

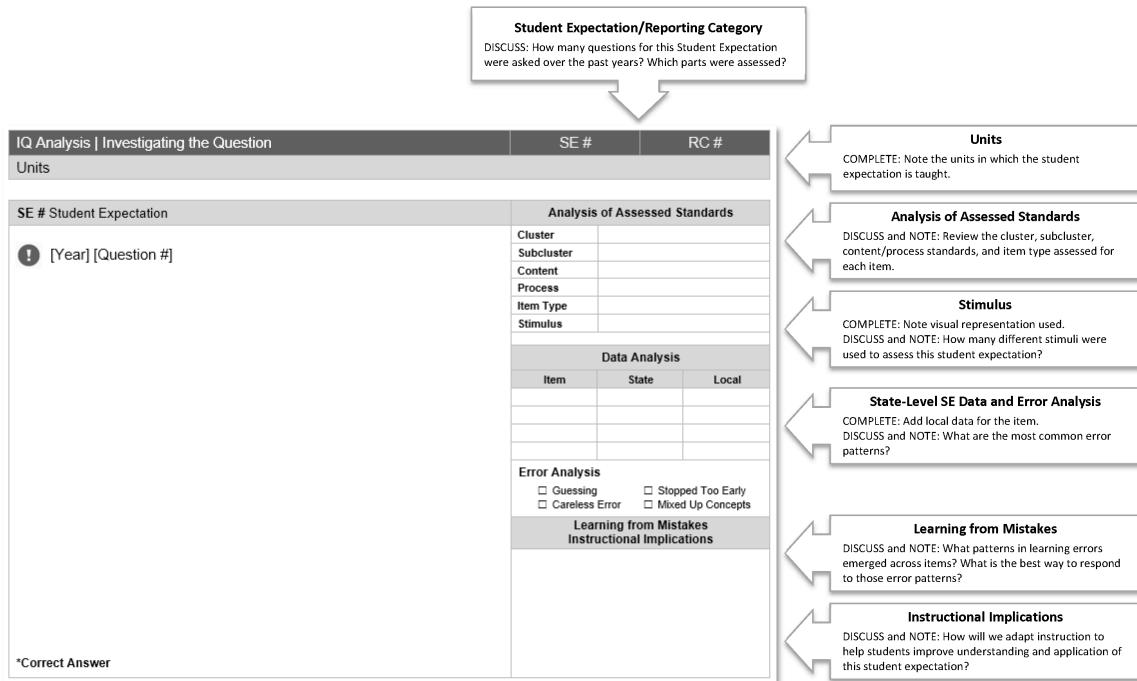
2016-2021 Released Tests

Aligned to the Standards

CONTENT BUILDER FOR THE PLC

Math

Algebra I



In conjunction with the IQ analysis tool, the lead4ward field guides can be a helpful resource for understanding error patterns and instructional implications.

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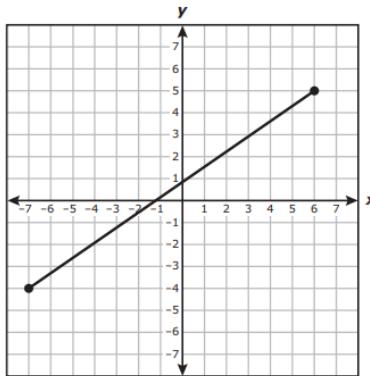
Linear Functions

A.2 Linear functions, equations, and inequalities. The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations.

A.3 Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations.

Connected Knowledge and Skills A.4, A.5, A.12

A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities		Analysis of Assessed Standards	
2021 – Q22			Cluster Linear Functions
22 A part of linear function g is graphed on the grid.			Subcluster Describing Linear Functions
			Content Readiness
			Process
			Stimulus
			Data Analysis
	Item	State	Local
F	11		
G	19		
H	19		
J*	51		
	Error Analysis		
	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		
	<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
*Correct Answer (J)	Learning from Mistakes Instructional Implications		



Which inequalities best describe the domain and range of the part shown?

- F** Domain: $-4 < x < 5$
Range: $-7 < g(x) < 6$
- G** Domain: $-7 < x < 6$
Range: $-4 < g(x) < 5$
- H** Domain: $-4 \leq x \leq 5$
Range: $-7 \leq g(x) \leq 6$
- J** Domain: $-7 \leq x \leq 6$
Range: $-4 \leq g(x) \leq 5$

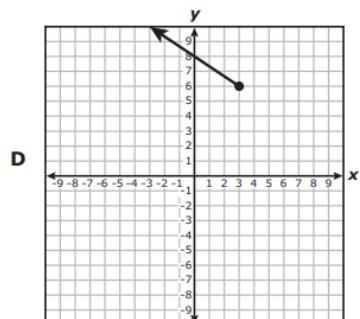
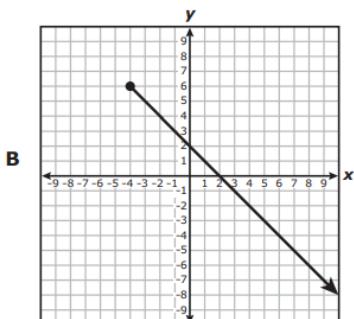
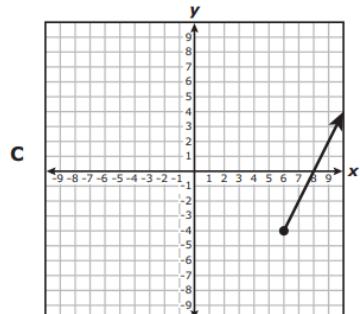
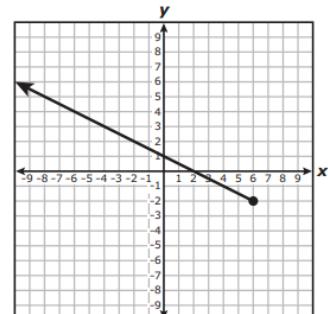
A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

2021 – Q33

- 33 Which graph best represents a function with a domain of all real numbers less than or equal to 6?



*Correct Answer (A)

Data Analysis

Item	State	Local
A*	57	
B	24	
C	11	
D	8	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

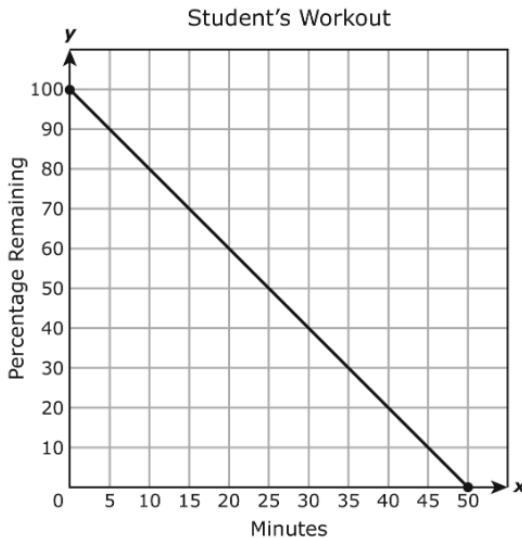
Data Analysis

Item	State	Local
A	16	
B	6	
C*	74	
D	4	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications



Which answer choice best describes the domain and range of the function for this situation?

- A** Domain: All real numbers greater than or equal to 0 and less than or equal to 100
Range: All real numbers greater than or equal to 0 and less than or equal to 50
- B** Domain: {-2}
Range: {100}
- C** Domain: All real numbers greater than or equal to 0 and less than or equal to 50
Range: All real numbers greater than or equal to 0 and less than or equal to 100
- D** Domain: {100}
Range: {-2}

*Correct Answer (C)

<p>A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities</p>	<p>Analysis of Assessed Standards</p>																
<p>! 2018 – Q13</p>	<table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus							
Cluster	Linear Functions																
Subcluster	Describing Linear Functions																
Content	Readiness																
Process																	
Stimulus																	
<p>13 What are the domain and range of $f(x) = -37$?</p>	<table border="1"> <tr> <td>Data Analysis</td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td>12</td><td></td></tr> <tr> <td>B</td><td>15</td><td></td></tr> <tr> <td>C</td><td>22</td><td></td></tr> <tr> <td>D*</td><td>51</td><td></td></tr> </table>	Data Analysis	Item	State	Local	A	12		B	15		C	22		D*	51	
Data Analysis																	
Item	State	Local															
A	12																
B	15																
C	22																
D*	51																
<p>A Domain: All real numbers greater than or equal to -37 Range: All real numbers</p> <p>B Domain: $\{-37\}$ Range: All real numbers</p> <p>C Domain: All real numbers Range: All real numbers greater than or equal to -37</p> <p>D Domain: All real numbers Range: $\{-37\}$</p>	<table border="1"> <tr> <td>Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td>Learning from Mistakes</td></tr> <tr> <td>Instructional Implications</td></tr> </table>	Error Analysis	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	Learning from Mistakes	Instructional Implications											
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Instructional Implications																	

*Correct Answer (D)

<p>A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities</p>	<p>Analysis of Assessed Standards</p>																
<p>2018 – Q47</p>	<table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus							
Cluster	Linear Functions																
Subcluster	Describing Linear Functions																
Content	Readiness																
Process																	
Stimulus																	
<p>47 The daily cost of hiring a plumber, y, to work x hours on a repair project can be modeled using a linear function. The plumber charges a fixed cost of \$80 plus an additional cost of \$45 per hour. The plumber works a maximum of 8 hours per day.</p> <p>For one day of work, what is the range of the function for this situation?</p>	<table border="1"> <tr> <td>Data Analysis</td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td>15</td><td></td></tr> <tr> <td>B*</td><td>67</td><td></td></tr> <tr> <td>C</td><td>5</td><td></td></tr> <tr> <td>D</td><td>13</td><td></td></tr> </table>	Data Analysis	Item	State	Local	A	15		B*	67		C	5		D	13	
Data Analysis																	
Item	State	Local															
A	15																
B*	67																
C	5																
D	13																
<p>A $0 \leq x \leq 8$</p> <p>B $80 \leq y \leq 440$</p> <p>C $0 \leq x \leq 10$</p> <p>D $45 \leq y \leq 685$</p> <p>*Correct Answer (B)</p>	<table border="1"> <tr> <td>Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td>Learning from Mistakes</td></tr> <tr> <td>Instructional Implications</td></tr> </table>	Error Analysis	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	Learning from Mistakes	Instructional Implications											
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Learning from Mistakes																	
Instructional Implications																	

<p>A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities</p> <p>2017 – Q5</p> <p>5 A set of weights includes a 4 lb barbell and 6 pairs of weight plates. Each pair of plates weighs 20 lb. If x pairs of plates are added to the barbell, the total weight of the barbell and plates in pounds can be represented by $f(x) = 20x + 4$.</p> <p>What is the range of the function for this situation?</p> <p>A {0, 1, 2, 3, 4, 5, 6} B {4, 24, 44, 64, 84, 104, 124} C {0, 2, 4, 6} D {4, 44, 84, 124}</p>	Analysis of Assessed Standards														
	Cluster	Linear Functions													
	Subcluster	Describing Linear Functions													
	Content	Readiness													
	Process														
	Stimulus														
	Data Analysis														
<table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A</td><td>9</td><td></td></tr> <tr> <td>B*</td><td>75</td><td></td></tr> <tr> <td>C</td><td>8</td><td></td></tr> </tbody> </table>	Item	State	Local	A	9		B*	75		C	8		Item	State	Local
Item	State	Local													
A	9														
B*	75														
C	8														
A	9														
B*	75														
C	8														
D	8														
Error Analysis															
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Learning from Mistakes Instructional Implications															

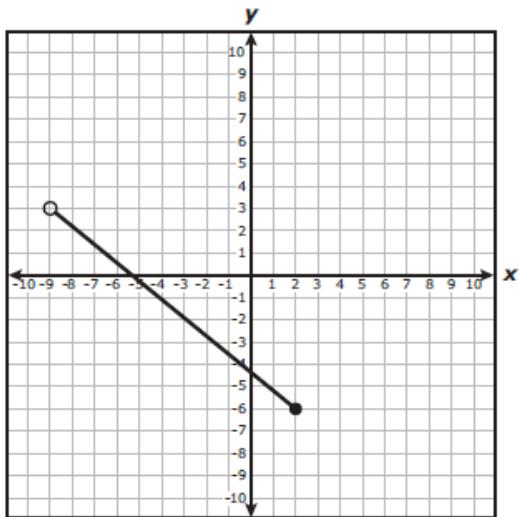
*Correct Answer (B)

A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

2017 – Q44

44 The graph of part of linear function g is shown on the grid.



Which inequality best represents the domain of the part shown?

F $-9 < x \leq 2$

G $-9 \leq x < 2$

H $-6 < g(x) \leq 3$

J $-6 \leq g(x) < 3$

*Correct Answer (F)

Cluster Linear Functions

Subcluster Describing Linear Functions

Content Readiness

Process

Stimulus

Data Analysis

Item	State	Local
F*	61	
G	18	
H	11	
J	9	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

<p>A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities</p>	<p>Analysis of Assessed Standards</p>															
<p>! 2016 – Q30</p> <p>30 The total cost in dollars to buy uniforms for the players on a volleyball team can be found using the function $c = 34.95u + 6.25$, where u is the number of uniforms bought. If there are at least 8 players but not more than 12 players on the volleyball team, what is the domain of the function for this situation?</p>	<p>Cluster Linear Functions Subcluster Describing Linear Functions Content Readiness Process A.1(A), A.1(B), A.1(F) Stimulus</p>															
<p>F $0 < u \leq 12$ G $0 < c \leq 425.65$ H $\{8, 9, 10, 11, 12\}$ J $\{285.85, 320.80, 355.75, 390.70, 425.65\}$</p>	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>22</td> <td></td> </tr> <tr> <td>G</td> <td>12</td> <td></td> </tr> <tr> <td>H*</td> <td>51</td> <td></td> </tr> <tr> <td>J</td> <td>15</td> <td></td> </tr> </tbody> </table>	Item	State	Local	F	22		G	12		H*	51		J	15	
Item	State	Local														
F	22															
G	12															
H*	51															
J	15															
<p>*Correct Answer (H)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

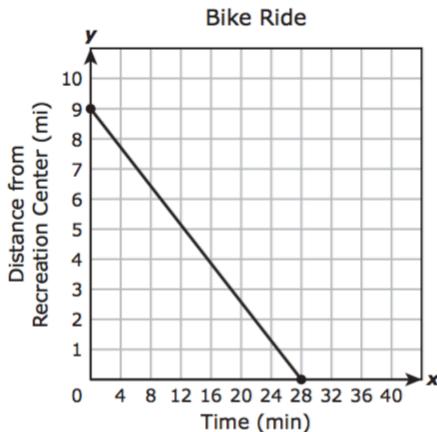
A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	A.1(A), A.1(B), A.1(E), A.1(G)
Stimulus	

2016 – Q44

- 44** A student rode a bike from school to a recreation center. The graph shows the student's distance in miles from the recreation center after riding the bike for x minutes.



What is the range of the function for this situation?

- F** All real numbers greater than or equal to 0 and less than or equal to 28
- G** All real numbers greater than or equal to 0 and less than or equal to 9
- H** All real numbers less than or equal to 28
- J** All real numbers less than or equal to 9

*Correct Answer (G)

Data Analysis

Item	State	Local
F	18	
G*	46	
H	16	
J	20	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.2(B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points		Analysis of Assessed Standards	
2021 – Q6		Cluster	Linear Functions
6 What is the equation in slope-intercept form of the line that passes through the points $(-26, -11)$ and $(39, 34)$?		Subcluster	Writing Linear Equations
F $y = -\frac{9}{13}x + 7$		Content	Supporting
G $y = -\frac{9}{13}x - 7$		Process	
H $y = \frac{9}{13}x + 7$		Stimulus	
J $y = \frac{9}{13}x - 7$		Data Analysis	
*Correct Answer (H)		Item	State
		F	13
		G	11
		H*	62
		J	14
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

<p>A.2(B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points</p> <p>2019 – Q6</p> <p>What is the equation in slope-intercept form of the line that passes through the points $(-4, 2)$ and $(12, 6)$?</p> <p>F $y = 0.25x + 3$</p> <p>G $y = 0.25x - 4.5$</p> <p>H $y = 4x + 18$</p> <p>J $y = 4x - 42$</p>	Analysis of Assessed Standards	
Cluster	Linear Functions	
Subcluster	Writing Linear Equations	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
F*	74	
G	9	
H	12	
J	4	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

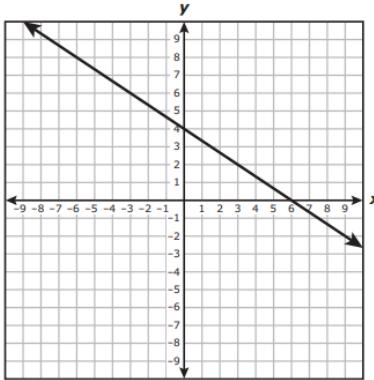
*Correct Answer (F)

<p>A.2(B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points</p> <p>2017 – Q23</p> <p>23 What is the equation in slope-intercept form of the line that passes through the points $(-4, 47)$ and $(2, -16)$?</p> <p>A $y = -\frac{21}{2}x + \frac{979}{21}$</p> <p>B $y = -\frac{2}{21}x + \frac{979}{21}$</p> <p>C $y = -\frac{21}{2}x + 5$</p> <p>D $y = -\frac{2}{21}x + 5$</p>	Analysis of Assessed Standards	
Cluster	Linear Functions	
Subcluster	Writing Linear Equations	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
A	9	
B	11	
C*	69	
D	11	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

*Correct Answer (C)

A.2(B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points	Analysis of Assessed Standards																	
! 2016 – Q46	Cluster	Linear Functions																
46 Which equation in standard form has a graph that passes through the point $(-4, 2)$ and has a slope of $\frac{9}{2}$?	Subcluster	Writing Linear Equations																
F $9x - 2y = 36$	Content	Supporting																
G $9x - 2y = 26$	Process	A.1(B), A.1(C), A.1(F)																
H $9x - 2y = -40$	Stimulus																	
J $9x - 2y = -10$																		
Data Analysis																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; background-color: #cccccc;">Item</th> <th style="text-align: center; background-color: #cccccc;">State</th> <th style="text-align: center; background-color: #cccccc;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F</td> <td style="text-align: center;">17</td> <td></td> </tr> <tr> <td style="text-align: center;">G</td> <td style="text-align: center;">17</td> <td></td> </tr> <tr> <td style="text-align: center;">H*</td> <td style="text-align: center;">53</td> <td></td> </tr> <tr> <td style="text-align: center;">J</td> <td style="text-align: center;">12</td> <td></td> </tr> </tbody> </table>			Item	State	Local	F	17		G	17		H*	53		J	12		
Item	State	Local																
F	17																	
G	17																	
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Learning from Mistakes Instructional Implications																		
* Correct Answer (H)																		

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2021 – Q2			Cluster Linear Functions
2 The graph of a linear function is shown on the grid.			Subcluster Writing Linear Equations
			Content Readiness
			Process
			Stimulus
Data Analysis			
Item	State	Local	
F	16		
G	6		
H	9		
J*	70		
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications			
*Correct Answer (J)			



Which function is best represented by this graph?

F $g(x) = 6x + 4$

G $g(x) = 4x - \frac{2}{3}$

H $g(x) = -\frac{3}{2}x + 6$

J $g(x) = -\frac{2}{3}x + 4$

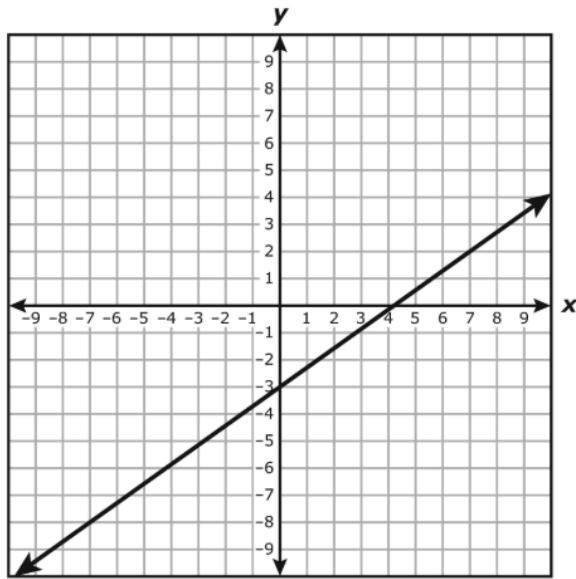
A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description	Analysis of Assessed Standards																
2021 – Q44 <p>44 The table represents some points on the graph of linear function f.</p> <table border="1" data-bbox="376 276 861 348"> <tr> <td>x</td><td>-3</td><td>2</td><td>5</td><td>11</td></tr> <tr> <td>$f(x)$</td><td>-130</td><td>0</td><td>78</td><td>234</td></tr> </table> <p>Which function represents f?</p> <p>F $f(x) = 26(x - 2)$ G $f(x) = -26(2x - 1)$ H $f(x) = 13(x - 2)$ J $f(x) = -2(26x - 1)$</p>	x	-3	2	5	11	$f(x)$	-130	0	78	234	Cluster Subcluster Content Process Stimulus	Linear Functions Writing Linear Equations Readiness Readiness Readiness					
x	-3	2	5	11													
$f(x)$	-130	0	78	234													
<p>Data Analysis</p> <table border="1" data-bbox="1106 348 1512 601"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>F*</td><td>58</td><td></td></tr> <tr> <td>G</td><td>15</td><td></td></tr> <tr> <td>H</td><td>15</td><td></td></tr> <tr> <td>J</td><td>12</td><td></td></tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>			Item	State	Local	F*	58		G	15		H	15		J	12	
Item	State	Local															
F*	58																
G	15																
H	15																
J	12																

*Correct Answer (F)

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description

2019 – Q23

The graph of a linear function is shown on the grid.



