |
| Walk | 95 | | | | | | | | | | | |

MA.912.DP.1.2 (continued)

| | Description | Evidence |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Tell whether a data display represents numerical or categorical data and whether the data is univariate or bivariate. | <p>Tell whether this data display represents <i>numerical</i> or <i>categorical</i> data and whether the data is <i>univariate</i> or <i>bivariate</i>.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Tell whether data is numerical or categorical. | <p>Tell whether the data are <i>numerical</i> or <i>categorical</i>.</p> <p>a. colors of shirts worn by students in a class</p> <p>b. heights of buildings in a town</p> |

Evidence-Based Scale Worksheets

Data Analysis and Probability

MA.912.DP.1.3 Explain the difference between correlation and causation in the contexts of both numerical and categorical data.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Explain flaws in real-life claims about causation. | <p>A recent study shows a correlation between the amount of fish a child eats and test performance. A newspaper article states that eating fish results in improved academic performance. What is the flaw in the article’s reasoning?</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Explain the difference between correlation and causation in the contexts of both numerical and categorical data. | <p>Tell whether a correlation is likely in the situation. If so, tell whether there is a causal relationship. Explain your reasoning.</p> <p>a. time spent watching television and test scores</p> <p>b. a person’s eye color and political party affiliation</p> |

Evidence-Based Scale Worksheets

Data Analysis and Probability

MA.912.DP.1.4 Estimate a population total, mean or percentage using data from a sample survey; develop a margin of error through the use of simulation.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Conduct a survey and estimate a population total. | <p>Create a survey question, then survey a random sample of students at your school. Based on the results, estimate the population total for the responses to the survey question at your school.</p> |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Estimate a population total, mean, or percentage using data from a sample survey. | <p>In a survey of 1600 residents in a city, 51% said they listen to music every day. The margin of error is $\pm 1.4\%$.</p> <p>a. Give an interval that is likely to contain the exact percent of residents in the city who would say they listen to music every day.</p> <p>b. The population of the city is 175,000. Estimate the number of residents in the city who would say they listen to music every day.</p> |

MA.912.DP.1.4 (continued)

| | Description | Evidence |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Use a margin of error to make a conclusion about a population. | <p>In a survey of 500 residents of a city, 52% said they exercise regularly. The margin of error is $\pm 4.5\%$. Give an interval that is likely to contain the exact percentage of residents in the city who exercise regularly.</p> |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Use the percent equation to find a part of a whole. | <p>There are 1610 students at Apple Valley High School. If 20% of the students at the school are sophomores, how many sophomores attend Apple Valley High School?</p> |

Evidence-Based Scale Worksheets

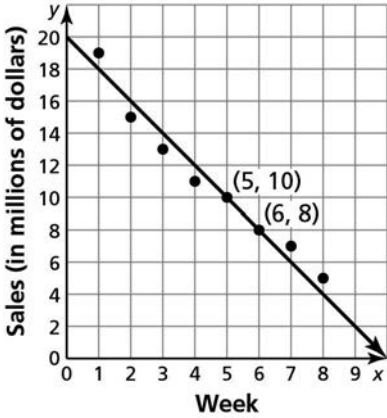
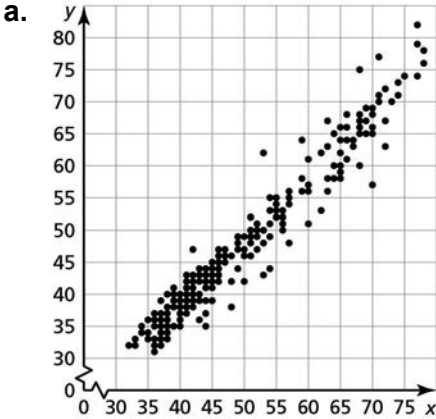
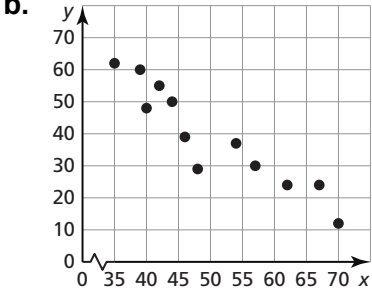
Data Analysis and Probability