Which equation is best represented by this graph?

A $y + 2 = \frac{7}{5}(x + 7)$

B $y - 2 = \frac{7}{5}(x - 7)$

C $y + 2 = \frac{5}{7}(x + 7)$

D $y - 2 = \frac{5}{7}(x - 7)$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	6	
B	10	
C	16	
D*	67	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2019 – Q32	The table shows the amount of pet food in cups remaining in an automatic feeder as a function of the number of meals the feeder has dispensed.	Cluster	Linear Functions
		Subcluster	Writing Linear Equations
		Content	Readiness
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	F*	77	
	G	8	
	H	7	
	J	7	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (F)			

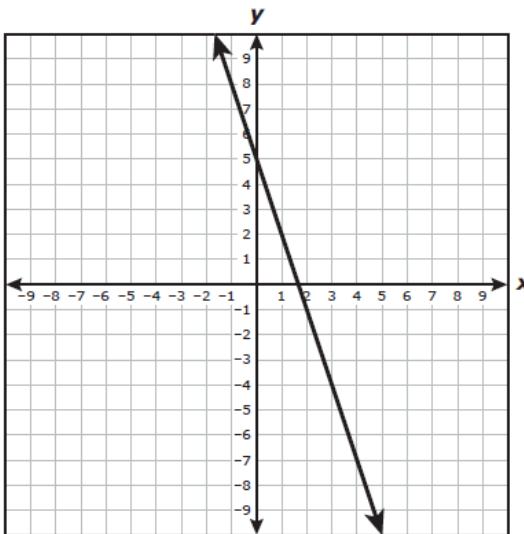
A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2018 – Q1		Cluster	Linear Functions
<p>1 At a restaurant jars of tomato sauce are stored in boxes in the pantry. Each box contains 8 jars of tomato sauce. A cook uses 2 jars from 1 of the boxes.</p> <p>Which function shows the relationship between y, the total number of jars of tomato sauce remaining in the pantry, and x, the number of boxes in the pantry?</p>		Subcluster	Writing Linear Equations
<p>A $y = 8x + 6$</p> <p>B $y = 8x$</p> <p>C $y = 8x - 2$</p> <p>D $y = 6x$</p>		Content	Readiness
		Process	
		Stimulus	
Data Analysis			
		Item	State
		A	7
		B	4
		C*	84
		D	5
Error Analysis			
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications			

*Correct Answer (C)

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description

! 2018 – Q43

43 The graph of a linear function is shown on the grid.



Which equation is best represented by this graph?

- A $y + 7 = -3(x - 4)$
- B $y + 1 = -3(x + 2)$
- C $y - 4 = 3(x + 7)$
- D $y - 2 = 3(x - 1)$

*Correct Answer (A)

Analysis of Assessed Standards	
Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Stimulus	

Data Analysis		
Item	State	Local
A*	59	
B	20	
C	11	
D	10	

Error Analysis	
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early

Learning from Mistakes Instructional Implications	

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2017 – Q33		Cluster	Linear Functions
33 Researchers in Antarctica discovered a warm sea current under a glacier that is causing the glacier to melt. The ice shelf of the glacier had a thickness of approximately 450 m when it was first discovered. The thickness of the ice shelf is decreasing at an average rate of 0.06 m per day.		Subcluster	Writing Linear Equations
Which function can be used to find the thickness of the ice shelf in meters x days since the discovery?		Content	Readiness
A $t(x) = 450 - 0.06x$		Process	
B $t(x) = -0.06(x + 450)$		Stimulus	
C $t(x) = 450 + 0.06x$		Data Analysis	
D $t(x) = 0.06(x + 450)$		Item	State
Correct Answer (A)		A	73
		B	10
		C	10
		D	7
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards			
!	2017 – Q50	Cluster	Linear Functions		
50	The table represents some points on the graph of a linear function.	Subcluster	Writing Linear Equations		
		Content	Readiness		
		Process			
		Stimulus			
Data Analysis					
	Item	State	Local		
F	16				
G	17				
H*	53				
J	14				
Error Analysis					
<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications					
*Correct Answer (H)					

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2016 – Q5		Cluster	Linear Functions
5 The table represents some points on the graph of a linear function.		Subcluster	Writing Linear Equations
		Content	Readiness
		Process	A.1(B), A.1(D), A.1(F)
		Stimulus	
		Data Analysis	
		Item	State
		A*	70
		B	10
		C	10
		D	9
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (A)			

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
!	2016 – Q35	Cluster	Linear Functions
35	An organization has a monthly budget of x dollars. Every month \$2,070 is spent on salaries. One-fourth of the remaining budget is spent on monthly activities. Which function can be used to find the amount in dollars spent on monthly activities?	Subcluster	Writing Linear Equations
		Content	Readiness
		Process	A.1(A), A.1(B), A.1(D), A.1(F)
		Stimulus	
		Data Analysis	
		Item	State
		A	14
		B	24
		C	14
		D*	47
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (D)			

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards		
! 2021 – Q42				
42 The value of y is directly proportional to the value of x . When $x = 3.5$, the value of y is 14.				
What is the value of y when $x = 28$?				
Record your answer and fill in the bubbles on your answer document.				
Data Analysis				
Item	State	Local		
112	40*			
	59			
Error Analysis				
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications				
*Correct Answer (112)				

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards		
2019 – Q54				
The total distance in centimeters a toy robot moves varies directly with the time in seconds. The toy robot moves a total distance of 264 centimeters in 11 seconds.				
What is the time in seconds the toy robot moves when the total distance is 408 centimeters?				
F 24 s				
G 17 s				
H 13 s				
J 37 s				
Data Analysis				
Item	State	Local		
F	17			
G*	66			
H	8			
J	9			
Error Analysis				
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications				
*Correct Answer (G)				

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards		
2018 – Q10		Cluster	Linear Functions	
10 The value of y varies directly with x . If $x = 3$, then $y = 21$. What is the value of x when $y = 105$?		Subcluster	Solving Linear Equations	
F $\frac{3}{5}$		Content	Supporting	
G $1\frac{2}{3}$		Process		
H 7		Stimulus		
J 15		Data Analysis		
		Item	State	Local
		F	7	
		G	6	
		H	13	
		J*	74	
*Correct Answer (J)		Error Analysis		
		<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		
		<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
		Learning from Mistakes Instructional Implications		

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards		
2017 – Q27		Cluster	Linear Functions	
27 The value of y is directly proportional to the value of x . If $y = 35$ when $x = 140$, what is the value of y when $x = 70$?		Subcluster	Solving Linear Equations	
Record your answer and fill in the bubbles on your answer document.		Content	Supporting	
		Process		
		Stimulus		
		Data Analysis		
		Item	State	Local
		17	48*	
			51	
*Correct Answer (17)		Error Analysis		
		<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		
		<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
		Learning from Mistakes Instructional Implications		

A.2(D) write and solve equations involving direct variation	Analysis of Assessed Standards	
!	Cluster	Linear Functions
2016 – Q42	Subcluster	Solving Linear Equations
42 In an electrical circuit, the voltage across a resistor is directly proportional to the current running through the resistor. If a current of 12 amps produces 480 volts across a resistor, how many volts would a current of 1.5 amps produce across an identical resistor?	Content	Supporting
Record your answer and fill in the bubbles on your answer document.	Process	A.1(A), A.1(B), A.1(F)
	Stimulus	
	Data Analysis	
	Item	State
	60	58*
		40
*Correct Answer (60)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.2(E) write the equation of a line that contains a given point and is parallel to a given line		Analysis of Assessed Standards	
2021 – Q19		Cluster	Linear Functions
19 What is the equation in standard form of the line that passes through the point $(6, -1)$ and is parallel to the line represented by $8x + 3y = 15$?		Subcluster	Writing Linear Equations
A $8x + 3y = -45$		Content	Supporting
B $8x - 3y = -51$		Process	
C $8x + 3y = 45$		Stimulus	
D $8x - 3y = 51$		Data Analysis	
*Correct Answer (C)		Item	State
		A	19
		B	15
		C*	50
		D	16
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.2(E) write the equation of a line that contains a given point and is parallel to a given line		Analysis of Assessed Standards	
2019 – Q45		Cluster	Linear Functions
What is the equation in slope-intercept form of the line that passes through the point $(5, 0)$ and is parallel to the line represented by $y = 1.2x + 3.8$?		Subcluster	Writing Linear Equations
A $y = 1.2x - 6$		Content	Supporting
B $y = -1.2x + 6$		Process	
C $y = 1.2x + 5$		Stimulus	
D $y = -1.2x - 5$		Data Analysis	
*Correct Answer (A)		Item	State
		A*	59
		B	12
		C	22
		D	6
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.2(F) write the equation of a line that contains a given point and is perpendicular to a given line		Analysis of Assessed Standards	
! 2019 – Q10	What is the equation in slope-intercept form of the line that crosses the x -axis at 36 and is perpendicular to the line represented by $y = -\frac{4}{9}x + 5$?	Cluster	Linear Functions
		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
		Item	State
		F	14
		G	30
		H	14
		J*	41
Error Analysis			
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications			
*			

A.2(F) write the equation of a line that contains a given point and is perpendicular to a given line		Analysis of Assessed Standards	
2018 – Q39	39 What is the equation in slope-intercept form of the line that passes through the point $(2, -2)$ and is perpendicular to the line represented by $y = \frac{2}{5}x + 2$?	Cluster	Linear Functions
		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
		Item	State
		A	23
		B	14
		C	18
		D*	45
Error Analysis			
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications			
*			

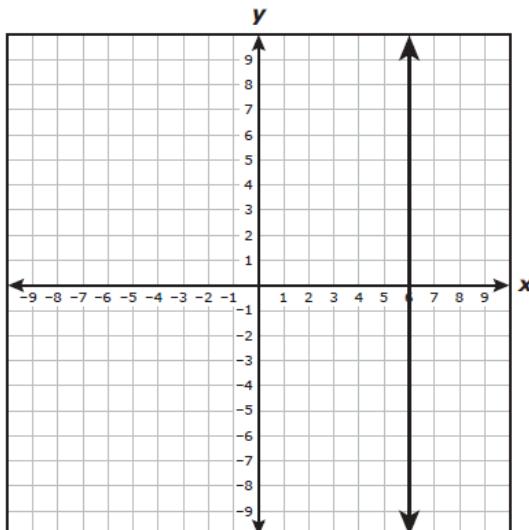
<p>A.2(G) write an equation of a line that is parallel or perpendicular to the x- or y- axis and determine whether the slope of the line is zero or undefined</p>	<p>Analysis of Assessed Standards</p>																	
<p>2021 – Q39</p> <p>39 Which statement best represents the equation of the line shown on the grid and its relationship to the x-axis?</p>	<p>Cluster Linear Functions Subcluster Writing Linear Equations Content Supporting Process Stimulus</p>	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>17</td> <td></td> </tr> <tr> <td>B</td> <td>7</td> <td></td> </tr> <tr> <td>C*</td> <td>66</td> <td></td> </tr> <tr> <td>D</td> <td>10</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	17		B	7		C*	66		D	10		<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>
Item	State	Local																
A	17																	
B	7																	
C*	66																	
D	10																	
<p>A The equation of the line is $x = 2.5$, and the line is parallel to the x-axis. B The equation of the line is $x = 2.5$, and the line is perpendicular to the x-axis. C The equation of the line is $y = 2.5$, and the line is parallel to the x-axis. D The equation of the line is $y = 2.5$, and the line is perpendicular to the x-axis.</p> <p>*Correct Answer (C)</p>	<p>Learning from Mistakes Instructional Implications</p>																	

A.2(G) write an equation of a line that is parallel or perpendicular to the x- or y- axis and determine whether the slope of the line is zero or undefined

Analysis of Assessed Standards

! 2018 – Q32

32 What are the equation and slope of the line shown on the grid?



F $y = 6$; slope is $-\frac{1}{6}$.

G $x = 6$; slope is zero.

H $y = 6$; slope is 6.

J $x = 6$; slope is undefined.

*Correct Answer (J)

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
F	2	
G	23	
H	6	
J*	68	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

A.2(G) write an equation of a line that is parallel or perpendicular to the x- or y- axis and determine whether the slope of the line is zero or undefined	Analysis of Assessed Standards	
!	Cluster	Linear Functions
2017 – Q36	Subcluster	Writing Linear Equations
36 What is the equation of the line that passes through the point $(-2, 7)$ and has a slope of zero?	Content	Supporting
F $x = 7$	Process	
G $y = -2$	Stimulus	
H $x = -2$		
J $y = 7$		
Data Analysis		
	Item	State
	F	11
	G	14
	H	28
Correct Answer (J)	J	46
Error Analysis		
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications		

A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$		Analysis of Assessed Standards	
2021 – Q17			Cluster Linear Functions
17 The table of values shows a linear relationship between x and y .			Subcluster Writing Linear Equations
			Content Supporting
			Process
			Stimulus
			Data Analysis
	Item	State	Local
A*	60		
B	21		
C	12		
D	7		
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes			
Instructional Implications			
*Correct Answer (A)			

<p>A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$</p> <p>2019 – Q1</p> <p>What is the slope of the graph of $y = 12x - 19$?</p> <p>A -19</p> <p>B $-\frac{12}{19}$</p> <p>C $\frac{19}{12}$</p> <p>D 12</p>	Analysis of Assessed Standards													
	Cluster	Linear Functions												
	Subcluster	Writing Linear Equations												
	Content	Supporting												
	Process													
	Stimulus													
	Data Analysis													
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Item	State	Local												
A	19													
B	8													
C	8													
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early													
Learning from Mistakes Instructional Implications														
<p>*Correct Answer (D)</p>														

<p>A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$</p> <p>2018 – Q51</p> <p>51 What is the slope of the line that passes through the points $(5, -11)$ and $(-9, 17)$?</p> <p>A -2</p> <p>B $-\frac{1}{2}$</p> <p>C 7</p> <p>D 2</p>	Analysis of Assessed Standards													
	Cluster	Linear Functions												
	Subcluster	Writing Linear Equations												
	Content	Supporting												
	Process													
	Stimulus													
	Data Analysis													
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Item	State	Local												
A*	60													
B	15													
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Error Analysis														
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts													
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early													
Learning from Mistakes Instructional Implications														
<p>*Correct Answer (A)</p>														

<p>A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$</p> <p>2017 – Q16</p> <p>16 What is the slope of the line represented by $5x - 12y = 24$?</p> <p>F -2</p> <p>G $\frac{24}{5}$</p> <p>H -12</p> <p>J $\frac{5}{12}$</p>	Analysis of Assessed Standards													
	Cluster	Linear Functions												
	Subcluster	Writing Linear Equations												
	Content	Supporting												
	Process													
	Stimulus													
	Data Analysis													
<p>Item</p> <p>State</p> <p>Local</p> <table border="1"> <tr> <td>F</td><td>16</td><td></td></tr> <tr> <td>G</td><td>12</td><td></td></tr> <tr> <td>H</td><td>13</td><td></td></tr> <tr> <td>J*</td><td>59</td><td></td></tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>			F	16		G	12		H	13		J*	59	
F	16													
G	12													
H	13													
J*	59													

*Correct Answer (J)

<p>A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$</p> <p>2016 – Q51</p> <p>51 What is the slope of the line that passes through the points $(26, 7)$ and $(-39, 12)$?</p> <p>A $-\frac{1}{13}$</p> <p>B $\frac{5}{13}$</p> <p>C -13</p> <p>D $\frac{13}{5}$</p>	Analysis of Assessed Standards													
	Cluster	Linear Functions												
	Subcluster	Writing Linear Equations												
	Content	Supporting												
	Process	A.1(B), A.1(C), A.1(F)												
	Stimulus													
	Data Analysis													
<p>Item</p> <p>State</p> <p>Local</p> <table border="1"> <tr> <td>A*</td><td>50</td><td></td></tr> <tr> <td>B</td><td>25</td><td></td></tr> <tr> <td>C</td><td>13</td><td></td></tr> <tr> <td>D</td><td>12</td><td></td></tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>			A*	50		B	25		C	13		D	12	
A*	50													
B	25													
C	13													
D	12													

*Correct Answer (A)

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems		Analysis of Assessed Standards											
2021 – Q3		Cluster	Linear Functions										
3 The values in the table represent a linear relationship between x and y .		Subcluster	Writing Linear Equations										
	<table border="1" data-bbox="404 382 829 466"> <tr> <td>x</td><td>-8.5</td><td>-6.5</td><td>-2.5</td><td>-1</td></tr> <tr> <td>y</td><td>-92</td><td>-72</td><td>-32</td><td>-17</td></tr> </table>	x	-8.5	-6.5	-2.5	-1	y	-92	-72	-32	-17	Content	Readiness
x	-8.5	-6.5	-2.5	-1									
y	-92	-72	-32	-17									
		Process											
		Stimulus											
Data Analysis													
	Item	State	Local										
	A*	58											
	B	15											
	C	14											
	D	14											
Error Analysis													
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts											
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early											
Learning from Mistakes Instructional Implications													
*Correct Answer (A)													

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																
2021 – Q25 25 The graph of a linear function is shown on the grid.	Cluster Linear Functions Subcluster Writing Linear Equations Content Readiness Process Stimulus																
	Data Analysis <table border="1" data-bbox="1106 411 1512 644"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>11</td> <td></td> </tr> <tr> <td>B</td> <td>14</td> <td></td> </tr> <tr> <td>C</td> <td>20</td> <td></td> </tr> <tr> <td>D*</td> <td>55</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	11		B	14		C	20		D*	55		
Item	State	Local															
A	11																
B	14																
C	20																
D*	55																
What is the rate of change of y with respect to x for this function? A $\frac{7}{9}$ B $-\frac{7}{9}$ C $\frac{3}{4}$ D $-\frac{3}{4}$ *Correct Answer (D)	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early Learning from Mistakes Instructional Implications																

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																																
2021 – Q36 <p>36 A contractor's total earnings from a job include a fixed amount plus an amount based on the number of hours worked. The values in the table represent the linear relationship between the number of hours worked and the contractor's total earnings in dollars.</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 15%;">Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus																							
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Content	Readiness																																
Process																																	
Stimulus																																	
<p style="text-align: center;">Contractor</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Number of Hours Worked</th><th style="text-align: center;">Total Earnings</th></tr> </thead> <tbody> <tr><td style="text-align: center;">0</td><td style="text-align: center;">\$20.00</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">\$63.75</td></tr> <tr><td style="text-align: center;">15</td><td style="text-align: center;">\$151.25</td></tr> <tr><td style="text-align: center;">25</td><td style="text-align: center;">\$238.75</td></tr> <tr><td style="text-align: center;">35</td><td style="text-align: center;">\$326.25</td></tr> <tr><td style="text-align: center;">40</td><td style="text-align: center;">\$370.00</td></tr> </tbody> </table>	Number of Hours Worked	Total Earnings	0	\$20.00	5	\$63.75	15	\$151.25	25	\$238.75	35	\$326.25	40	\$370.00	<table border="1" style="width: 100%;"> <tr> <td colspan="3" style="width: 100%; background-color: #cccccc; text-align: center;">Data Analysis</td></tr> <tr> <td style="width: 33.33%;">Item</td><td style="width: 33.33%;">State</td><td style="width: 33.33%;">Local</td></tr> <tr> <td style="text-align: center;">F*</td><td style="text-align: center;">60</td><td></td></tr> <tr> <td style="text-align: center;">G</td><td style="text-align: center;">18</td><td></td></tr> <tr> <td style="text-align: center;">H</td><td style="text-align: center;">11</td><td></td></tr> <tr> <td style="text-align: center;">J</td><td style="text-align: center;">10</td><td></td></tr> </table>	Data Analysis			Item	State	Local	F*	60		G	18		H	11		J	10	
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<p>What is the rate of change of the contractor's total earnings in dollars with respect to the number of hours worked?</p> <p>F \$8.75 per hour worked G \$9.25 per hour worked H \$10.00 per hour worked J \$20.00 per hour worked</p> <p>*Correct Answer (F)</p>	<table border="1" style="width: 100%;"> <tr> <td colspan="2" style="width: 100%; background-color: #cccccc; text-align: center;">Error Analysis</td></tr> <tr> <td style="width: 50%; text-align: center;"><input type="checkbox"/> Guessing</td><td style="width: 50%; text-align: center;"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td style="text-align: center;"><input type="checkbox"/> Careless Error</td><td style="text-align: center;"><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td colspan="2" style="width: 100%; background-color: #cccccc; text-align: center;">Learning from Mistakes Instructional Implications</td></tr> <tr> <td colspan="2" style="height: 100px;"></td></tr> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications																									
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A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																														
2019 – Q5 <p>The table shows the linear relationship between the average height in feet of trees on a tree farm and the number of years since the trees were planted.</p>	<table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus																					
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<p style="text-align: center;">Average Tree Height</p> <table border="1"> <thead> <tr> <th>Number of Years Since the Trees Were Planted</th><th>1</th><th>3</th><th>6</th><th>11</th><th>15</th></tr> </thead> <tbody> <tr> <td>Average Height (ft)</td><td>10</td><td>24</td><td>45</td><td>80</td><td>108</td></tr> </tbody> </table>	Number of Years Since the Trees Were Planted	1	3	6	11	15	Average Height (ft)	10	24	45	80	108	<table border="1"> <tr> <td colspan="3">Data Analysis</td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td>10</td><td></td></tr> <tr> <td>B</td><td>8</td><td></td></tr> <tr> <td>C*</td><td>77</td><td></td></tr> <tr> <td>D</td><td>5</td><td></td></tr> </table>	Data Analysis			Item	State	Local	A	10		B	8		C*	77		D	5	
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<p>What is the rate of change of the average height in feet of the trees on the farm with respect to the number of years since the trees were planted?</p> <p>A 14 ft/yr B 3 ft/yr C 7 ft/yr D 10 ft/yr</p> <p>*Correct Answer (C)</p>	<table border="1"> <tr> <td>Error Analysis</td><td></td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td colspan="2">Learning from Mistakes</td></tr> <tr> <td colspan="2">Instructional Implications</td></tr> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes		Instructional Implications																					
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2019 – Q20 The graph of a linear function is shown on the grid.	<table border="1"> <tr> <td data-bbox="1116 149 1220 177">Cluster</td><td data-bbox="1228 149 1421 177">Linear Functions</td></tr> <tr> <td data-bbox="1116 192 1220 219">Subcluster</td><td data-bbox="1228 192 1490 219">Writing Linear Equations</td></tr> <tr> <td data-bbox="1116 234 1220 261">Content</td><td data-bbox="1228 234 1367 261">Readiness</td></tr> <tr> <td data-bbox="1116 276 1220 304">Process</td><td data-bbox="1228 276 1302 304"></td></tr> <tr> <td data-bbox="1116 318 1220 346">Stimulus</td><td data-bbox="1228 318 1302 346"></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus																		
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<p>What is the rate of change of y with respect to x for this function?</p> <p>Record your answer and fill in the bubbles on your answer document.</p> <p>*Correct Answer (-0.2)</p>	<table border="1"> <tr> <td data-bbox="1181 756 1437 804" style="text-align: center;">Learning from Mistakes Instructional Implications</td><td data-bbox="1445 756 1486 804"></td></tr> <tr> <td data-bbox="1181 819 1486 1163" style="height: 150px;"></td><td data-bbox="1445 819 1486 1163"></td></tr> </table>	Learning from Mistakes Instructional Implications																										
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A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards											
2019 – Q39 <p>The table shows a linear relationship between x and y.</p>	<table border="1" data-bbox="775 337 1085 696"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-20</td> <td>96</td> </tr> <tr> <td>-12</td> <td>60</td> </tr> <tr> <td>-6</td> <td>33</td> </tr> <tr> <td>-2</td> <td>15</td> </tr> </tbody> </table>	x	y	-20	96	-12	60	-6	33	-2	15	
x	y											
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	Subcluster Writing Linear Equations											
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	B	<input type="checkbox"/>										
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What is the rate of change of y with respect to x ?

A $-\frac{9}{2}$

B $\frac{2}{9}$

C $-\frac{2}{9}$

D $\frac{9}{2}$

*Correct Answer (A)

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																
2018 – Q21	Cluster Linear Functions Subcluster Writing Linear Equations Content Readiness Process Stimulus																
<p>21 The graph shows the linear relationship between the maximum area in square feet that can be painted and the number of gallons of paint used.</p>	Data Analysis																
	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>19</td> <td></td> </tr> <tr> <td>B</td> <td>9</td> <td></td> </tr> <tr> <td>C*</td> <td>60</td> <td></td> </tr> <tr> <td>D</td> <td>12</td> <td></td> </tr> </tbody> </table>		Item	State	Local	A	19		B	9		C*	60		D	12	
Item	State	Local															
A	19																
B	9																
C*	60																
D	12																
<p>Which of these best represents the rate of change of the maximum area painted with respect to the number of gallons of paint used?</p>	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																
<p>A $200 \text{ ft}^2/\text{gal}$</p> <p>B $\frac{1}{200} \text{ ft}^2/\text{gal}$</p> <p>C $400 \text{ ft}^2/\text{gal}$</p> <p>D $\frac{1}{400} \text{ ft}^2/\text{gal}$</p> <p>*Correct Answer (C)</p>	Learning from Mistakes Instructional Implications																

<p>A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems</p> <p>2018 – Q42</p> <p>42 The table shows the linear relationship between the balance of a student's savings account and the number of weeks he has been saving.</p> <table border="1"> <thead> <tr> <th>Week</th><th>0</th><th>1</th><th>3</th><th>6</th><th>8</th><th>13</th></tr> </thead> <tbody> <tr> <td>Balance (dollars)</td><td>32</td><td>39</td><td>53</td><td>74</td><td>88</td><td>123</td></tr> </tbody> </table> <p>Based on the table, what was the rate of change of the balance of the student's savings account in dollars and cents per week?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Week	0	1	3	6	8	13	Balance (dollars)	32	39	53	74	88	123	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus		
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<p>A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems</p> <p>! 2017 – Q26</p> <p>26 The graph models the linear relationship between the temperature of Earth's atmosphere and the altitude above sea level.</p> <p style="text-align: center;">Earth's Atmosphere</p> <p>Which of these best represents the rate of change of the temperature with respect to altitude?</p> <p>F $-6.5^{\circ}\text{C}/\text{km}$ G $-3.5^{\circ}\text{C}/\text{km}$ H $-0.29^{\circ}\text{C}/\text{km}$ J $-0.15^{\circ}\text{C}/\text{km}$</p>	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus									
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A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems		Analysis of Assessed Standards	
!	2017 – Q52	Cluster	Linear Functions
	52 The function $y = 3.75 + 1.5(x - 1)$ can be used to determine the cost in dollars for a taxi ride of x miles. What is the rate of change of the cost in dollars with respect to the number of miles?	Subcluster	Writing Linear Equations
	F \$1.50 per mile	Content	Readiness
	G \$3.75 per mile	Process	
	H \$4.25 per mile	Stimulus	
	J \$5.25 per mile		
Data Analysis			
	Item	State	Local
	F*	57	
	G	21	
	H	12	
	J	10	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes			
Instructional Implications			

*Correct Answer (F)

A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																			
2016 – Q1 <p>1 A savings account balance can be modeled by the graph of the linear function shown on the grid.</p>	<table border="1"> <tr> <td data-bbox="1116 143 1220 175">Cluster</td><td data-bbox="1220 143 1512 175">Linear Functions</td></tr> <tr> <td data-bbox="1116 185 1220 217">Subcluster</td><td data-bbox="1220 185 1512 217">Writing Linear Equations</td></tr> <tr> <td data-bbox="1116 228 1220 259">Content</td><td data-bbox="1220 228 1512 259">Readiness</td></tr> <tr> <td data-bbox="1116 270 1220 323">Process</td><td data-bbox="1220 270 1512 323">A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)</td></tr> <tr> <td data-bbox="1116 333 1220 365">Stimulus</td><td data-bbox="1220 333 1512 365"></td></tr> </table>		Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus									
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Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)																			
Stimulus																				
<p style="text-align: center;">Savings Account</p> <p>What is the rate of change of the balance with respect to the number of deposits?</p>		<table border="1"> <tr> <td colspan="3" data-bbox="1116 397 1512 428"> Data Analysis </td></tr> <tr> <td data-bbox="1116 439 1220 470">Item</td><td data-bbox="1220 439 1325 470">State</td><td data-bbox="1325 439 1512 470">Local</td></tr> <tr> <td data-bbox="1116 481 1220 513">A*</td><td data-bbox="1220 481 1325 513">87</td><td data-bbox="1325 481 1512 513"></td></tr> <tr> <td data-bbox="1116 523 1220 555">B</td><td data-bbox="1220 523 1325 555">11</td><td data-bbox="1325 523 1512 555"></td></tr> <tr> <td data-bbox="1116 566 1220 597">C</td><td data-bbox="1220 566 1325 597">1</td><td data-bbox="1325 566 1512 597"></td></tr> <tr> <td data-bbox="1116 608 1220 639">D</td><td data-bbox="1220 608 1325 639">2</td><td data-bbox="1325 608 1512 639"></td></tr> </table>	Data Analysis			Item	State	Local	A*	87		B	11		C	1		D	2	
Data Analysis																				
Item	State	Local																		
A*	87																			
B	11																			
C	1																			
D	2																			
<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p> <p>*Correct Answer (A)</p>																				

<p>A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems</p>	<p>Analysis of Assessed Standards</p>																									
<p>2016 – Q19</p> <p>19 The table represents some points on the graph of a linear function.</p>	<p>Cluster Linear Functions Subcluster Writing Linear Equations Content Readiness Process A.1(B), A.1(C), A.1(E), A.1(F) Stimulus</p>																									
<table border="1" data-bbox="677 306 930 580"> <thead> <tr> <th>x</th> <th>y</th> </tr> </thead> <tbody> <tr> <td>-2</td> <td>12</td> </tr> <tr> <td>0</td> <td>3</td> </tr> <tr> <td>3</td> <td>-10.5</td> </tr> <tr> <td>7</td> <td>-28.5</td> </tr> </tbody> </table>	x	y	-2	12	0	3	3	-10.5	7	-28.5	<p>Data Analysis</p> <table border="1" data-bbox="1166 432 1512 644"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12</td> <td></td> </tr> <tr> <td>B*</td> <td>59</td> <td></td> </tr> <tr> <td>C</td> <td>14</td> <td></td> </tr> <tr> <td>D</td> <td>15</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	12		B*	59		C	14		D	15	
x	y																									
-2	12																									
0	3																									
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A	12																									
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<p>What is the rate of change of y with respect to x for this function?</p> <p>A $\frac{2}{9}$ B $-\frac{9}{2}$ C $\frac{9}{2}$ D $-\frac{2}{9}$</p> <p>*Correct Answer (B)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>																									

<p>A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems</p> <p>2016 – Q38</p> <p>38 The graph shows how the volume of a gas sample changes as the temperature changes and the pressure remains constant.</p> <p style="text-align: center;">Gas Sample</p> <table border="1"> <caption>Data points estimated from the graph</caption> <thead> <tr> <th>Temperature (°C)</th> <th>Volume of Gas (mL)</th> </tr> </thead> <tbody> <tr><td>0</td><td>21.4</td></tr> <tr><td>20</td><td>23.4</td></tr> <tr><td>40</td><td>25.4</td></tr> <tr><td>60</td><td>27.4</td></tr> <tr><td>80</td><td>29.4</td></tr> <tr><td>100</td><td>30.0</td></tr> </tbody> </table>	Temperature (°C)	Volume of Gas (mL)	0	21.4	20	23.4	40	25.4	60	27.4	80	29.4	100	30.0	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td>A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus	
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Item	State	Local																							
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	<p>Learning from Mistakes Instructional Implications</p>																								

Which of these best represents the rate of change in the volume of the gas sample with respect to the temperature?

F $\frac{7}{100}$ mL/°C

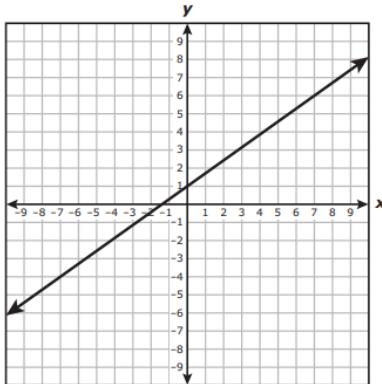
G $\frac{1}{12}$ mL/°C

H 12 mL/°C

J $22\frac{2}{5}$ mL/°C

*Correct Answer (G)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems		Analysis of Assessed Standards	
2021 – Q9		Cluster	Linear Functions
9 The graph of linear function g passes through the points $(-7, -4)$ and $(7, 6)$, as shown.		Subcluster	Describing Linear Functions
		Content	Readiness
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		A	6
		B*	71
		C	7
		D	16
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (B)			



What are the slope and y -intercept of the graph of g ?

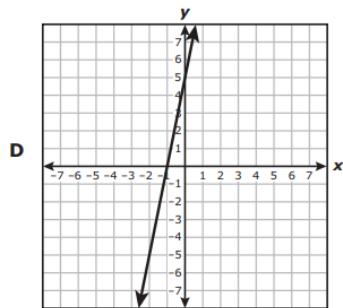
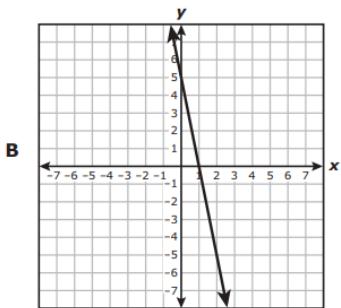
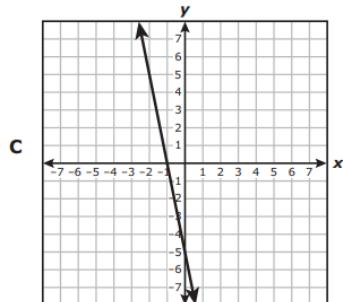
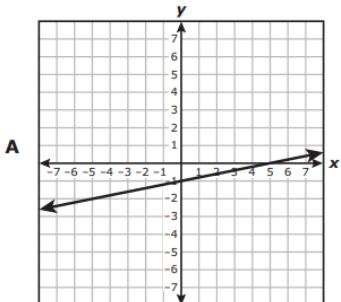
- A The slope is $\frac{5}{7}$, and the y -intercept is -1 .
- B The slope is $\frac{5}{7}$, and the y -intercept is 1 .
- C The slope is $\frac{7}{5}$, and the y -intercept is -1 .
- D The slope is $\frac{7}{5}$, and the y -intercept is 1 .

*Correct Answer (B)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

2021 – Q41

- 41 Linear function t has an x -intercept of -1 and a y -intercept of 5 . Which graph best represents t ?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

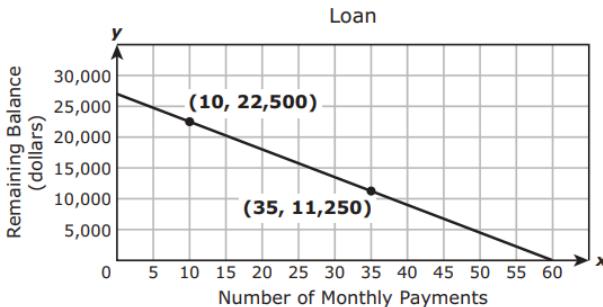
Data Analysis

Item	State	Local
A	8	
B	8	
C	10	
D*	73	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

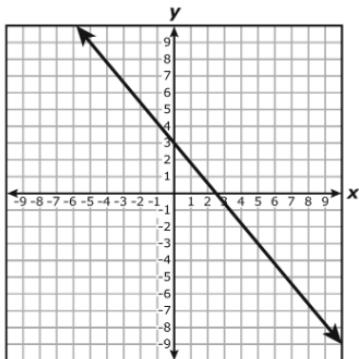
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards															
2021 – Q51 <p>51 The graph models the linear relationship between the number of monthly payments made on a loan and the remaining balance in dollars left to pay on the loan.</p>	<p>Cluster Linear Functions Subcluster Describing Linear Functions Content Readiness Process Stimulus</p>															
	<p>Data Analysis</p> <table border="1" data-bbox="1158 432 1493 644"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>9</td> <td></td> </tr> <tr> <td>B</td> <td>12</td> <td></td> </tr> <tr> <td>C*</td> <td>72</td> <td></td> </tr> <tr> <td>D</td> <td>7</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	9		B	12		C*	72		D	7	
Item	State	Local														
A	9															
B	12															
C*	72															
D	7															
<p>Which statement describes the x-intercept of the graph?</p> <p>A The x-intercept is 60, which represents the initial balance in dollars of the loan. B The x-intercept is 27,000, which represents the initial balance in dollars of the loan. C The x-intercept is 60, which represents the number of monthly payments needed to repay the loan. D The x-intercept is 27,000, which represents the number of monthly payments needed to repay the loan.</p> <p>*Correct Answer (C)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

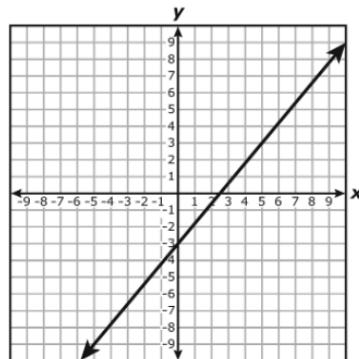
2019 – Q7

Which graph best represents $-5y = -6x + 15$?

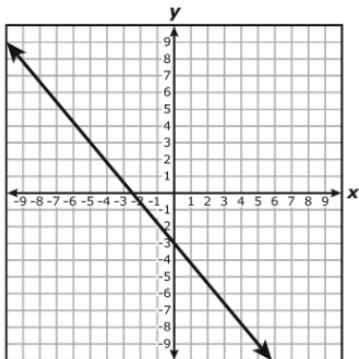
A



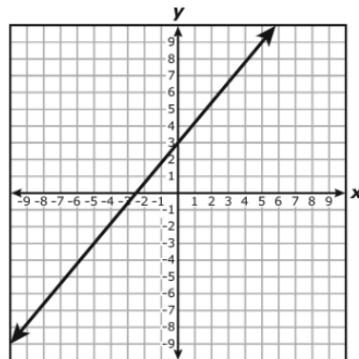
C



B



D



*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	15	
B	12	
C*	66	
D	8	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards															
! 2019 – Q26 The graph of linear function f passes through the point $(1, -9)$ and has a slope of -3 .	Cluster Linear Functions Subcluster Describing Linear Functions Content Readiness Process Stimulus															
	Data Analysis <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #d3d3d3;">Item</th> <th style="background-color: #d3d3d3;">State</th> <th style="background-color: #d3d3d3;">Local</th> </tr> </thead> <tbody> <tr> <td>F</td><td>10</td><td></td></tr> <tr> <td>G</td><td>17</td><td></td></tr> <tr> <td>H</td><td>29</td><td></td></tr> <tr> <td>J*</td><td>43</td><td></td></tr> </tbody> </table> Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	Item	State	Local	F	10		G	17		H	29		J*	43	
Item	State	Local														
F	10															
G	17															
H	29															
J*	43															
What is the zero of f ? F 2 G 4 H -6 J -2	Learning from Mistakes Instructional Implications															

*Correct Answer (J)

<p>A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems</p> <p>2019 – Q35</p> <p>The graph of linear function k passes through the points $(-7, 0)$ and $(1, 8)$.</p> <p>Which statement must be true?</p> <p> A The slope of the graph of k is $-\frac{4}{3}$. B The graph of k passes through the point $(-1, -8)$. C The zero of k is 7. D The x-intercept of the graph of k is -7. </p> <p>*Correct Answer (D)</p>	<table border="1"> <thead> <tr> <th colspan="2">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td> <td>Linear Functions</td> </tr> <tr> <td>Subcluster</td> <td>Describing Linear Functions</td> </tr> <tr> <td>Content</td> <td>Readiness</td> </tr> <tr> <td>Process</td> <td></td> </tr> <tr> <td>Stimulus</td> <td></td> </tr> <tr> <th colspan="2">Data Analysis</th> </tr> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> <tr> <td>A</td> <td>7</td> <td></td> </tr> <tr> <td>B</td> <td>9</td> <td></td> </tr> <tr> <td>C</td> <td>17</td> <td></td> </tr> <tr> <td>D*</td> <td>65</td> <td></td> </tr> <tr> <th colspan="3">Error Analysis</th> </tr> <tr> <td><input type="checkbox"/> Guessing</td> <td><input type="checkbox"/> Mixed Up Concepts</td> </tr> <tr> <td><input type="checkbox"/> Careless Error</td> <td><input type="checkbox"/> Stopped Too Early</td> </tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th> </tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus		Data Analysis		Item	State	Local	A	7		B	9		C	17		D*	65		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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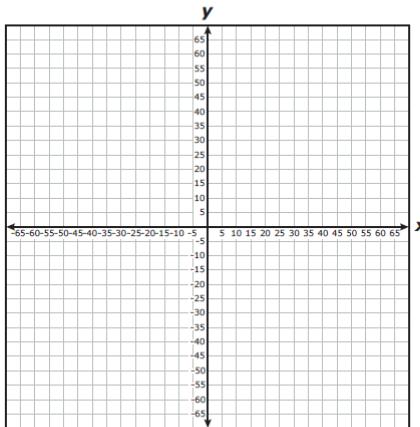
<p>A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems</p> <p>2018 – Q16</p> <p>16 The water level of a river was measured each day during a two-week period. The graph models the linear relationship between the water level of the river in feet and the number of days the water level was measured.</p> <p style="text-align: center;">Water Level of River</p> <table border="1"> <thead> <tr> <th>Number of Days (x)</th> <th>Water Level (ft) (y)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>16</td> </tr> <tr> <td>14</td> <td>20</td> </tr> </tbody> </table>	Number of Days (x)	Water Level (ft) (y)	0	16	14	20	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>F</td><td>12</td><td></td></tr> <tr> <td>G</td><td>11</td><td></td></tr> <tr> <td>H*</td><td>71</td><td></td></tr> <tr> <td>J</td><td>6</td><td></td></tr> </tbody> </table> <p>Error Analysis</p> <table> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus		Item	State	Local	F	12		G	11		H*	71		J	6		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
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Which statement best describes the y -intercept of the graph?