MA.912.DP.2.4 Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y -intercept of the model. Use the model to solve real-world problems in terms of the context of the data.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | | | | | |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----|----|----|----|---|---|---|----------------------------------------------------|----|----|----|----|----|----|----|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Collect data in two variables and analyze the type of association by fitting a linear function to the data. | | | | | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and y-intercept of the model. Use the model to solve real-world problems in terms of the context of the data. | <p>The table shows the weekly sales of a movie and the number of weeks since its release.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Week, x</th> <th style="text-align: center;">1</th> <th style="text-align: center;">2</th> <th style="text-align: center;">3</th> <th style="text-align: center;">4</th> <th style="text-align: center;">5</th> <th style="text-align: center;">6</th> <th style="text-align: center;">7</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Sales (millions of dollars), y</td> <td style="text-align: center;">31</td> <td style="text-align: center;">28</td> <td style="text-align: center;">26</td> <td style="text-align: center;">23</td> <td style="text-align: center;">20</td> <td style="text-align: center;">18</td> <td style="text-align: center;">15</td> </tr> </tbody> </table> <p>a. Write an equation that models the movie sales as a function of the number of weeks since its release.</p> <p>b. Interpret the slope and y-intercept of the line of fit.</p> <p>c. Predict the sales of the movie 9 weeks after its release.</p> | Week, x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | Sales (millions of dollars), y | 31 | 28 | 26 | 23 | 20 | 18 | 15 |
| Week, x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | |
| Sales (millions of dollars), y | 31 | 28 | 26 | 23 | 20 | 18 | 15 | | | | | | | | | | | |

MA.912.DP.2.4 (continued)

| | Description | Evidence |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Use a line of fit to solve real-life problems. | <p>The scatter plot shows the sales y (in millions of dollars) each week x of a new style release at a popular retail store. The equation $y = -2x + 30$ is a line of fit for the data set. Use the line of fit to predict the sales in week 10.</p>  |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Identify the type of correlation between data sets. | <p>Describe the correlation in the scatter plot.</p> <p>a.</p>  <p>b.</p>  |

Evidence-Based Scale Worksheets

Data Analysis and Probability

H MA.912.DP.2.5 Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to assess the fit of a linear function by plotting and analyzing residuals. | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a scatter plot that represents bivariate numerical data, assess the fit of a given linear function by plotting and analyzing residuals. | <p>The scatter plot shows the age y (in years) of a tree with a circumference of x inches. The equation $y = 0.5x + 0.3$ is proposed to model the data.</p> <div data-bbox="837 892 1241 1375" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Height and Weight</p> <table border="1" style="display: none;"> <caption>Data points from the scatter plot</caption> <thead> <tr> <th>Stem circumference (cm)</th> <th>Age (years)</th> </tr> </thead> <tbody> <tr><td>5</td><td>2</td></tr> <tr><td>6</td><td>3</td></tr> <tr><td>7</td><td>4</td></tr> <tr><td>8</td><td>4</td></tr> <tr><td>9</td><td>5</td></tr> </tbody> </table> </div> <p>a. Make a scatter plot of the residuals.</p> <p>b. Identify the number of positive and negative residuals, the residual with the greatest absolute value, and the residual with the least absolute value.</p> <p>c. Is the model a good fit?</p> | Stem circumference (cm) | Age (years) | 5 | 2 | 6 | 3 | 7 | 4 | 8 | 4 | 9 | 5 |
| Stem circumference (cm) | Age (years) | | | | | | | | | | | | | |
| 5 | 2 | | | | | | | | | | | | | |
| 6 | 3 | | | | | | | | | | | | | |
| 7 | 4 | | | | | | | | | | | | | |
| 8 | 4 | | | | | | | | | | | | | |
| 9 | 5 | | | | | | | | | | | | | |

H MA.912.DP.2.5 (continued)

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|----------|-----|-----|----|----|----|----|----|----|----|----|----|---|---|---|----|---|----|--|---|---|--|---|----|--|---|----|--|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Create a residual plot for a function fit to data. | <p>Create a residual plot for the data in the table given the model $y = 1.9x + 2.2$.</p> <table border="1" data-bbox="715 394 858 919"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr><td>-8</td><td>-10</td></tr> <tr><td>-6</td><td>-8</td></tr> <tr><td>-4</td><td>-8</td></tr> <tr><td>-2</td><td>-2</td></tr> <tr><td>0</td><td>-1</td></tr> <tr><td>2</td><td>8</td></tr> <tr><td>4</td><td>9</td></tr> <tr><td>6</td><td>13</td></tr> <tr><td>8</td><td>19</td></tr> </tbody> </table> | x | y | -8 | -10 | -6 | -8 | -4 | -8 | -2 | -2 | 0 | -1 | 2 | 8 | 4 | 9 | 6 | 13 | 8 | 19 | | | | | | | | | | |
| x | y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -8 | -10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -6 | -8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -4 | -8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -2 | -2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | -1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Calculate residuals for a model fit to data. | <p>Calculate the residuals for the data in the table given the model $y = 3x + 1$.</p> <table border="1" data-bbox="746 1234 1045 1759"> <thead> <tr> <th>x</th> <th>y</th> <th>Residual</th> </tr> </thead> <tbody> <tr><td>-4</td><td>-10</td><td></td></tr> <tr><td>-3</td><td>-6</td><td></td></tr> <tr><td>-2</td><td>-5</td><td></td></tr> <tr><td>-1</td><td>-4</td><td></td></tr> <tr><td>0</td><td>1</td><td></td></tr> <tr><td>1</td><td>5</td><td></td></tr> <tr><td>2</td><td>4</td><td></td></tr> <tr><td>3</td><td>11</td><td></td></tr> <tr><td>4</td><td>14</td><td></td></tr> </tbody> </table> | x | y | Residual | -4 | -10 | | -3 | -6 | | -2 | -5 | | -1 | -4 | | 0 | 1 | | 1 | 5 | | 2 | 4 | | 3 | 11 | | 4 | 14 | |
| x | y | Residual | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -4 | -10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -3 | -6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -2 | -5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -1 | -4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Data Analysis and Probability

MA.912.DP.2.6 Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| 4 | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|-----|-----|------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----------------|------|---|------|-----|---|-----|------|
| | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone else how to use a scatter plot with a line of fit and residuals to determine the strength and direction of the correlation, and how to interpret strength and direction with a real-life context. | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context. | <p>The scatter plot shows the height x (in inches) and the weight y (in pounds) of a group of players on a football team. The equation $y = 20.5x - 1278$ models the data. The residuals are shown in the table. Interpret the strength and direction of the correlation.</p> <div data-bbox="839 1104 1289 1591" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">Height and Weight</p> </div> <table border="1" data-bbox="826 1654 1481 1864"> <tbody> <tr> <td>x</td> <td>71</td> <td>72</td> <td>73</td> <td>74</td> <td>74</td> <td>76</td> <td>77</td> </tr> <tr> <td>y</td> <td>195</td> <td>198</td> <td>210</td> <td>204</td> <td>242</td> <td>250</td> <td>318</td> </tr> <tr> <td>Residual</td> <td>17.5</td> <td>0</td> <td>-8.5</td> <td>-35</td> <td>3</td> <td>-30</td> <td>17.5</td> </tr> </tbody> </table> | x | 71 | 72 | 73 | 74 | 74 | 76 | 77 | y | 195 | 198 | 210 | 204 | 242 | 250 | 318 | Residual | 17.5 | 0 | -8.5 | -35 | 3 | -30 | 17.5 |
| x | 71 | 72 | 73 | 74 | 74 | 76 | 77 | | | | | | | | | | | | | | | | | | | |
| y | 195 | 198 | 210 | 204 | 242 | 250 | 318 | | | | | | | | | | | | | | | | | | | |
| Residual | 17.5 | 0 | -8.5 | -35 | 3 | -30 | 17.5 | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Data Analysis and Probability

MA.912.DP.3.1 Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem that involves constructing a two-way table and interpreting the joint and marginal frequencies. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Construct a two-way table summarizing bivariate categorical data. Interpret the joint and marginal frequencies and determine possible associations in terms of a real-world context. | <p>You conduct a survey that asks 996 freshmen and seniors about whether they participate in sports. Four hundred nine-two freshmen respond, with 142 of them responding “yes.” Five hundred four seniors respond, with 402 responding “no.”</p> <p>a. Organize the results in a two-way table. Include marginal frequencies.</p> <p>b. Interpret the joint and marginal frequencies.</p> <p>c. Is there an association between class and participation in sports?</p> |