- F** The water level increased by 0.25 ft per day.
- G** The maximum water level was 19.5 ft.
- H** The initial water level was 16 ft.
- J** The water level was measured for 14 days.

*Correct Answer (H)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards		
2018 – Q27	27 A paper airplane was thrown from the top of a tall building. The height of the paper airplane above the ground can be found using the function $y = -1.5x + 60$, where x is the time in seconds the airplane has been in the air.	Cluster Linear Functions Subcluster Describing Linear Functions Content Readiness Process Stimulus	
		Data Analysis	
		Item 40	State 52*
		Local 47	
		Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	
*Correct Answer (40)	Learning from Mistakes Instructional Implications		



How many seconds did it take the paper airplane to reach the ground?

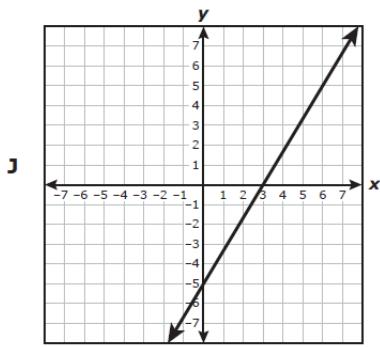
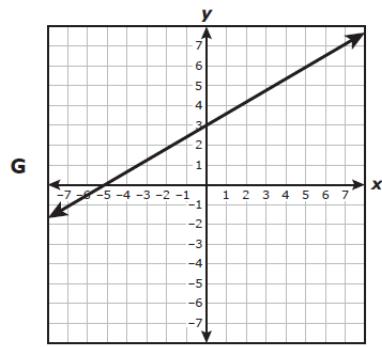
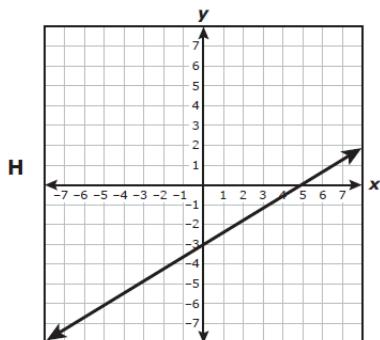
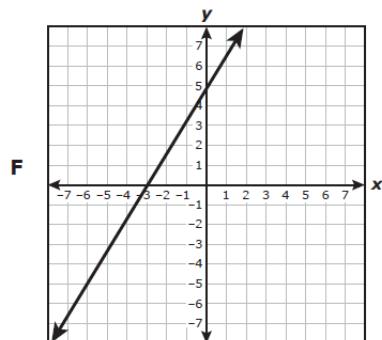
Record your answer and fill in the bubbles on your answer document.

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

Analysis of Assessed Standards

2018 – Q54

- 54 Which line appears to have an x -intercept of -5 and a y -intercept of 3 ?



Cluster Linear Functions

Subcluster Describing Linear Functions

Content Readiness

Process

Stimulus

Data Analysis

Item	State	Local
F	2	
G*	84	
H	4	
J	9	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

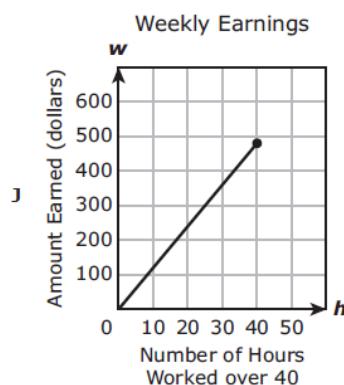
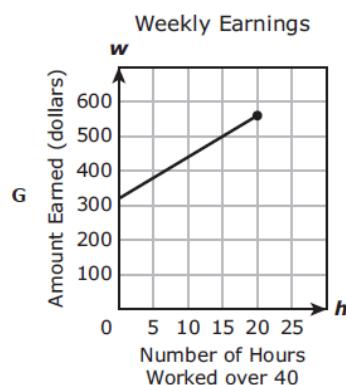
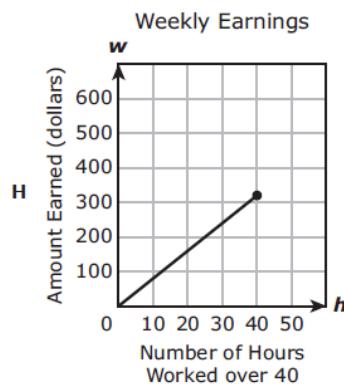
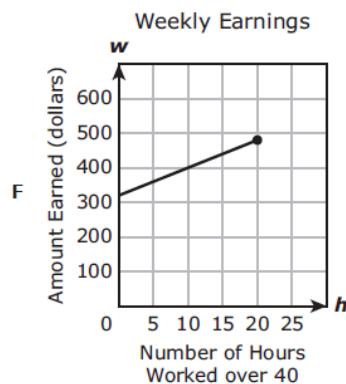
*Correct Answer (G)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

! 2017 – Q12

- 12 A lifeguard earns \$320 per week for working 40 hours plus \$12 per hour worked over 40 hours. A lifeguard can work a maximum of 60 hours per week.

Which graph best represents the lifeguard's weekly earnings in dollars for working h hours over 40?



*Correct Answer (G)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	12	
G*	47	
H	26	
J	15	

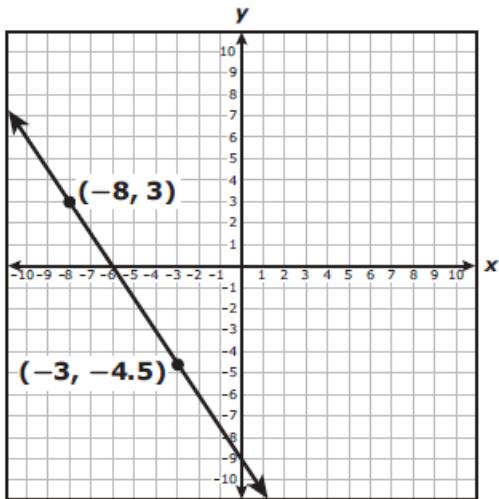
Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems</p> <p>2017 – Q32</p> <p>32 The graph of a function is shown on the grid.</p> <p>Which ordered pair best represents the location of the <i>y</i>-intercept?</p> <p>F $(\frac{1}{3}, 0)$</p> <p>G $(0, -2)$</p> <p>H $(0, \frac{1}{3})$</p> <p>J $(-2, 0)$</p> <p>*Correct Answer (G)</p>	<table border="1"> <thead> <tr> <th colspan="2">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <th colspan="2">Data Analysis</th></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>F</td><td>5</td><td></td></tr> <tr> <td>G*</td><td>78</td><td></td></tr> <tr> <td>H</td><td>7</td><td></td></tr> <tr> <td>J</td><td>9</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th></tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus		Data Analysis		Item	State	Local	F	5		G*	78		H	7		J	9		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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2017 – Q42 <p>42 The graph of linear function g is shown on the grid.</p>	<table border="1"> <tr> <td data-bbox="1116 149 1220 181">Cluster</td><td data-bbox="1220 149 1512 181">Linear Functions</td></tr> <tr> <td data-bbox="1116 192 1220 223">Subcluster</td><td data-bbox="1220 192 1512 223">Describing Linear Functions</td></tr> <tr> <td data-bbox="1116 234 1220 266">Content</td><td data-bbox="1220 234 1512 266">Readiness</td></tr> <tr> <td data-bbox="1116 276 1220 308">Process</td><td data-bbox="1220 276 1512 308"></td></tr> <tr> <td data-bbox="1116 318 1220 350">Stimulus</td><td data-bbox="1220 318 1512 350"></td></tr> </table>			Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus									
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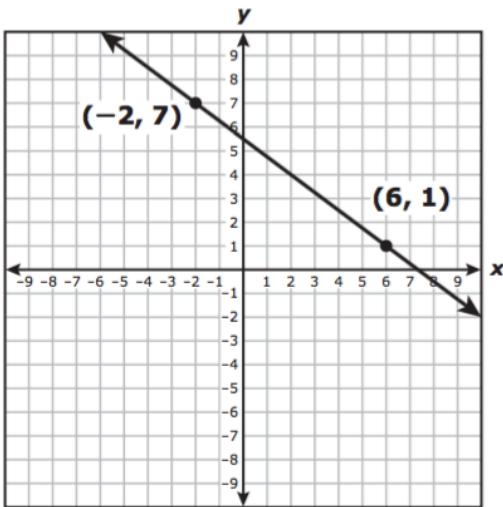


What is the zero of g ?

Record your answer and fill in the bubbles on your answer document.

*Correct Answer (-6)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards																				
2016 – Q14 14 What is the y -intercept of the line graphed on the grid?	<table border="1" data-bbox="1122 143 1507 306"> <tr> <td>Cluster</td><td colspan="2">Linear Functions</td></tr> <tr> <td>Subcluster</td><td colspan="2">Describing Linear Functions</td></tr> <tr> <td>Content</td><td colspan="2">Readiness</td></tr> <tr> <td>Process</td><td colspan="2">A.1(B), A.1(E), A.1(F)</td></tr> <tr> <td>Stimulus</td><td colspan="2"></td></tr> </table>			Cluster	Linear Functions		Subcluster	Describing Linear Functions		Content	Readiness		Process	A.1(B), A.1(E), A.1(F)		Stimulus					
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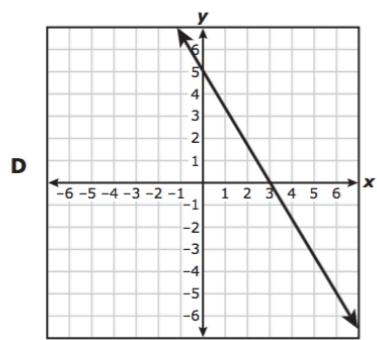
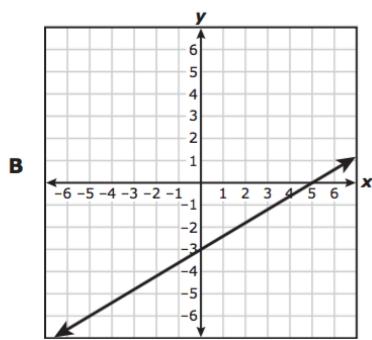
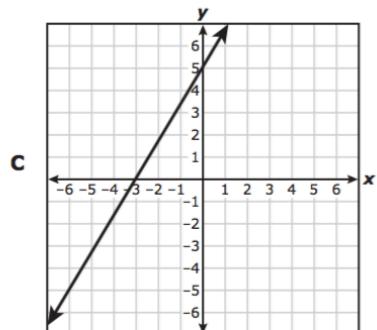
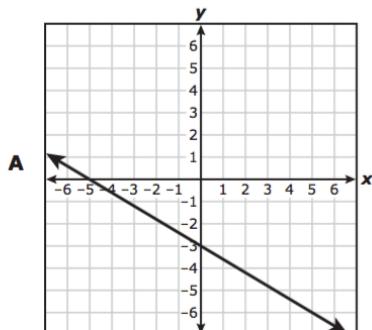
Record your answer and fill in the bubbles on your answer document.

*Correct Answer (5.5)

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

2016 – Q23

23 Which graph represents $-3x + 5y = -15$?



*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	A.1(B), A.1(D), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A	11	
B*	56	
C	24	
D	9	

Error Analysis

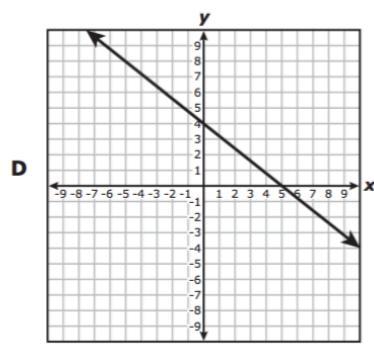
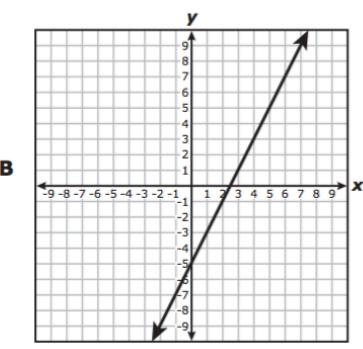
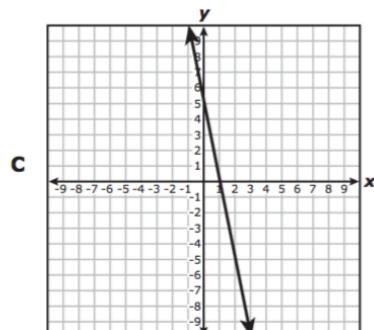
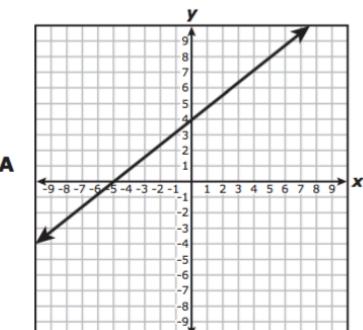
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems

2016 – Q43

43 Which graph shows a line with an x -intercept of -5 ?



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

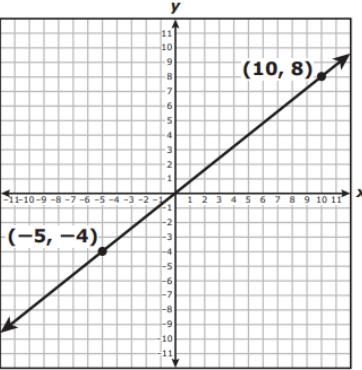
Data Analysis

Item	State	Local
A*	80	
B	11	
C	4	
D	6	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

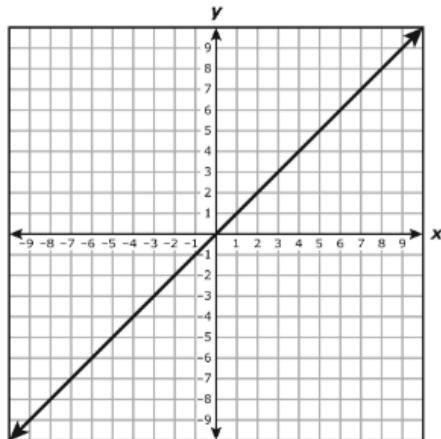
<p>A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d</p>	<p>Analysis of Assessed Standards</p>															
<p>! 2021 – Q20</p> <p>20 The graph of linear function h is shown on the grid.</p>	<table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Supporting	Process		Stimulus						
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Item	State	Local														
0.8	25*															
	74															
<p>Given $f(x) = x$ and $h(x) = af(x)$, what is the value of a?</p> <p>Record your answer and fill in the bubbles on your answer document.</p> <p>*Correct Answer (0.8)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

Analysis of Assessed Standards

! 2019 – Q52

Linear parent function f is graphed on the grid.



Cluster Linear Functions

Subcluster Describing Linear Functions

Content Supporting

Process

Stimulus

Data Analysis

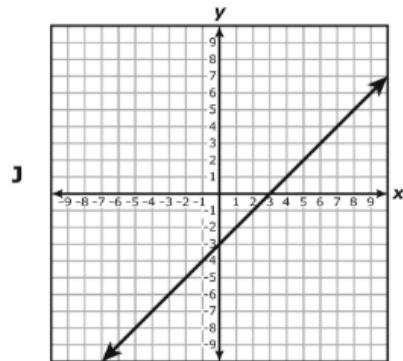
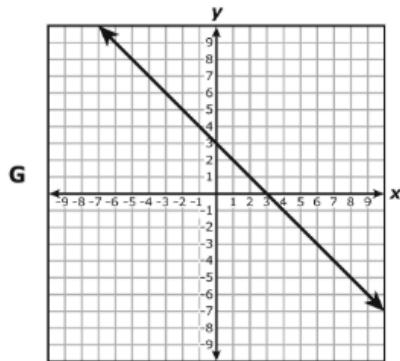
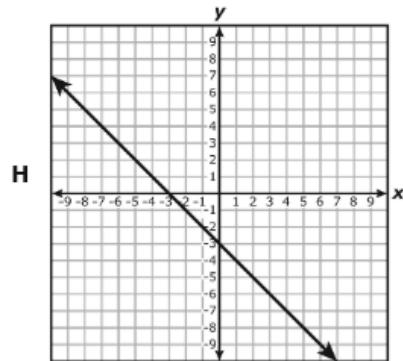
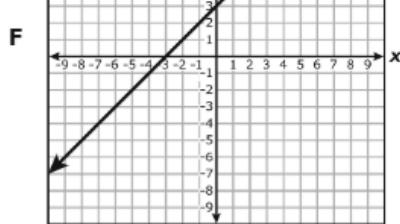
Item	State	Local
F	30	
G*	52	
H	7	
J	11	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

Which graph best represents $h(x) = -f(x) + 3$?

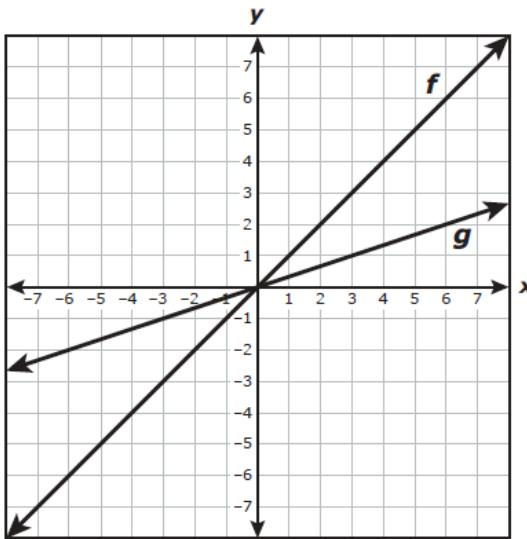


*Correct Answer (G)

A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

2018 – Q35

35 The graphs of linear functions f and g are shown on the grid.



Which function is best represented by the graph of g ?