MA.912.DP.3.1 (continued)

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|-----------------|--|-------|-----|----|-------------|-----|----|--|--|----|--|----|--|-------|--|--|----|-----|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> • Complete a two-way table. | <p>Complete the two-way table that shows survey results.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="2">Play Instrument</th> <th rowspan="2">Total</th> </tr> <tr> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <th rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Play Sports</th> <th>Yes</th> <td>22</td> <td></td> <td></td> </tr> <tr> <th>No</th> <td></td> <td>65</td> <td></td> </tr> <tr> <th colspan="2">Total</th> <td></td> <td>71</td> <td>100</td> </tr> </tbody> </table> | | | Play Instrument | | Total | Yes | No | Play Sports | Yes | 22 | | | No | | 65 | | Total | | | 71 | 100 |
| | | Play Instrument | | | Total | | | | | | | | | | | | | | | | | | |
| | | Yes | No | | | | | | | | | | | | | | | | | | | | |
| Play Sports | Yes | 22 | | | | | | | | | | | | | | | | | | | | | |
| | No | | 65 | | | | | | | | | | | | | | | | | | | | |
| Total | | | 71 | 100 | | | | | | | | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> • Define marginal frequency and joint frequency. | <p>Define each term.</p> <p style="margin-left: 40px;">a. marginal frequency</p> <p style="margin-left: 40px;">b. joint frequency</p> | | | | | | | | | | | | | | | | | | | | | |

Evidence-Based Scale Worksheets

Data Analysis and Probability

H MA.912.DP.3.2 Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data.

Circle the scale that best demonstrates your knowledge of the standard.

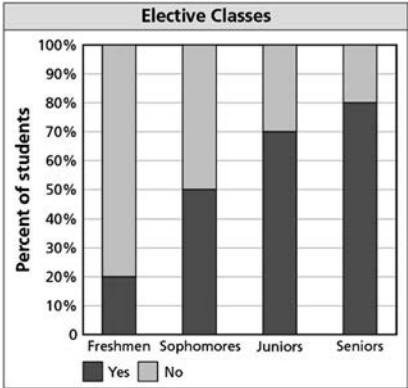
| | Description | Evidence |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> • Create a word problem that involves using given marginal and conditional relative frequencies to create a two-way relative frequency table. | |
| 3 | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> • Given marginal and conditional relative frequencies, construct a two-way relative frequency table summarizing categorical bivariate data. | <p>You survey some residents of a town about whether they walk or ride a bike for exercise. You find that 60% of the residents walk for exercise. You find that 30% of the residents who walk also ride a bike. You find that 5% of the residents do not walk but ride a bike for exercise. Organize the data in a two-way relative frequency table.</p> |

Evidence-Based Scale Worksheets

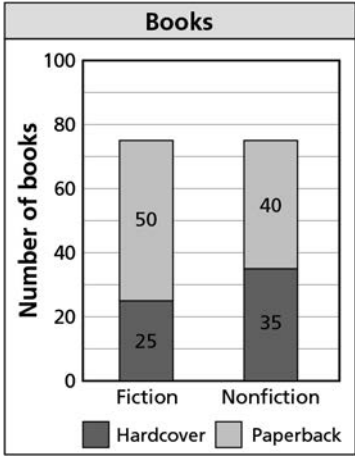
Data Analysis and Probability

H MA.912.DP.3.3 Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal and conditional relative frequencies in terms of a real-world context.