A $g(x) = f(x) - 4$

B $g(x) = \frac{1}{3}f(x)$

C $g(x) = f(x) - 2$

D $g(x) = 3f(x)$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	8	
B*	65	
C	13	
D	14	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards		
2017 – Q45	Cluster	Linear Functions	
45 A student graphed $f(x) = x$ and $g(x) = f(x) + 3$ on the same coordinate grid. Which statement describes how the graphs of f and g are related?	Subcluster	Describing Linear Functions	
A The graph of f is shifted 3 units up to create the graph of g . B The graph of f is steeper than the graph of g . C The graph of f is shifted 3 units down to create the graph of g . D The graph of f is less steep than the graph of g .	Content	Supporting	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	A*	65	
	B	11	
	C	15	
	D	9	
*Correct Answer (A)	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
	Learning from Mistakes Instructional Implications		

A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards		
! 2016 – Q11	Cluster	Linear Functions	
11 Linear function $f(x) = x$ is graphed on a coordinate plane. The graph of a new line is formed by changing the slope of the original line to $\frac{2}{3}$ and the y -intercept to 4. Which statement about the relationship between these two graphs is true?	Subcluster	Describing Linear Functions	
A The graph of the new line is steeper than the graph of the original line, and the y -intercept has been translated down. B The graph of the new line is less steep than the graph of the original line, and the y -intercept has been translated up. C The graph of the new line is steeper than the graph of the original line, and the y -intercept has been translated up. D The graph of the new line is less steep than the graph of the original line, and the y -intercept has been translated down.	Content	Supporting	
	Process	A.1(B), A.1(G)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	7	
	B*	59	
	C	27	
	D	7	
*Correct Answer (B)	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
	Learning from Mistakes Instructional Implications		

<p>A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association</p> <p>! 2017 – Q19</p> <p>19 The table shows the heights and the lengths of several rectangles.</p> <table border="1"> <tbody> <tr> <td>Height (in.)</td><td>41</td><td>70</td><td>21</td><td>34</td><td>10</td><td>92</td><td>54</td><td>24</td><td>10</td><td>35</td><td>42</td><td>66</td></tr> <tr> <td>Length (in.)</td><td>21</td><td>25</td><td>32</td><td>12</td><td>16</td><td>45</td><td>40</td><td>23</td><td>45</td><td>35</td><td>21</td><td>14</td></tr> </tbody> </table> <p>What does the correlation coefficient for the data indicate about the strength of the linear association between the height and the length of these rectangles?</p> <p>A Weak negative correlation B Strong negative correlation C Weak positive correlation D Strong positive correlation</p>													Height (in.)	41	70	21	34	10	92	54	24	10	35	42	66	Length (in.)	21	25	32	12	16	45	40	23	45	35	21	14	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A</td><td>18</td><td></td></tr> <tr> <td>B</td><td>13</td><td></td></tr> <tr> <td>C*</td><td>50</td><td></td></tr> <tr> <td>D</td><td>19</td><td></td></tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>				Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Supporting	Process		Stimulus		Item	State	Local	A	18		B	13		C*	50		D	19	
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A.4(B) compare and contrast association and causation in real-world problems		Analysis of Assessed Standards	
2021 – Q31		Cluster	Linear Functions
31 Which situation best shows causation?		Subcluster	Describing Linear Functions
A The length of a rectangle affects the width of the rectangle.		Content	Supporting
B The amount of time a cell phone is used affects the charge of its battery.		Process	
C The number of ice-cream bars sold affects the number of milkshakes sold.		Stimulus	
D The number of soccerballs a team owns affects the number of games the team wins during the soccer season.		Data Analysis	
*Correct Answer (B)		Item	State
		A	13
		B*	63
		C	11
		D	13
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.4(B) compare and contrast association and causation in real-world problems		Analysis of Assessed Standards	
2018 – Q25		Cluster	Linear Functions
25 Which situation does NOT show causation?		Subcluster	Describing Linear Functions
A When the student population at a school increases, the number of teachers at the school increases.		Content	Supporting
B When the amount of sugar in a quart of apple juice is reduced, there are fewer calories in each serving.		Process	
C When there are more workers on a project, the project is completed in less time.		Stimulus	
D When there is more protein in an athlete's diet, the athlete scores more points in a game.		Data Analysis	
*Correct Answer (D)		Item	State
		A	10
		B	14
		C	15
		D*	62
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.4(B) compare and contrast association and causation in real-world problems		Analysis of Assessed Standards					
 2017 – Q9		Cluster	Linear Functions				
9 Which situation best represents causation?		Subcluster	Describing Linear Functions				
A When the number of bus stops increases, the number of car sales decreases.		Content	Supporting				
B When fewer firefighters report to a house fire, the damage caused by the fire decreases.		Process					
C When ice cream sales increase, incidents of sunburn increase.		Stimulus					
D When it rains several inches, the water level of a lake increases.		Data Analysis					
		Item	State	Local			
		A	15				
		B	9				
		C	6				
		D*	70				
Error Analysis							
<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts					
<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early					
Learning from Mistakes Instructional Implications							
*Correct Answer (D)							

A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems		Analysis of Assessed Standards	
! 2019 – Q22	A company advertises on a website. A worker tracked the number of visits to the website and the number of clicks on the advertisement. The table shows the data for several days. A linear function can be used to model the data.	Cluster	Linear Functions
		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	F	18	
	G	12	
	H*	54	
	J	15	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
Based on the table, what is the best prediction of the number of clicks on the advertisement if 1,500 people visit the website?			
F 77 G 137 H 83 J 105			
* Correct Answer (H)			

A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

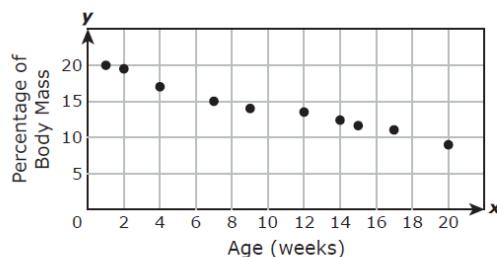
Analysis of Assessed Standards

! 2018 – Q12

- 12** A zookeeper recorded the feeding schedule for a baby rhinoceros for 20 weeks. The table and scatterplot show the percentage of the baby rhinoceros's body mass that was used to determine the amount of food given at each feeding as a linear function of its age in weeks.

Baby Rhinoceros Feeding Schedule

Age (weeks)	1	2	4	7	9	12	14	15	17	20
Percentage of Body Mass	20	19.5	17	15	14	13.5	12.4	11.6	11	9



What is the best prediction of the percentage of the baby rhinoceros's body mass that should be used to determine the amount of food given at each feeding when it is 25 weeks old?

- F** 8.5%
- G** 6%
- H** 2.5%
- J** 10%

*Correct Answer (G)

Cluster Linear Functions

Subcluster Writing Linear Equations

Content Supporting

Process

Stimulus

Data Analysis

Item	State	Local
------	-------	-------

F 16

G* 51

H 27

J 5

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

<p>A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p>	<p>Analysis of Assessed Standards</p>																		
<p>! 2016 – Q26</p>	<table border="1"> <tr> <td>Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Linear Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td>A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>		Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Supporting	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus								
Cluster	Linear Functions																		
Subcluster	Writing Linear Equations																		
Content	Supporting																		
Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)																		
Stimulus																			
<p>26 The scatterplot shows the monthly high temperatures for Austin, Texas, in degrees Fahrenheit over a 12-month period.</p>	<table border="1"> <tr> <td>Data Analysis</td><td></td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>F</td><td>15</td><td></td></tr> <tr> <td>G</td><td>27</td><td></td></tr> <tr> <td>H*</td><td>52</td><td></td></tr> <tr> <td>J</td><td>5</td><td></td></tr> </table>		Data Analysis		Item	State	Local	F	15		G	27		H*	52		J	5	
Data Analysis																			
Item	State	Local																	
F	15																		
G	27																		
H*	52																		
J	5																		
<p>Monthly High Temperatures in Austin, Texas</p>	<table border="1"> <tr> <td>Error Analysis</td><td></td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table>		Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early											
Error Analysis																			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																		
<p>Which function best models the data from Month 1 to Month 9?</p>	<table border="1"> <tr> <td>Learning from Mistakes</td><td></td></tr> <tr> <td>Instructional Implications</td><td></td></tr> </table>		Learning from Mistakes		Instructional Implications														
Learning from Mistakes																			
Instructional Implications																			
<p>F $y = -1.6x + 111$</p> <p>G $y = 3.5x + 85$</p> <p>H $y = 2.5x + 90$</p> <p>J $y = -3.3x + 130$</p> <p>*Correct Answer (H)</p>																			

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides		Analysis of Assessed Standards	
2021 – Q10		Cluster	Linear Functions
10 What is the solution to $4(y - 3) + 19 = 8(2y + 3) + 7$?		Subcluster	Solving Linear Equations
F $-\frac{1}{2}$		Content	Readiness
G $\frac{1}{2}$		Process	
H -2		Stimulus	
J 2		Data Analysis	
		Item	State
		F	10
		G	17
		H*	56
		J	16
Error Analysis		Learning from Mistakes	
<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early	
Instructional Implications			
*Correct Answer (H)			

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides		Analysis of Assessed Standards	
2021 – Q54		Cluster	Linear Functions
54 What is the solution to this equation?		Subcluster	Solving Linear Equations
	$-4(2m - 7) = 3(52 - 4m)$	Content	Readiness
F 32		Process	
G 46		Stimulus	
H -6.4		Data Analysis	
J -40.75		Item	State
		F*	57
		G	16
		H	19
		J	8
Error Analysis		Learning from Mistakes	
<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early	
Instructional Implications			
*Correct Answer (F)			

<p>A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides</p> <p>2019 – Q3</p> <p>Which value of x makes the equation $1.25(4x - 10) = 7.5$ true?</p> <p>A 3.5 B -1 C -0.5 D 4</p>	Analysis of Assessed Standards																
	Cluster	Linear Functions															
	Subcluster	Solving Linear Equations															
	Content	Readiness															
	Process																
	Stimulus																
Data Analysis																	
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Item</th><th style="text-align: center;">State</th><th style="text-align: center;">Local</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td><td style="text-align: center;">8</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">4</td><td></td></tr> <tr> <td style="text-align: center;">C</td><td style="text-align: center;">5</td><td></td></tr> <tr> <td style="text-align: center;">D*</td><td style="text-align: center;">82</td><td></td></tr> </tbody> </table>			Item	State	Local	A	8		B	4		C	5		D*	82	
Item	State	Local															
A	8																
B	4																
C	5																
D*	82																
Error Analysis																	
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																	
Learning from Mistakes Instructional Implications																	

*Correct Answer (D)

<p>A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides</p> <p>2019 – Q42</p> <p>What is the solution to $-(6m + 8) = 4(17 - m)$?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Analysis of Assessed Standards																			
	Cluster	Linear Functions																		
	Subcluster	Solving Linear Equations																		
	Content	Readiness																		
	Process																			
	Stimulus																			
Data Analysis																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Item</th><th style="text-align: center;">State</th><th style="text-align: center;">Local</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">-38</td><td style="text-align: center;">46*</td><td></td></tr> <tr> <td></td><td style="text-align: center;">53</td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td></tr> </tbody> </table>			Item	State	Local	-38	46*			53										
Item	State	Local																		
-38	46*																			
	53																			
Error Analysis																				
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																				
Learning from Mistakes Instructional Implications																				

*Correct Answer (-38)

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides	Analysis of Assessed Standards																
2018 – Q8 8 What value of n makes the equation $4(0.5n - 3) = n - 0.25(12 - 8n)$ true? F 3 G -9 H 0 J -15	Cluster Subcluster Content Process Stimulus	Linear Functions Solving Linear Equations Readiness Readiness Readiness															
	Data Analysis																
	<table border="1"> <thead> <tr> <th data-bbox="1106 449 1204 487">Item</th><th data-bbox="1204 449 1302 487">State</th><th data-bbox="1302 449 1400 487">Local</th></tr> </thead> <tbody> <tr> <td data-bbox="1106 487 1204 528">F</td><td data-bbox="1204 487 1302 528">16</td><td data-bbox="1302 487 1400 528"></td></tr> <tr> <td data-bbox="1106 528 1204 570">G*</td><td data-bbox="1204 528 1302 570">69</td><td data-bbox="1302 528 1400 570"></td></tr> <tr> <td data-bbox="1106 570 1204 612">H</td><td data-bbox="1204 570 1302 612">7</td><td data-bbox="1302 570 1400 612"></td></tr> <tr> <td data-bbox="1106 612 1204 654">J</td><td data-bbox="1204 612 1302 654">7</td><td data-bbox="1302 612 1400 654"></td></tr> </tbody> </table>		Item	State	Local	F	16		G*	69		H	7		J	7	
Item	State	Local															
F	16																
G*	69																
H	7																
J	7																
	Error Analysis																
	<input type="checkbox"/> Guessing <input type="checkbox"/> Careless Error		<input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Stopped Too Early														
Learning from Mistakes Instructional Implications																	

*Correct Answer (G)

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides	Analysis of Assessed Standards																			
2018 – Q34 34 What is the solution to $34x + 95 = 3(14x + 9)$? Record your answer and fill in the bubbles on your answer document.	Cluster Subcluster Content Process Stimulus	Linear Functions Solving Linear Equations Readiness Readiness Readiness																		
	Data Analysis																			
	<table border="1"> <thead> <tr> <th data-bbox="1106 1368 1204 1406">Item</th><th data-bbox="1204 1368 1302 1406">State</th><th data-bbox="1302 1368 1400 1406">Local</th></tr> </thead> <tbody> <tr> <td data-bbox="1106 1406 1204 1448">8.5</td><td data-bbox="1204 1406 1302 1448">53*</td><td data-bbox="1302 1406 1400 1448"></td></tr> <tr> <td data-bbox="1106 1448 1204 1491"></td><td data-bbox="1204 1448 1302 1491">46</td><td data-bbox="1302 1448 1400 1491"></td></tr> <tr> <td data-bbox="1106 1491 1204 1533"></td><td data-bbox="1204 1491 1302 1533"></td><td data-bbox="1302 1491 1400 1533"></td></tr> <tr> <td data-bbox="1106 1533 1204 1575"></td><td data-bbox="1204 1533 1302 1575"></td><td data-bbox="1302 1533 1400 1575"></td></tr> <tr> <td data-bbox="1106 1575 1204 1617"></td><td data-bbox="1204 1575 1302 1617"></td><td data-bbox="1302 1575 1400 1617"></td></tr> </tbody> </table>		Item	State	Local	8.5	53*			46										
Item	State	Local																		
8.5	53*																			
	46																			
	Error Analysis																			
	<input type="checkbox"/> Guessing <input type="checkbox"/> Careless Error		<input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Stopped Too Early																	
	Learning from Mistakes Instructional Implications																			

*Correct Answer (8.5)

<p>A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides</p> <p>2017 – Q11</p> <p>11 What is the solution to $8x - 3(2x - 4) = 3(x - 6)$?</p> <p>A 6 B 2 C 30 D No solution</p>	Analysis of Assessed Standards	
	Cluster	Linear Functions
	Subcluster	Solving Linear Equations
	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	A	12
	B	6
	C*	58
	D	24
	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

*Correct Answer (C)

<p>A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides</p> <p>2017 – Q40</p> <p>40 Which value of x makes the equation $0.75(x + 20) = 2 + 0.5(x - 2)$ true?</p> <p>F 64 G -64 H 56 J -56</p>	Analysis of Assessed Standards	
	Cluster	Linear Functions
	Subcluster	Solving Linear Equations
	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	F	10
	G	11
	H	14
	J*	65
	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

*Correct Answer (J)

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides	Analysis of Assessed Standards		
	Cluster	Linear Functions	
2016 – Q8	Subcluster	Solving Linear Equations	
8 What value of x makes the equation $-5x - (-7 - 4x) = -2(3x - 4)$ true?	Content	Readiness	
F $x = 3$	Process	A.1(B), A.1(F)	
G $x = 5$	Stimulus		
H $x = \frac{1}{3}$	Data Analysis		
J $x = \frac{1}{5}$	Item	State	Local
	F	13	
	G	13	
	H	15	
Correct Answer (J)	J	59	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides	Analysis of Assessed Standards		
	Cluster	Linear Functions	
2016 – Q52	Subcluster	Solving Linear Equations	
52 What is the solution to $0.3(12x - 16) = 0.4(12 - 3x)$?	Content	Readiness	
F -2	Process	A.1(B), A.1(F)	
G 4	Stimulus		
H 2	Data Analysis		
J -4	Item	State	Local
	F	8	
	G	16	
	H*	67	
	J	9	
*Correct Answer (H)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.12(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function					Analysis of Assessed Standards										
2019 – Q44					Cluster Linear Functions										
Which table shows y as a function of x ?					Subcluster Describing Linear Functions										
F <table border="1"> <tr> <td>x</td><td>-13</td><td>-13</td><td>-13</td><td>-13</td></tr> <tr> <td>y</td><td>-2</td><td>0</td><td>5</td><td>7</td></tr> </table>					x	-13	-13	-13	-13	y	-2	0	5	7	Content Supporting
x	-13	-13	-13	-13											
y	-2	0	5	7											
H <table border="1"> <tr> <td>x</td><td>1</td><td>3</td><td>7</td><td>12</td></tr> <tr> <td>y</td><td>4</td><td>4</td><td>4</td><td>4</td></tr> </table>					x	1	3	7	12	y	4	4	4	4	Process
x	1	3	7	12											
y	4	4	4	4											
G <table border="1"> <tr> <td>x</td><td>-6</td><td>-1</td><td>-1</td><td>10</td></tr> <tr> <td>y</td><td>3</td><td>-1</td><td>5</td><td>-9</td></tr> </table>					x	-6	-1	-1	10	y	3	-1	5	-9	Stimulus
x	-6	-1	-1	10											
y	3	-1	5	-9											
J <table border="1"> <tr> <td>x</td><td>-9</td><td>-2</td><td>0</td><td>0</td></tr> <tr> <td>y</td><td>-7</td><td>-5</td><td>0</td><td>6</td></tr> </table>					x	-9	-2	0	0	y	-7	-5	0	6	Data Analysis
x	-9	-2	0	0											
y	-7	-5	0	6											
* Correct Answer (H)					Item State Local										
F 9					F 9										
G 11					G 11										
H* 67					H* 67										
J 13					J 13										
Error Analysis					Error Analysis										
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts					<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts										
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early					<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early										
Learning from Mistakes Instructional Implications					Learning from Mistakes Instructional Implications										

A.12(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function

! 2016 – Q36

36 Which table represents y as a function of x ?

F	x	y
-5	-5	
3	-2	
-5	5	
-3	-2	

G	x	y
6	-6	
-6	6	
8	-8	
-8	8	

H	x	y
-3	-4	
1	4	
-3	4	
1	-4	

J	x	y
2	-1	
2	-2	
2	-3	
2	-4	

*Correct Answer (G)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
F	9	
G*	64	
H	8	
J	19	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains		Analysis of Assessed Standards	
!	2016 – Q27	Cluster	Linear Functions
27	Given $f(x) = 6(1 - x)$, what is the value of $f(-8)$?	Subcluster	Describing Linear Functions
	Record your answer and fill in the bubbles on your answer document.	Content	Supporting
		Process	A.1(B), A.1(F)
		Stimulus	
Data Analysis			
Item	State	Local	
54	44*		
	55		
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications			

*Correct Answer (54)

A.12(D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms		Analysis of Assessed Standards	
! 2018 – Q9		Cluster	Linear Functions
9 In a sequence of numbers, $a_3 = 0$, $a_4 = 6$, $a_5 = 12$, $a_6 = 18$, and $a_7 = 24$. Based on this information, which equation can be used to find the n^{th} term in the sequence, a_n ?	Subcluster	Writing Linear Equations	
A $a_n = -6n + 18$	Content	Supporting	
B $a_n = -18n + 6$	Process		
C $a_n = 6n - 18$	Stimulus		
D $a_n = 18n - 6$	Data Analysis		
*Correct Answer (C)	Item	State	Local
	A	14	
	B	21	
	C*	53	
	D	11	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.12(E) solve mathematic and scientific formulas, and other literal equations, for a specified variable		Analysis of Assessed Standards	
! 2016 – Q18		Cluster	Linear Functions
18 Which of the following is equivalent to $3x - 4y = 6$?		Subcluster	Solving Linear Equations
F $y = -\frac{6}{7}x$		Content	Supporting
G $y = -\frac{3}{4}x$		Process	A.1(B), A.1(F)
H $y = \frac{4}{3}x + 2$		Stimulus	
J $y = \frac{3}{4}x - \frac{3}{2}$		Data Analysis	
*Correct Answer (J)		Item	State
		F	6
		G	15
		H	16
		J*	63
		Local	
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

Systems of Equations and Inequalities

A.2 Linear functions, equations, and inequalities. The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations.

A.3 Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations.

A.5 Linear functions, equations, and inequalities. The student applies the mathematical process standards to solve, with and without technology, linear equations and evaluate the reasonableness of their solutions.

A.2(H) write linear inequalities in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
! 2021 – Q30		Cluster	Systems of Equations and Inequalities
30 Which inequality is best represented by the graph?		Subcluster	Inequalities
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
F	22		
G	34		
H	15		
J*	29		
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes			
Instructional Implications			
*			
Correct Answer (J)			

<p>A.2(H) write linear inequalities in two variables given a table of values, a graph, and a verbal description</p> <p>2019 – Q15</p> <p>A grill at a barbecue restaurant will be used to cook sausage links that are 2 lb each and briskets that are 6 lb each. No more than 120 lb of sausage links and briskets will be cooked on the grill.</p> <p>Which inequality represents all possible combinations of x, the number of sausage links that will be cooked on the grill, and y, the number of briskets that will also be cooked?</p> <p>A $6x + 2y < 120$</p> <p>B $2x + 6y \leq 120$</p> <p>C $6x + 2y > 120$</p> <p>D $2x + 6y \geq 120$</p>	Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities	
Subcluster	Inequalities	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
A	7	
B*	67	
C	6	
D	19	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

*Correct Answer (B)

<p>A.2(H) write linear inequalities in two variables given a table of values, a graph, and a verbal description</p> <p>2017 – Q25</p> <p>25 A student is ordering a flower arrangement. She can choose any combination of roses and carnations for her flower arrangement, and she does not want to spend more than \$30. If roses cost \$3 each and carnations cost \$2 each, which inequality represents all possible combinations of x roses and y carnations?</p> <p>A $3x + 2y < 30$</p> <p>B $3x + 2y \leq 30$</p> <p>C $2x + 3y > 30$</p> <p>D $2x + 3y \leq 30$</p>	Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities	
Subcluster	Inequalities	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
A	14	
B*	70	
C	10	
D	6	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

*Correct Answer (B)

A.2(H) write linear inequalities in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
!	2016 – Q3	Cluster	Systems of Equations and Inequalities
	3 Baseball fans can buy tickets for seats in the lower deck or upper deck of the stadium. Tickets for the lower deck cost \$42 each. Ticket prices for the upper deck are 75% of the cost of tickets for the lower deck. Which inequality represents all possible combinations of x , the number of tickets for the lower deck, and y , the number of tickets for the upper deck, that someone can buy for no more than \$800?	Subcluster	Inequalities
	A $42x + 56y \leq 800$ B $42x + 31.5y \leq 800$ C $42x + 56y > 800$ D $42x + 31.5y > 800$	Content	Supporting
		Process	A.1(A), A.1(B), A.1(D), A.1(F)
		Stimulus	
Data Analysis			
	Item	State	Local
	A	21	
	B*	56	
	C	11	
	D	12	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

*Correct Answer (B)

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2021 – Q15		Cluster	Systems of Equations and Inequalities
15 A customer paid a total of \$6.00 for 68 copies at a print shop. Some of the copies were black-and-white copies, and the rest were color copies.		Subcluster	Systems of Equations
<ul style="list-style-type: none"> Each black-and-white copy cost \$0.08. Each color copy cost \$0.15. 		Content	Readiness
Which system of equations can be used to find b , the number of black-and-white copies, and c , the number of color copies that the customer paid for at the print shop?		Process	
A $b + c = 6.00$ $0.08b + 0.15c = 68$		Stimulus	
B $b + c = 68$ $0.15b + 0.08c = 6.00$		Data Analysis	
C $b + c = 6.00$ $0.15b + 0.08c = 68$		Item	State
D $b + c = 68$ $0.08b + 0.15c = 6.00$		A	18
*Correct Answer (D)		B	12
		C	9
		D*	62
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes	
		Instructional Implications	