Circle the scale that best demonstrates your knowledge of the standard.

| | Description | Evidence | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|----------|--|--|----------|---------|-------|--------|------|-------|-------|-------|--------|-------|-------|-------|-------|--|-------|-------|---|
| <p>4</p> | <p>I can go beyond the standard.</p> <ul style="list-style-type: none"> Teach someone how to interpret joint, marginal, and conditional relative frequencies when given a two-way relative frequency table or segmented bar graph. | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3</p> | <p>I understand the entire standard.</p> <ul style="list-style-type: none"> Given a two-way relative frequency table or segmented bar graph summarizing categorical bivariate data, interpret joint, marginal, and conditional relative frequencies in terms of a real-world context. | <p>a. The two-way table shows the relative frequencies of a survey that asked males and females about whether they are in favor of planting a community garden. Interpret one of the joint relative frequencies and one of the marginal relative frequencies.</p> <table border="1" data-bbox="836 1010 1458 1308"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="3">Response</th> </tr> <tr> <th>In Favor</th> <th>Against</th> <th>Total</th> </tr> </thead> <tbody> <tr> <th rowspan="2">Gender</th> <th>Male</th> <td>0.332</td> <td>0.190</td> <td>0.522</td> </tr> <tr> <th>Female</th> <td>0.386</td> <td>0.092</td> <td>0.478</td> </tr> <tr> <th colspan="2">Total</th> <td>0.718</td> <td>0.282</td> <td>1</td> </tr> </tbody> </table> <p>b. The segmented bar graph shows conditional relative frequencies for students taking elective classes. A junior is how many times likely to take an elective class than to not take an elective class?</p>  | | | Response | | | In Favor | Against | Total | Gender | Male | 0.332 | 0.190 | 0.522 | Female | 0.386 | 0.092 | 0.478 | Total | | 0.718 | 0.282 | 1 |
| | | Response | | | | | | | | | | | | | | | | | | | | | | |
| | | In Favor | Against | Total | | | | | | | | | | | | | | | | | | | | |
| Gender | Male | 0.332 | 0.190 | 0.522 | | | | | | | | | | | | | | | | | | | | |
| | Female | 0.386 | 0.092 | 0.478 | | | | | | | | | | | | | | | | | | | | |
| Total | | 0.718 | 0.282 | 1 | | | | | | | | | | | | | | | | | | | | |

MA.912.DP.3.3 (continued)

| | Description | Evidence | | | | | | | | | | | | | |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|------------|---------|-----|----|------------|-----|------|------|----|------|------|
| 2 | <p>I understand some parts, but not the entire standard.</p> <ul style="list-style-type: none"> Read and interpret data in a two-way relative frequency table. | <p>This two-way relative frequency table shows the results of a survey that asked students whether they are in band or in chess club. What percent of the students in the survey are in band and in chess club?</p> <table border="1" data-bbox="748 480 1230 730"> <thead> <tr> <th colspan="2" rowspan="2"></th> <th colspan="2">Chess Club</th> </tr> <tr> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <th rowspan="2">Band</th> <th>Yes</th> <td>0.02</td> <td>0.18</td> </tr> <tr> <th>No</th> <td>0.03</td> <td>0.77</td> </tr> </tbody> </table> | | | Chess Club | | Yes | No | Band | Yes | 0.02 | 0.18 | No | 0.03 | 0.77 |
| | | Chess Club | | | | | | | | | | | | | |
| | | Yes | No | | | | | | | | | | | | |
| Band | Yes | 0.02 | 0.18 | | | | | | | | | | | | |
| | No | 0.03 | 0.77 | | | | | | | | | | | | |
| 1 | <p>I understand the basic skills needed to begin learning this standard.</p> <ul style="list-style-type: none"> Read and interpret a segmented bar graph. | <p>The segmented bar graph shows the number of books on Mr. Johnson’s shelves. What does 40 represent?</p>  <p>The graph shows the following data:</p> <table border="1" data-bbox="708 1096 1059 1556"> <thead> <tr> <th>Category</th> <th>Hardcover</th> <th>Paperback</th> </tr> </thead> <tbody> <tr> <td>Fiction</td> <td>25</td> <td>50</td> </tr> <tr> <td>Nonfiction</td> <td>35</td> <td>40</td> </tr> </tbody> </table> | Category | Hardcover | Paperback | Fiction | 25 | 50 | Nonfiction | 35 | 40 | | | | |
| Category | Hardcover | Paperback | | | | | | | | | | | | | |
| Fiction | 25 | 50 | | | | | | | | | | | | | |
| Nonfiction | 35 | 40 | | | | | | | | | | | | | |