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
! 2021 – Q24		Cluster	Systems of Equations and Inequalities
24 The tables of ordered pairs represent some points on the graphs of lines f and g .		Subcluster	Systems of Equations
		Content	Readiness
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		F*	54
		G	20
		H	16
		J	11
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes	
		Instructional Implications	
*Correct Answer (F)			

<p>A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description</p> <p>2019 – Q30</p> <p>A system of equations is graphed on the grid.</p> <p>Which system of equations does the graph represent?</p> <p>F $y = -x - 4$ $y = 2x - 2$</p> <p>G $y = -x + 4$ $y = 2x - 4$</p> <p>H $y = x - 4$ $y = -2x - 2$</p> <p>J $y = x + 4$ $y = -2x - 4$</p> <p>*Correct Answer (J)</p>	<table border="1"> <thead> <tr> <th colspan="3">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td colspan="2">Systems of Equations and Inequalities</td></tr> <tr> <td>Subcluster</td><td colspan="2">Systems of Equations</td></tr> <tr> <td>Content</td><td colspan="2">Readiness</td></tr> <tr> <td>Process</td><td colspan="2"></td></tr> <tr> <td>Stimulus</td><td colspan="2"></td></tr> <tr> <th colspan="3">Data Analysis</th></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>F</td><td>7</td><td></td></tr> <tr> <td>G</td><td>10</td><td></td></tr> <tr> <td>H</td><td>10</td><td></td></tr> <tr> <td>J*</td><td>73</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th></tr> </tbody> </table>	Analysis of Assessed Standards			Cluster	Systems of Equations and Inequalities		Subcluster	Systems of Equations		Content	Readiness		Process			Stimulus			Data Analysis			Item	State	Local	F	7		G	10		H	10		J*	73		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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Learning from Mistakes Instructional Implications																																															

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2019 – Q51		Cluster	Systems of Equations and Inequalities
A customer at a store paid \$64 for 3 large candles and 4 small candles. At the same store, a second customer paid \$4 more than the first customer for 1 large candle and 8 small candles. The price of each large candle is the same, and the price of each small candle is the same.		Subcluster	Systems of Equations
Which system of equations can be used to find the price in dollars of each large candle, x , and each small candle, y ?		Content	Readiness
A $4y = 3x + 64$ $8y = x + 68$		Process	
B $4y = 3x + 64$ $8y = x + 60$		Stimulus	
C $3x + 4y = 64$ $x + 8y = 68$		Data Analysis	
D $3x + 4y = 64$ $x + 8y = 60$		Item	State
*Correct Answer (C)		A	11
		B	9
		C*	72
		D	9
Error Analysis		Learning from Mistakes	
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		Instructional Implications	
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards									
2018 – Q24		Cluster	Systems of Equations and Inequalities								
24 The tables of ordered pairs represent some points on the graphs of lines q and v .		Subcluster	Systems of Equations								
		Content	Readiness								
		Process									
		Stimulus									
Line q		Data Analysis									
Line v		Item	State								
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>x</td><td>-9</td><td>-3</td><td>2</td></tr> <tr><td>y</td><td>0</td><td>18</td><td>33</td></tr> </table>		x	-9	-3	2	y	0	18	33	F	10
x	-9	-3	2								
y	0	18	33								
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>x</td><td>-4</td><td>0</td><td>10</td></tr> <tr><td>y</td><td>10</td><td>8</td><td>3</td></tr> </table>		x	-4	0	10	y	10	8	3	G*	58
x	-4	0	10								
y	10	8	3								
		H	17								
		J	15								
Which system of equations is represented by lines q and v ?		Error Analysis									
F $21x - y = 9$ $5x + 6y = 40$		<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts									
G $3x - y = -27$ $x + 2y = 16$		<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early									
H $21x - y = 9$ $5x + 6y = 20$		Learning from Mistakes									
J $9x - y = -27$ $x + 2y = 8$		Instructional Implications									
*Correct Answer (G)											

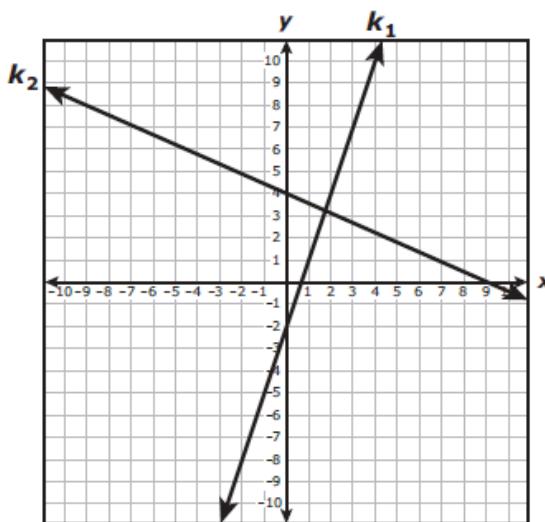
A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards		
2018 – Q37		Cluster	Systems of Equations and Inequalities	
37 There are 15 plates in a kitchen cabinet. The diameter of each plate is either 7 inches or 12 inches. The diameter of all 15 plates combined is 140 inches.		Subcluster	Systems of Equations	
Which system of equations can be used to find the number of 7-inch plates, x , and the number of 12-inch plates, y , that are in the cabinet?		Content	Readiness	
A $x + y = 140$ $12x + 7y = 15$		Process		
B $7x + 12y = 140$ $7x + 12y = 15$		Stimulus		
C $x + y = 15$ $7x + 12y = 140$		Data Analysis		
D $x + y = 15$ $12x + 7y = 140$		Item	State	Local
		A	12	
		B	12	
		C*	66	
		D	10	
*Correct Answer (C)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards		
2017 – Q2		Cluster	Systems of Equations and Inequalities	
2 A drummer and a guitarist each wrote songs for their band. The guitarist wrote 8 fewer than twice the number of songs that the drummer wrote. They wrote a total of 46 songs.		Subcluster	Systems of Equations	
Which system of equations models this situation if the drummer wrote d songs and the guitarist wrote g songs?		Content	Readiness	
F $g = 2d - 8$ $g + d = 46$		Process		
G $g = 8 - 2d$ $g = 46 - d$		Stimulus		
H $d = 2g - 8$ $d = 46 - g$		Data Analysis		
J $d = 8 - 2g$ $d + g = 46$		Item	State	Local
		F*	70	
		G	9	
		H	7	
		J	14	
*Correct Answer (F)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description

2017 – Q48

48 The graphs of lines k_1 and k_2 are shown on the grid.



Which system of equations is best represented by this graph?

- F** $3x - y = 2$
 $4x + 9y = 36$
- G** $3x - y = 6$
 $4x + 9y = 4$
- H** $x - 3y = -18$
 $9x + 4y = 9$
- J** $x + y = 10$
 $9x + 4y = 13$

*Correct Answer (F)

Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Readiness
Process	
Stimulus	

Data Analysis		
Item	State	Local
F*	54	
G	17	
H	17	
J	11	

Error Analysis	
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early

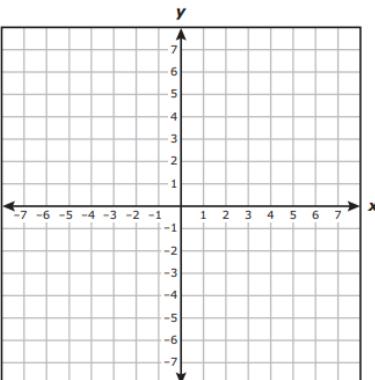
Learning from Mistakes
Instructional Implications

<p>A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description</p> <p>2016 – Q13</p> <p>13 A sports magazine prints 12 issues per year, and a technology magazine prints 10 issues per year. The total number of pages in all the issues of the sports magazine for one year is 32 more than the total number of pages in all the issues of the technology magazine for one year. Each issue of the sports magazine has 18 fewer pages than each issue of the technology magazine. Which system of equations can be used to find s, the number of pages in each issue of the sports magazine, and t, the number of pages in each issue of the technology magazine?</p> <p>A $s = t - 18$ $12s = 10t + 32$</p> <p>B $t = s - 18$ $10t = 12s + 32$</p> <p>C $s = t - 18$ $10s = 12t + 32$</p> <p>D $t = s - 18$ $12t = 10s + 32$</p>	Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities	
Subcluster	Systems of Equations	
Content	Readiness	
Process	A.1(A), A.1(B), A.1(D), A.1(F)	
Stimulus		
Data Analysis		
Item	State	Local
A*	51	
B	28	
C	11	
D	9	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

*Correct Answer (A)

<p>A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description</p> <p>2016 – Q48</p> <p>48 A bag contains 18 coins consisting of quarters and dimes. The total value of the coins is \$2.85. Which system of equations can be used to determine the number of quarters, q, and the number of dimes, d, in the bag?</p> <p>F $0.10q + 0.25d = 2.85$ $q + d = 18$</p> <p>G $0.10q + 0.25d = 18$ $q + d = 2.85$</p> <p>H $0.25q + 0.10d = 2.85$ $q + d = 18$</p> <p>J $0.25q + 0.10d = 18$ $q + d = 2.85$</p>	Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities	
Subcluster	Systems of Equations	
Content	Readiness	
Process	A.1(A), A.1(B), A.1(D), A.1(F)	
Stimulus		
Data Analysis		
Item	State	Local
F	10	
G	8	
H*	70	
J	12	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications		

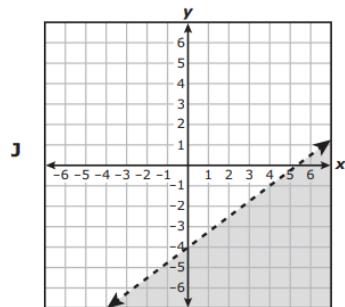
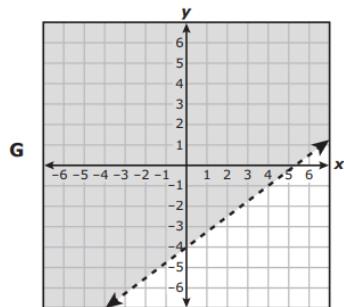
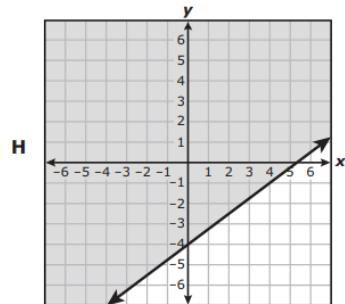
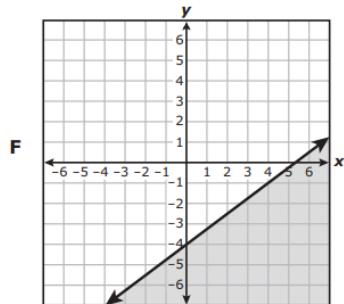
*Correct Answer (H)

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards															
! 2021 – Q5		Cluster Systems of Equations and Inequalities Subcluster Inequalities Content Readiness Process Stimulus															
5 Which ordered pair is in the solution set of $8x + 16y > 32$?																	
																	
A (0, 2) B (-3, 5) C (-1, 1) D (4, 0)		Data Analysis <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>25</td> <td></td> </tr> <tr> <td>B*</td> <td>39</td> <td></td> </tr> <tr> <td>C</td> <td>10</td> <td></td> </tr> <tr> <td>D</td> <td>25</td> <td></td> </tr> </tbody> </table> Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early Learning from Mistakes Instructional Implications	Item	State	Local	A	25		B*	39		C	10		D	25	
Item	State	Local															
A	25																
B*	39																
C	10																
D	25																
*Correct Answer (B)																	

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

! 2021 – Q46

- 46 Which graph best represents the solution set of $y \leq \frac{3}{4}x - 4$?



*Correct Answer (F)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F*	43	
G	15	
H	26	
J	15	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

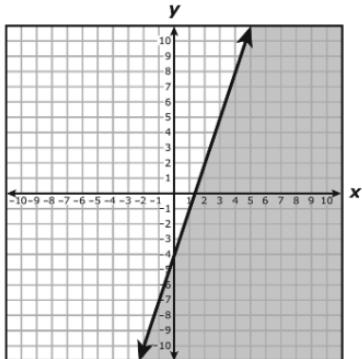
**Learning from Mistakes
Instructional Implications**

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

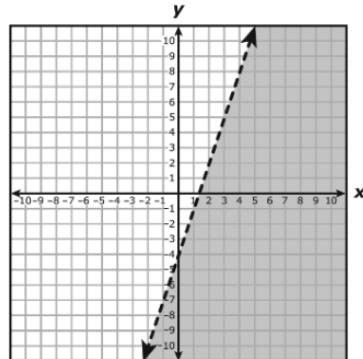
2019 – Q17

Which graph best represents the solution set of $y > 3x - 4$?

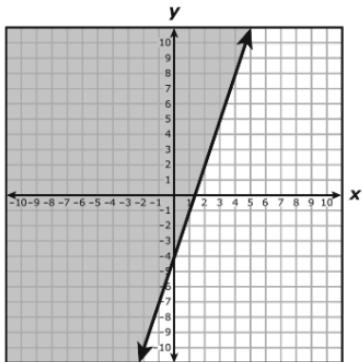
A



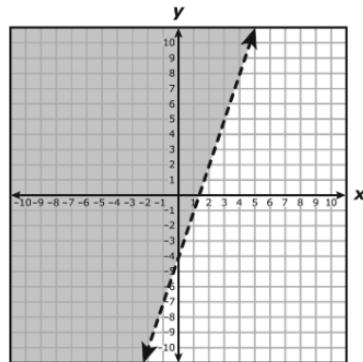
C



B



D



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	7	
B	12	
C	16	
D*	65	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

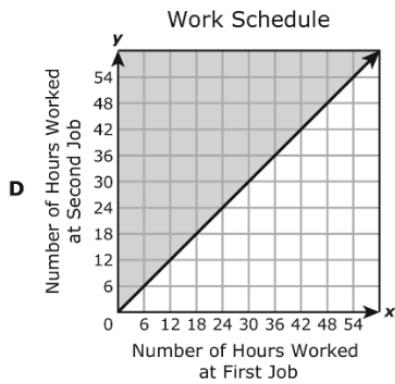
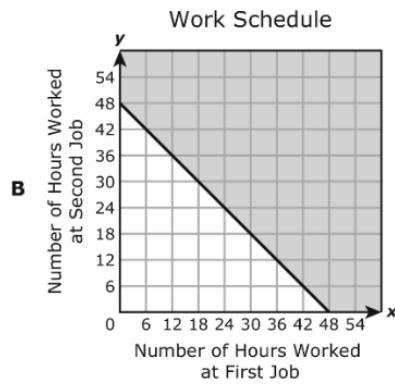
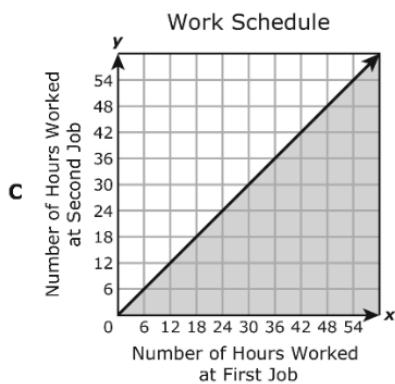
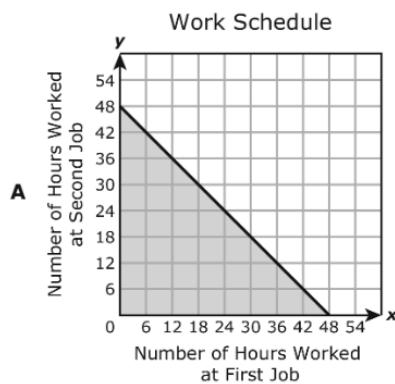
**Learning from Mistakes
Instructional Implications**

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2019 – Q47

A college student has two different jobs. Her combined work schedules consist of no more than 48 hours in one week.

Which graph best represents the solution set for all possible combinations of x , the number of hours she worked at her first job, and y , the number of hours she worked at her second job, in one week?



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	69	
B	10	
C	13	
D	7	

Error Analysis

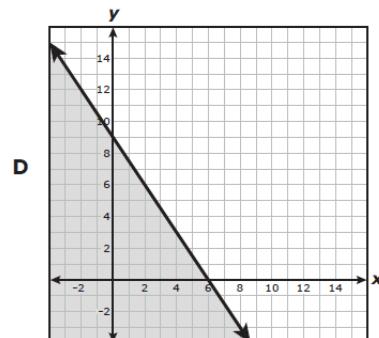
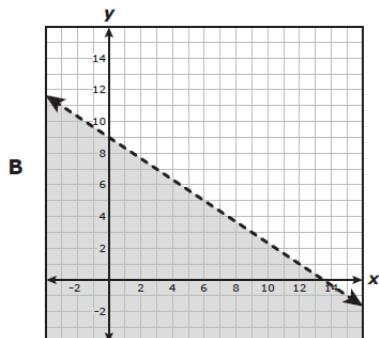
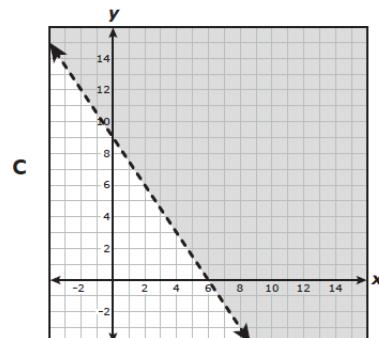
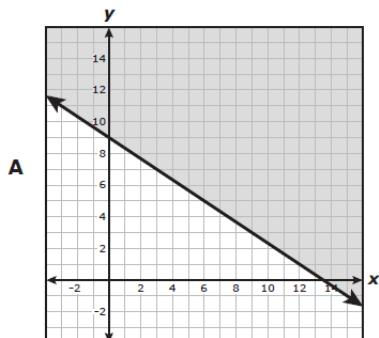
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2018 – Q19

- 19 Which graph best represents the solution set of $-4x \leq 6y - 54$?



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	55	
B	8	
C	11	
D	26	

Error Analysis

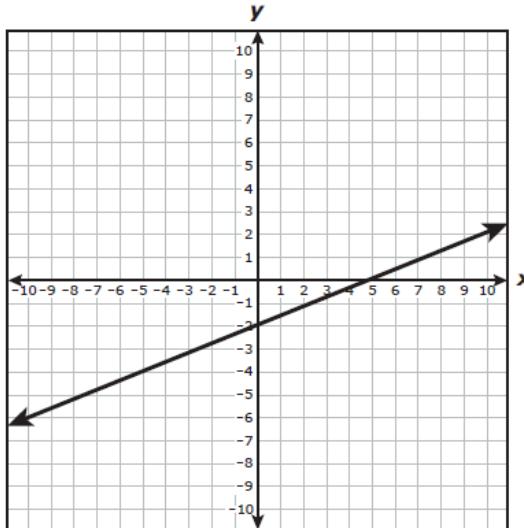
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2018 – Q45

45 The graph of $2x - 5y = 10$ is shown on the grid.



Which ordered pair is in the solution set of $2x - 5y \geq 10$?

- A (0, 5)
- B (5, 0)
- C (-2, 5)
- D (-5, 2)

*Correct Answer (B)

Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis		
Item	State	Local
A	12	
B*	60	
C	21	
D	7	

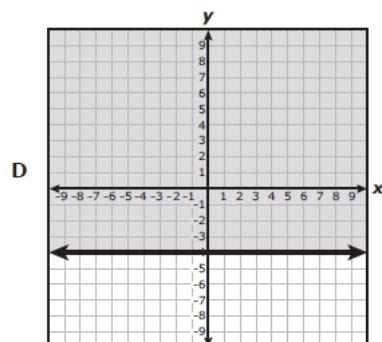
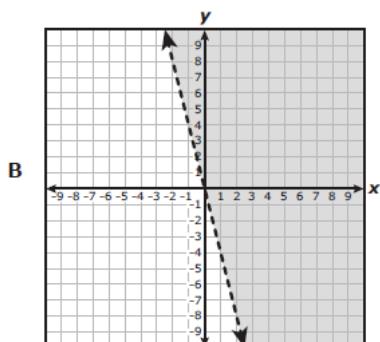
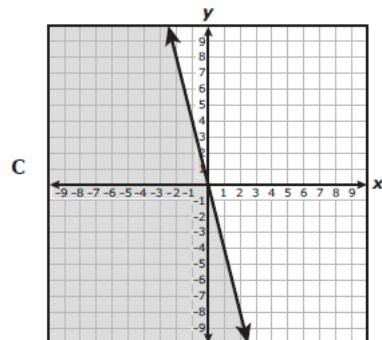
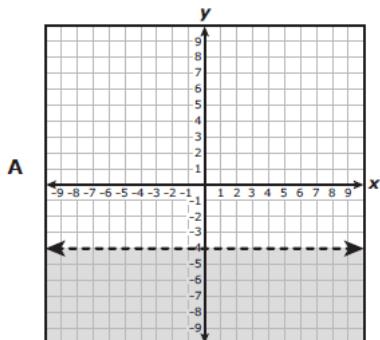
Error Analysis	
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early

Learning from Mistakes Instructional Implications	

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2017 – Q3

- 3 Which graph best represents the solution set of $y \leq -4x$?



*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	10	
B	7	
C*	73	
D	11	

Error Analysis

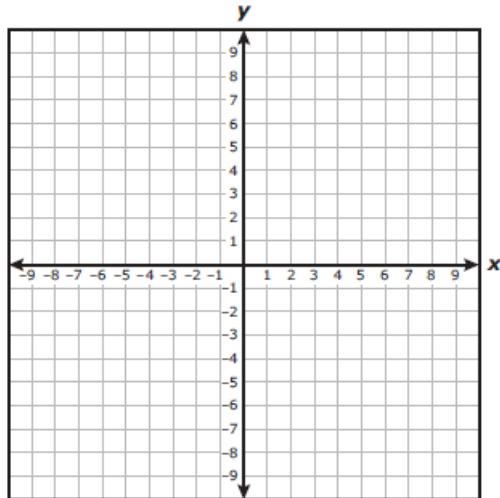
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2017 – Q37

37 Which ordered pair is in the solution set of $y \geq \frac{1}{3}x + 4$?



- A** $(-6, 1)$
- B** $(-1, 6)$
- C** $(6, -1)$
- D** $(1, -6)$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	21	
B*	55	
C	16	
D	8	

Error Analysis

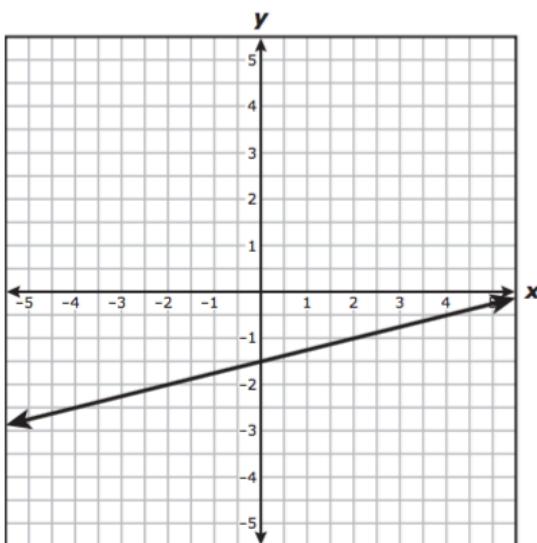
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2016 – Q7

- 7 The graph of $0.5x - 2y = 3$ is shown on the grid.



Which ordered pair is in the solution set of $0.5x - 2y \geq 3$?

- A $(-2, 0.5)$
- B $(2, 1)$
- C $(2, -1)$
- D $(-2, -0.5)$

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A	13	
B	8	
C*	68	
D	11	

Error Analysis

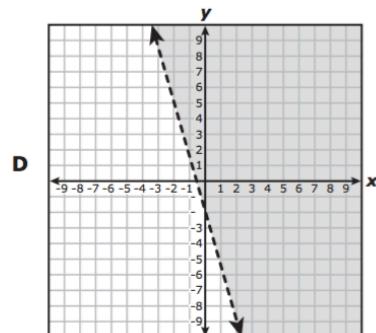
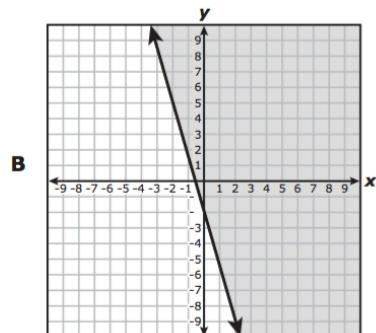
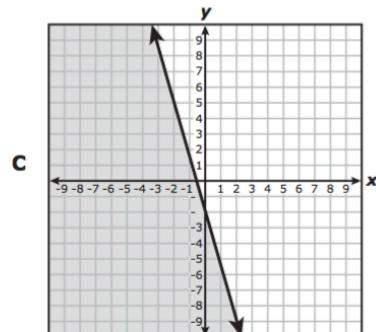
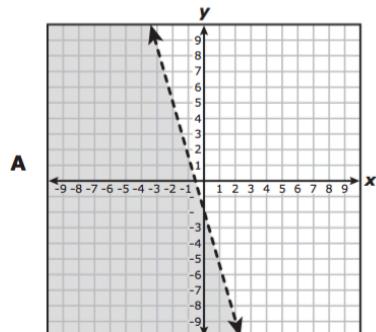
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane

2016 – Q47

- 47 Which graph represents the solution set of $y \geq -\frac{7}{2}x - 2$?



*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Readiness
Process	A.1(B), A.1(D), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A	10	
B*	57	
C	20	
D	13	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

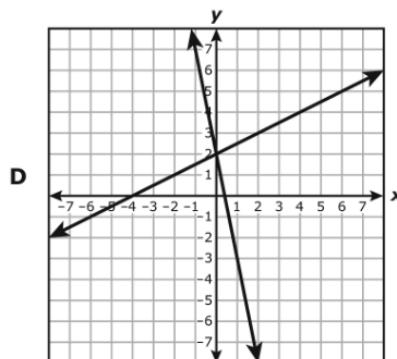
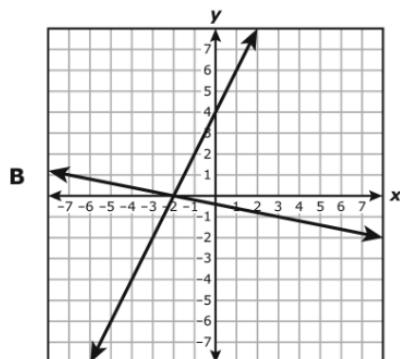
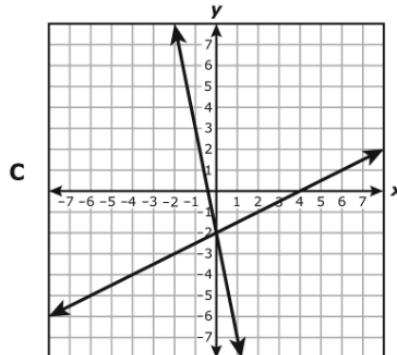
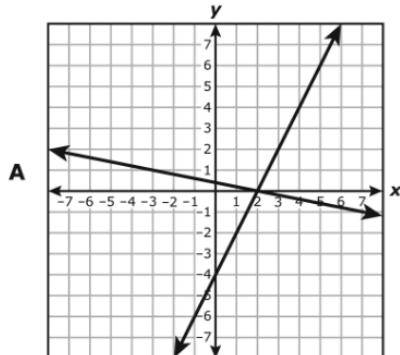
Learning from Mistakes
Instructional Implications

A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist

2019 – Q49

Which graph best represents this system of equations and its solution?

$$\begin{aligned} 8x - 4y &= -16 \\ 3x + 15y &= -6 \end{aligned}$$



*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	12	
B*	67	
C	13	
D	8	

Error Analysis

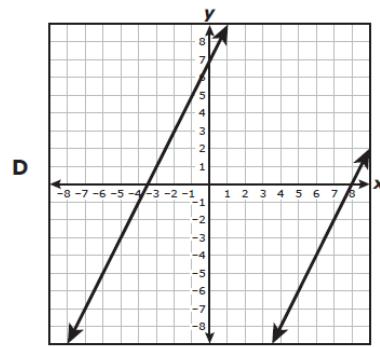
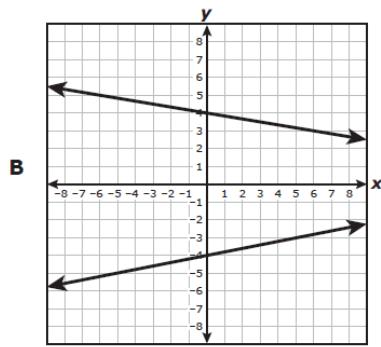
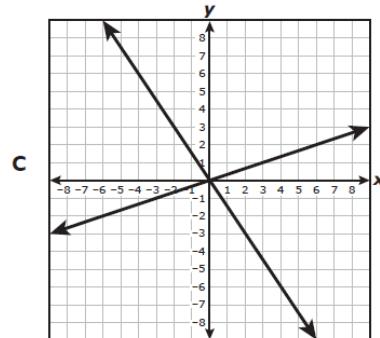
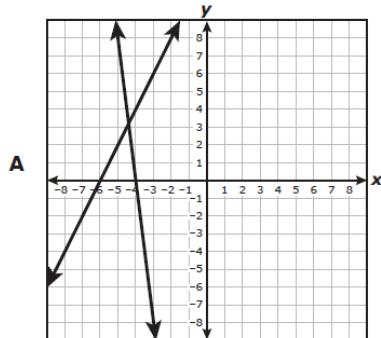
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist

2018 – Q3

- 3 Which graph best represents a system of equations that has no solution?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Supporting
Process	
Stimulus	

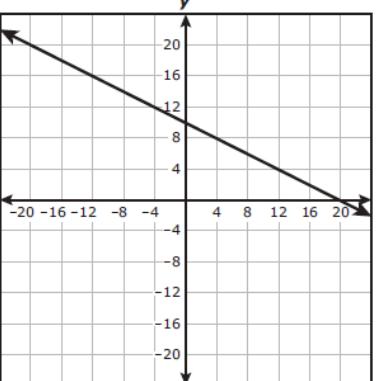
Data Analysis

Item	State	Local
A	5	
B	13	
C	9	
D*	72	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

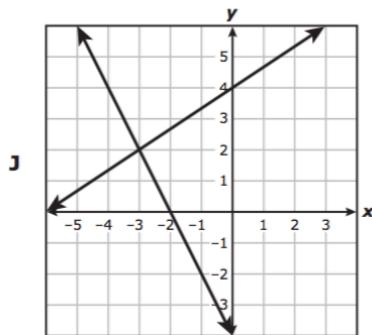
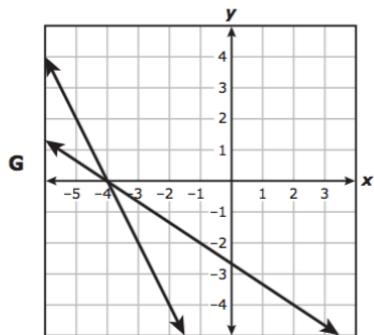
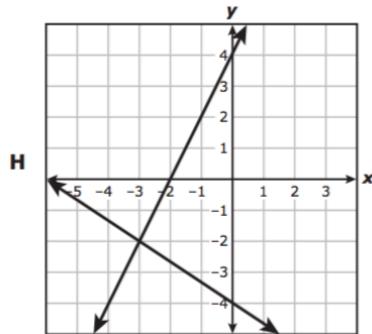
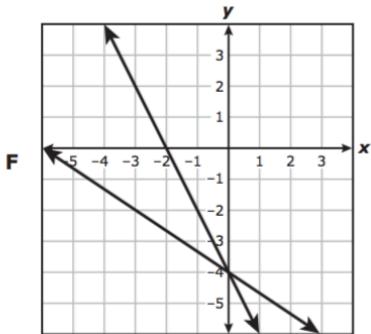
<p>A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist</p>	<p>Analysis of Assessed Standards</p>															
<p>! 2017 – Q29</p>	<p>Cluster Systems of Equations and Inequalities</p>															
<p>29 The line graphed on the grid represents the first of two equations in a system of linear equations.</p>	<p>Subcluster Systems of Equations</p>															
	<p>Content Supporting</p>															
	<p>Process</p>															
	<p>Stimulus</p>															
	<p>Data Analysis</p> <table border="1" data-bbox="1158 443 1485 633"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>11</td> <td></td> </tr> <tr> <td>B</td> <td>13</td> <td></td> </tr> <tr> <td>C*</td> <td>47</td> <td></td> </tr> <tr> <td>D</td> <td>29</td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>	Item	State	Local	A	11		B	13		C*	47		D	29	
Item	State	Local														
A	11															
B	13															
C*	47															
D	29															
<p>If the graph of the second equation in the system passes through the points $(-12, 20)$ and $(4, 12)$, which statement is true?</p> <p>A The only solution to the system is $(10, 5)$. B The only solution to the system is $(0, 14)$. C The system has no solution. D The system has an infinite number of solutions.</p> <p>*Correct Answer (C)</p>	<p>Learning from Mistakes Instructional Implications</p>															

A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist

2016 – Q32

32 Which graph can be used to find the solution to the system of equations below?

$$\begin{aligned}2x + y &= -4 \\-3y &= 2x + 12\end{aligned}$$



*Correct Answer (F)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Supporting
Process	A.1(B), A.1(D), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
F*	61	
G	11	
H	15	
J	12	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

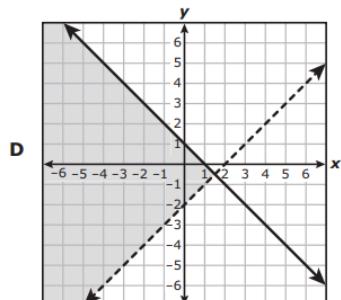
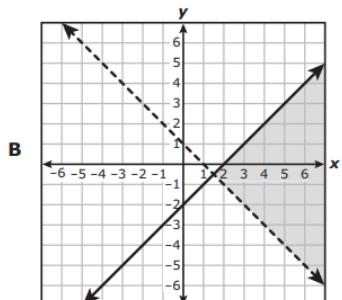
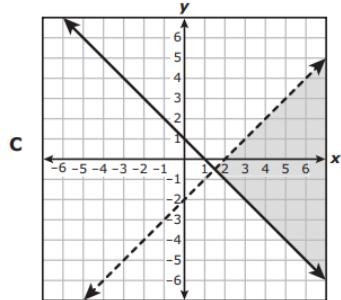
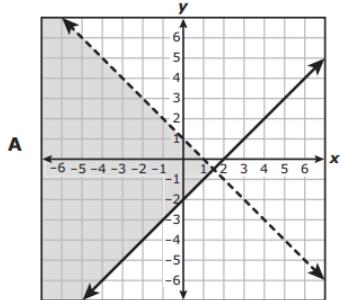
Learning from Mistakes Instructional Implications

A.3(H) graph the solution set of systems of two linear inequalities in two variables on the coordinate plane

! 2021 – Q13

13 Which graph best represents the solution set to this system of inequalities?

$$\begin{aligned}x + y &< 1 \\x - y &\leq 2\end{aligned}$$



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Inequalities
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	39	
B	19	
C	21	
D	20	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.5(B) solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides		Analysis of Assessed Standards			
2018 – Q30		Cluster	Systems of Equations and Inequalities		
		Subcluster	Inequalities		
		Content	Supporting		
		Process			
		Stimulus			
Data Analysis					
Item	State	Local			
F	14				
G	15				
H*	61				
J	11				
Error Analysis					
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early				
Learning from Mistakes Instructional Implications					

*Correct Answer (H)

A.5(B) solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides	Analysis of Assessed Standards	
! 2016 – Q33	Cluster	Systems of Equations and Inequalities
33 Which inequality describes all the solutions to $5(3 - x) < -2x + 6$?	Subcluster	Inequalities
A $x < -9$	Content	Supporting
B $x > 3$	Process	A.1(B), A.1(F)
C $x < -3$	Stimulus	
D $x > 7$		
	Data Analysis	
	Item	State
	A	13
	B*	54
	C	18
	D	15
	Error Analysis	
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
*Correct Answer (B)	Learning from Mistakes Instructional Implications	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards	
! 2021 – Q50		Cluster	Systems of Equations and Inequalities
50 What is the value of y in the solution to this system of equations?		Subcluster	Systems of Equations
	$\begin{aligned} 6y + x &= -59 \\ x &= -2y + 9 \end{aligned}$	Content	Readiness
F 8.5		Process	
G -17		Stimulus	
H 43		Data Analysis	
J -12.5		Item	State
		F	24
		G*	42
		H	13
		J	21
* Correct Answer (G)		Error Analysis	
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		Learning from Mistakes Instructional Implications	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards	
2019 – Q25	Cluster	Systems of Equations and Inequalities
A college student completed some courses worth 3 credits and some courses worth 4 credits. The student earned a total of 59 credits after completing 18 courses.	Subcluster	Systems of Equations
How many courses worth 3 credits did the student complete?	Content	Readiness
A 13	Process	
B 5	Stimulus	
C 20	Data Analysis	
D 39	Item	State
	A*	65
	B	16
	C	13
	D	5
*Correct Answer (A)	Error Analysis	
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards	
2019 – Q37	Cluster	Systems of Equations and Inequalities
What is the value of x in the solution to this system of equations?	Subcluster	Systems of Equations
$\begin{aligned} 3x - 5y &= 22 \\ y &= -5x + 32 \end{aligned}$	Content	Readiness
A -6.5	Process	
B 0.5	Stimulus	
C 6.5	Data Analysis	
D -0.5	Item	State
	A	12
	B	11
	C*	68
	D	9
*Correct Answer (C)	Error Analysis	
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	Learning from Mistakes Instructional Implications	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards		
!	2018 – Q15	Cluster	Systems of Equations and Inequalities
15	Two customers went to a post office to buy postcards and large envelopes. Each postcard costs the same amount, and each large envelope costs the same amount.	Subcluster	Systems of Equations
	<ul style="list-style-type: none"> The first customer paid \$12 for 14 postcards and 5 large envelopes. The second customer paid \$24.80 for 10 postcards and 15 large envelopes. <p>What was the cost in dollars of each large envelope?</p>	Content	Readiness
	<p>A \$1.42 B \$0.35 C \$1.15 D \$0.63</p>	Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	A*	47	
	B	9	
	C	26	
	D	17	
Error Analysis			
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

*Correct Answer (A)

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards		
2018 – Q52	Cluster	Systems of Equations and Inequalities	
52	What is the x -value of the solution to this system of equations?	Subcluster	Systems of Equations
	$\begin{aligned}x &= 2y - 4 \\ 7x + 5y &= -66\end{aligned}$	Content	Readiness
	$x = 2y - 4$	Process	
	$7x + 5y = -66$	Stimulus	
Data Analysis			
	Item	State	Local
	F	17	
	G	15	
	H*	61	
	J	7	
Error Analysis			
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

*Correct Answer (H)

<p>A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems</p> <p>2017 – Q18</p> <p>18 A bus travels two different routes: the Green Route and the Blue Route. The routes are different lengths.</p> <ul style="list-style-type: none"> On Monday the bus traveled the Green Route 6 times and the Blue Route 5 times, traveling a total of 52 miles. On Tuesday the bus traveled the Green Route 12 times and the Blue Route 13 times, traveling a total of 119 miles. <p>What is the length of the Green Route in miles?</p> <p>F 4.4 mi G 4.5 mi H 6.4 mi J 6.8 mi</p>	Analysis of Assessed Standards	
	Cluster	Systems of Equations and Inequalities
	Subcluster	Systems of Equations
	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	F	16
	G*	53
	H	19
	J	12
	Error Analysis	
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

*Correct Answer (G)

<p>A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems</p> <p>2017 – Q54</p> <p>54 What is the value of x in the solution to this system of equations?</p> $y + 2x = -1$ $y = \frac{1}{2}x + 4$ <p>F $\frac{6}{5}$ G -2 H $-\frac{10}{3}$ J 3</p>	Analysis of Assessed Standards	
	Cluster	Systems of Equations and Inequalities
	Subcluster	Systems of Equations
	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	F	11
	G*	63
	H	10
	J	16
	Error Analysis	
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

*Correct Answer (G)

<p>A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems</p> <p>2016 – Q20</p> <p>20 A manager purchased a total of 21 coffee mugs and key chains. Each coffee mug cost \$8.50, and each key chain cost \$2.75. If the manager spent a total of \$132.50, how many coffee mugs did the manager purchase?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Analysis of Assessed Standards																			
	Cluster	Systems of Equations and Inequalities																		
	Subcluster	Systems of Equations																		
	Content	Readiness																		
	Process	A.1(A), A.1(B), A.1(F)																		
	Stimulus																			
Data Analysis																				
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Item	State	Local																		
13	47*																			
	52																			
Error Analysis																				
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																				
Learning from Mistakes Instructional Implications																				
<p>*Correct Answer (13)</p>																				

<p>A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems</p> <p>2016 – Q39</p> <p>39 What is the solution to this system of equations?</p> $10x - y = 53$ $y = \frac{-13x + 92}{2}$ <p>A (6, 7) B (2, 33) C (7, 6) D (33, 2)</p>	Analysis of Assessed Standards																
	Cluster	Systems of Equations and Inequalities															
	Subcluster	Systems of Equations															
	Content	Readiness															
	Process	A.1(B), A.1(F)															
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Item	State	Local															
A*	59																
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D	8																
Error Analysis																	
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Learning from Mistakes Instructional Implications																	
<p>*Correct Answer (A)</p>																	

Simplifying Expressions

A.10 Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions.

A.11 Number and algebraic methods. The student applies the mathematical process standards and algebraic methods to rewrite algebraic expressions into equivalent forms.

A.10(A) add and subtract polynomials of degree one and degree two		Analysis of Assessed Standards	
2019 – Q16		Cluster	Simplifying Expressions
Which expression is equivalent to $(10 + 7r - r^2) + (-6r^2 - 18 + 5r)$?		Subcluster	Polynomials
F $-7r^2 + 2r + 8$		Content	Supporting
G $7r^2 + 12r + 8$		Process	
H $-7r^2 + 12r - 8$		Stimulus	
J $7r^2 + 2r - 8$		Data Analysis	
*Correct Answer (H)		Item	State
		F	6
		G	11
		H*	75
		J	8
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.10(A) add and subtract polynomials of degree one and degree two		Analysis of Assessed Standards	
!	2017 – Q13	Cluster	Simplifying Expressions
13	A shoe company is going to close one of its two stores and combine all the inventory from both stores. These polynomials represent the inventory in each store:	Subcluster	Polynomials
	Store A: $\frac{1}{2}g^2 + \frac{7}{2}$	Content	Supporting
	Store B: $3g^2 - \frac{4}{5}g + \frac{1}{4}$	Process	
	Which expression represents the combined inventory of the two stores?	Stimulus	
A	$\frac{7}{2}g^2 - \frac{4}{5}g + \frac{15}{4}$	Data Analysis	
B	$\frac{7}{2}g^2 - \frac{4}{5}g + \frac{4}{3}$	Item	State
C	$\frac{7}{2}g^2 + \frac{4}{5}g + \frac{15}{4}$	A*	59
D	$\frac{7}{2}g^2 + \frac{4}{5}g + \frac{4}{3}$	B	17
		C	15
		D	8
*Correct Answer (A)		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.10(A) add and subtract polynomials of degree one and degree two		Analysis of Assessed Standards	
2016 – Q2		Cluster	Simplifying Expressions
2	Which expression is equivalent to $2x^2 + (4x - 6x^2) + 9 - (6x + 3)$?	Subcluster	Polynomials
F	$-4x^2 - 2x + 12$	Content	Supporting
G	$-4x^2 - 2x + 6$	Process	A.1(B), A.1(F)
H	$-10x + 6$	Stimulus	
J	$18x + 12$	Data Analysis	
		Item	State
		F	23
		G*	65
		H	6
		J	5
*Correct Answer (G)		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.10(B) multiply polynomials of degree one and degree two		Analysis of Assessed Standards	
2021 – Q29		Cluster	Simplifying Expressions
		Subcluster	Polynomials
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	A	18	
	B	15	
	C*	58	
	D	9	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (C)			

A.10(B) multiply polynomials of degree one and degree two		Analysis of Assessed Standards	
! 2018 – Q36		Cluster	Simplifying Expressions
		Subcluster	Polynomials
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	F*	59	
	G	11	
	H	18	
	J	11	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (F)			

A.10(B) multiply polynomials of degree one and degree two	Analysis of Assessed Standards		
! 2016 – Q54	Cluster	Simplifying Expressions	
54 The diagram shows the floor plan of a storage facility. All dimensions are given in feet.	Subcluster	Polynomials	
	Content	Supporting	
	Process	A.1(A), A.1(B), A.1(E), A.1(F)	
	Stimulus		
	Data Analysis		
	Item	State	Local
F	16		
G*	65		
H	9		
J	10		
*Correct Answer (G)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property		Analysis of Assessed Standards	
2021 – Q48		Cluster	Simplifying Expressions
48 Which expression is equivalent to $35m^2 - 63$?		Subcluster	Polynomials
F $7(5m^2 - 9)$		Content	Supporting
G $-7(5m^2 + 9)$		Process	
H $7m(5m - 9)$		Stimulus	
J $-7m(5m + 9)$		Data Analysis	
		Item	State
		F*	64
		G	12
		H	18
		J	6
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (F)			

A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property		Analysis of Assessed Standards	
2019 – Q36		Cluster	Simplifying Expressions
Which expression is equivalent to $210d^2 - 63d$?		Subcluster	Polynomials
F $21d(10d - 3)$		Content	Supporting
G $21d(10d + 3)$		Process	
H $21(10d + 3)$		Stimulus	
J $21(10d - 3)$		Data Analysis	
		Item	State
		F*	71
		G	11
		H	9
		J	9
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (F)			

<p>A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property</p>	<p>Analysis of Assessed Standards</p>										
<p>2018 – Q2</p>	<table border="1"> <tr> <td>Cluster</td><td>Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td>Polynomials</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Simplifying Expressions	Subcluster	Polynomials	Content	Supporting	Process		Stimulus	
Cluster	Simplifying Expressions										
Subcluster	Polynomials										
Content	Supporting										
Process											
Stimulus											
<p>2 Which expression is equivalent to $-28x^2 + 35x$?</p>	<table border="1"> <tr> <td>Data Analysis</td></tr> </table>	Data Analysis									
Data Analysis											
<p>F $7x(4x + 5)$</p>	<table border="1"> <tr> <td>Item</td><td>State</td><td>Local</td></tr> </table>	Item	State	Local							
Item	State	Local									
<p>G $-7x(4x - 5)$</p>	<table border="1"> <tr> <td>F</td><td>7</td><td></td></tr> </table>	F	7								
F	7										
<p>H $7x(4x - 5)$</p>	<table border="1"> <tr> <td>G*</td><td>72</td><td></td></tr> </table>	G*	72								
G*	72										
<p>J $-7x(4x + 5)$</p>	<table border="1"> <tr> <td>H</td><td>6</td><td></td></tr> </table>	H	6								
H	6										
<p></p>	<table border="1"> <tr> <td>J</td><td>14</td><td></td></tr> </table>	J	14								
J	14										
<p></p>	<p>Error Analysis</p>										
<p><input type="checkbox"/> Guessing</p>	<p><input type="checkbox"/> Mixed Up Concepts</p>										
<p><input type="checkbox"/> Careless Error</p>	<p><input type="checkbox"/> Stopped Too Early</p>										
<p></p>	<p>Learning from Mistakes Instructional Implications</p>										
<p>*Correct Answer (G)</p>	<p></p>										

<p>A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property</p>	<p>Analysis of Assessed Standards</p>										
<p>! 2016 – Q15</p>	<table border="1"> <tr> <td>Cluster</td><td>Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td>Polynomials</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td>A.1(B), A.1(F)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Simplifying Expressions	Subcluster	Polynomials	Content	Supporting	Process	A.1(B), A.1(F)	Stimulus	
Cluster	Simplifying Expressions										
Subcluster	Polynomials										
Content	Supporting										
Process	A.1(B), A.1(F)										
Stimulus											
<p>15 Which expression is equivalent to $9q^2 - \frac{2}{3}(3q - 7) + 5q^2$?</p>	<table border="1"> <tr> <td>Data Analysis</td></tr> </table>	Data Analysis									
Data Analysis											
<p>A $9q^2 - \frac{5}{3}q - 3$</p>	<table border="1"> <tr> <td>Item</td><td>State</td><td>Local</td></tr> </table>	Item	State	Local							
Item	State	Local									
<p>B $9q^2 - 2q - 3$</p>	<table border="1"> <tr> <td>A</td><td>7</td><td></td></tr> </table>	A	7								
A	7										
<p>C $14q^2 - 2q + \frac{14}{3}$</p>	<table border="1"> <tr> <td>B</td><td>10</td><td></td></tr> </table>	B	10								
B	10										
<p>D $14q^2 - \frac{5}{3}q - \frac{14}{3}$</p>	<table border="1"> <tr> <td>C*</td><td>73</td><td></td></tr> </table>	C*	73								
C*	73										
<p></p>	<table border="1"> <tr> <td>D</td><td>10</td><td></td></tr> </table>	D	10								
D	10										
<p></p>	<p>Error Analysis</p>										
<p><input type="checkbox"/> Guessing</p>	<p><input type="checkbox"/> Mixed Up Concepts</p>										
<p><input type="checkbox"/> Careless Error</p>	<p><input type="checkbox"/> Stopped Too Early</p>										
<p></p>	<p>Learning from Mistakes Instructional Implications</p>										
<p>*Correct Answer (C)</p>	<p></p>										

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two		Analysis of Assessed Standards			
2021 – Q18		Cluster	Simplifying Expressions		
18 Which expression is a factored form of $2x^2 - 25x + 63$?		Subcluster	Polynomials		
F $(x + 9)(2x + 7)$		Content	Readiness		
G $(x - 9)(2x - 7)$		Process			
H $(x + 7)(2x + 9)$		Stimulus			
J $(x - 7)(2x - 9)$		Data Analysis			
		Item	State		
		F	16		
		G*	54		
		H	19		
		J	11		
Error Analysis					
<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications					

*Correct Answer (G)

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2021 – Q32	Cluster	Simplifying Expressions	
32 Which expression is equivalent to $16w^2 + 24w + 9$?	Subcluster	Polynomials	
F $(4w + 3)^2$	Content	Readiness	
G $(4w - 3)^2$	Process		
H $(8w + 3)^2$	Stimulus		
J $(8w - 3)^2$	Data Analysis		
	Item	State	Local
	F*	56	
	G	10	
	H	28	
	J	6	
*Correct Answer (F)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2021 – Q45	Cluster	Simplifying Expressions	
45 Which expression is equivalent to $x^2 + 10x + 24$?	Subcluster	Polynomials	
A $(x + 1)(x + 24)$	Content	Readiness	
B $(x + 2)(x + 12)$	Process		
C $(x + 3)(x + 8)$	Stimulus		
D $(x + 4)(x + 6)$	Data Analysis		
	Item	State	Local
	A	10	
	B	19	
	C	10	
	D*	60	
*Correct Answer (D)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards															
2019 – Q4	Cluster Simplifying Expressions Subcluster Polynomials Content Readiness Process Stimulus															
Which function is equivalent to $g(x) = x^2 + 15x - 54$?	Data Analysis															
F $g(x) = (x + 9)(x - 6)$ G $g(x) = (x + 18)(x - 3)$	<table border="1" data-bbox="1114 418 1501 644"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>7</td> <td></td> </tr> <tr> <td>G*</td> <td>77</td> <td></td> </tr> <tr> <td>H</td> <td>8</td> <td></td> </tr> <tr> <td>J</td> <td>8</td> <td></td> </tr> </tbody> </table>	Item	State	Local	F	7		G*	77		H	8		J	8	
Item	State	Local														
F	7															
G*	77															
H	8															
J	8															
H $g(x) = (x - 9)(x + 6)$ J $g(x) = (x - 18)(x + 3)$	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early															
	Learning from Mistakes Instructional Implications															
*Correct Answer (G)																

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards															
2019 – Q29	Cluster Simplifying Expressions Subcluster Polynomials Content Readiness Process Stimulus															
Which expression is equivalent to $24x^2 - 22x + 5$?	Data Analysis															
A $(12x + 5)(2x + 1)$ B $(8x - 5)(3x - 1)$	<table border="1" data-bbox="1114 1387 1501 1613"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>14</td> <td></td> </tr> <tr> <td>B</td> <td>10</td> <td></td> </tr> <tr> <td>C*</td> <td>71</td> <td></td> </tr> <tr> <td>D</td> <td>5</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	14		B	10		C*	71		D	5	
Item	State	Local														
A	14															
B	10															
C*	71															
D	5															
C $(12x - 5)(2x - 1)$ D $(8x + 5)(3x + 1)$	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early															
	Learning from Mistakes Instructional Implications															
*Correct Answer (C)																

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2019 – Q48	Cluster	Simplifying Expressions	
Which function is equivalent to $q(x) = 9x^2 - 24x + 16$?	Subcluster	Polynomials	
F $q(x) = (9x - 4)(x - 4)$	Content	Readiness	
G $q(x) = (3x + 4)^2$	Process		
H $q(x) = (9x + 4)(x + 4)$	Stimulus		
J $q(x) = (3x - 4)^2$	Data Analysis		
	Item	State	Local
F	10		
G	11		
H	12		
J*	67		
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
* Correct Answer (J)			

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2018 – Q11	Cluster	Simplifying Expressions	
11 Which expression is equivalent to $x^2 - 17x - 60$?	Subcluster	Polynomials	
A $(x - 20)(x + 3)$	Content	Readiness	
B $(x - 5)(x - 12)$	Process		
C $(x - 20)(x - 3)$	Stimulus		
D $(x + 5)(x - 12)$	Data Analysis		
	Item	State	Local
A*	74		
B	10		
C	9		
D	7		
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
* Correct Answer (A)	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
! 2018 – Q31	Cluster	Simplifying Expressions	
31 Which expression is a factor of $21x^2 + 13x - 20$?	Subcluster	Polynomials	
A $3x - 4$	Content	Readiness	
B $7x - 5$	Process		
C $7x + 4$	Stimulus		
D $3x + 5$	Data Analysis		
*Correct Answer (B)	Item	State	Local
	A	18	
	B*	47	
	C	21	
	D	14	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2018 – Q44	Cluster	Simplifying Expressions	
44 Which expression is a factor of $9r^2 - 4r + 1$?	Subcluster	Polynomials	
F $3r - 1$	Content	Readiness	
G $r - 1$	Process		
H $9r - 1$	Stimulus		
J There are no real factors.	Data Analysis		
*Correct Answer (J)	Item	State	Local
	F	16	
	G	8	
	H	11	
	J*	65	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2017 – Q17	Cluster	Simplifying Expressions	
17 Which expression is equivalent to $6x^2 + 13x + 5$?	Subcluster	Polynomials	
A $(2x + 5)(3x - 1)$	Content	Readiness	
B $(2x - 5)(3x + 1)$	Process		
C $(2x + 1)(3x + 5)$	Stimulus		
D $(2x - 1)(3x - 5)$	Data Analysis		
	Item	State	Local
	A	9	
	B	7	
	C*	78	
	D	6	
*Correct Answer (C)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2017 – Q28	Cluster	Simplifying Expressions	
28 Which expression is equivalent to $m^2 - 13m - 30$?	Subcluster	Polynomials	
F $(m - 15)(m + 2)$	Content	Readiness	
G $(m - 10)(m - 3)$	Process		
H $(m + 15)(m - 2)$	Stimulus		
J $(m + 10)(m + 3)$	Data Analysis		
	Item	State	Local
	F*	67	
	G	13	
	H	13	
	J	7	
*Correct Answer (F)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2017 – Q41	Cluster	Simplifying Expressions	
	Subcluster	Polynomials	
	Content	Readiness	
	Process		
	Stimulus		
Data Analysis			
	Item	State	Local
	A*	51	
	B	26	
	C	12	
	D	11	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (A)			

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two	Analysis of Assessed Standards		
2016 – Q6	Cluster	Simplifying Expressions	
	Subcluster	Polynomials	
	Content	Readiness	
	Process	A.1(B), A.1(F)	
	Stimulus		
Data Analysis			
	Item	State	Local
	F	7	
	G	5	
	H	17	
	J*	70	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (J)			

A.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two

2016 – Q49

49 Which expression is a factor of $x^2 - 5x - 6$?

- A** $x - 6$
- B** $x - 2$
- C** $x - 3$
- D** $x - 1$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	A.1(B), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A*	47	
B	14	
C	17	
D	21	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

A.10(F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial		Analysis of Assessed Standards		
2021 – Q40		Cluster	Simplifying Expressions	
40 Which expression is equivalent to $9n^2 - 25$?		Subcluster	Polynomials	
F $(3n - 5)^2$		Content	Supporting	
G $(3n + 5)(3n - 5)$		Process		
H $9(n - 4)^2$		Stimulus		
J $9(n + 4)(n - 4)$		Data Analysis		
		Item	State	Local
		F	24	
		G*	56	
		H	11	
		J	8	
*Correct Answer (G)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

A.10(F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial		Analysis of Assessed Standards		
2016 – Q25		Cluster	Simplifying Expressions	
25 Which expression is a factor of $36x^2 - 49$?		Subcluster	Polynomials	
A $18x - 7$		Content	Supporting	
B $6x - 49$		Process	A.1(B), A.1(C), A.1(F)	
C $18x - 49$		Stimulus		
D $6x - 7$		Data Analysis		
		Item	State	Local
		A	16	
		B	13	
		C	13	
		D*	58	
*Correct Answer (D)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

A.11(A) simplify numerical radical expressions involving square roots		Analysis of Assessed Standards	
2021 – Q1		Cluster	Simplifying Expressions
		Subcluster	Radicals
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
		Item	State
		A	7
		B*	75
		C	6
		D	12
Error Analysis			
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications			
*Correct Answer (B)			

A.11(A) simplify numerical radical expressions involving square roots		Analysis of Assessed Standards	
2019 – Q53		Cluster	Simplifying Expressions
		Subcluster	Radicals
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
		Item	State
		A	3
		B	7
		C	6
		D*	83
Error Analysis			
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications			
*Correct Answer (D)			

A.11(A) simplify numerical radical expressions involving square roots	Analysis of Assessed Standards		
2018 – Q53	Cluster	Simplifying Expressions	
53 Which expression is equivalent to $\sqrt{96}$?	Subcluster	Radicals	
A 24	Content	Supporting	
B $8\sqrt{6}$	Process		
C 48	Stimulus		
D $4\sqrt{6}$	Data Analysis		
	Item	State	Local
	A	4	
	B	8	
	C	7	
*	D*	80	
*Correct Answer (D)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.11(A) simplify numerical radical expressions involving square roots	Analysis of Assessed Standards		
2017 – Q1	Cluster	Simplifying Expressions	
1 Which expression is equivalent to $\sqrt{147}$?	Subcluster	Radicals	
A $3\sqrt{7}$	Content	Supporting	
B $7\sqrt{3}$	Process		
C $21\sqrt{7}$	Stimulus		
D $49\sqrt{3}$	Data Analysis		
	Item	State	Local
	A	5	
	B*	79	
	C	10	
	D	6	
*Correct Answer (B)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents		Analysis of Assessed Standards		
2021 – Q8		Cluster	Simplifying Expressions	
8 Which expression is equivalent to $(x^9yz^4)^5$?		Subcluster	Exponents	
F $x^{14}y^6z^9$		Content	Readiness	
G $x^{14}y^5z^9$		Process		
H $x^{45}yz^{20}$		Stimulus		
J $x^{45}y^5z^{20}$		Data Analysis		
		Item	State	Local
		F	11	
		G	16	
		H	26	
		J*	47	
*Correct Answer (J)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents		Analysis of Assessed Standards		
2021 – Q26		Cluster	Simplifying Expressions	
26 Which expression is equivalent to $\frac{36x^4y^5}{(3xy)^2}$ for all values of x and y where the expression is defined?		Subcluster	Exponents	
F $12x^3y^4$		Content	Readiness	
G $27x^2y^3$		Process		
H $4x^2y^3$		Stimulus		
J $6x^3y^4$		Data Analysis		
		Item	State	Local
		F	33	
		G	15	
		H*	39	
		J	13	
*Correct Answer (H)		Error Analysis		
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications		

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>2021 – Q35</p> <p>35 Which expression is equivalent to $(15a^0b^2c^{34})(3a^{16}b^{-29}c^0)$ for all values of a, b, and c where the expression is defined?</p> <p>A $\frac{18}{b^{58}}$</p> <p>B $\frac{45}{b^{58}}$</p> <p>C $\frac{18a^{16}c^{34}}{b^{27}}$</p> <p>D $\frac{45a^{16}c^{34}}{b^{27}}$</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td>Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td>Exponents</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <th colspan="2">Data Analysis</th></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>7</td><td></td></tr> <tr> <td>B</td><td>16</td><td></td></tr> <tr> <td>C</td><td>32</td><td></td></tr> <tr> <td>D*</td><td>45</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th></tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Simplifying Expressions	Subcluster	Exponents	Content	Readiness	Process		Stimulus		Data Analysis		Item	State	Local	A	7		B	16		C	32		D*	45		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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Learning from Mistakes Instructional Implications																																								

*Correct Answer (D)

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>2019 – Q13</p> <p>Which expression is equivalent to $\frac{45m^{-6}p^2v^{12}}{15m^{-2}p^8v^{-4}}$ for all values of m, p, and v where the expression is defined?</p> <p>A $\frac{3v^8}{m^8p^6}$</p> <p>B $\frac{3v^{16}}{m^4p^6}$</p> <p>C $\frac{30m^3}{p^4v^3}$</p> <p>D $\frac{30v^3}{m^3p^4}$</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td>Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td>Exponents</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <th colspan="2">Data Analysis</th> </tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>25</td><td></td></tr> <tr> <td>B*</td><td>54</td><td></td></tr> <tr> <td>C</td><td>13</td><td></td></tr> <tr> <td>D</td><td>8</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th> </tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th> </tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Simplifying Expressions	Subcluster	Exponents	Content	Readiness	Process		Stimulus		Data Analysis		Item	State	Local	A	25		B*	54		C	13		D	8		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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Learning from Mistakes Instructional Implications																																								

*Correct Answer (B)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
2019 – Q24 Which expression is equivalent to $(xy^{-6})^2$ for all values of x and y where the expression is defined? F xy^{36} G xy^{36} H x^2y^{-12} J x^2y^{12}	Cluster Subcluster Content Process Stimulus	Simplifying Expressions Exponents Readiness 	
		Data Analysis	
	Item F G H* J	State 14 11 67 8	Local
		Error Analysis	
		<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications	
*Correct Answer (H)			

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
2019 – Q34 The expression $(x^{22})(x^7)^3$ is equivalent to x^p . What is the value of p ? Record your answer and fill in the bubbles on your answer document.	Cluster Subcluster Content Process Stimulus	Simplifying Expressions Exponents Readiness 	
		Data Analysis	
	Item 43	State 36*	Local
		 62	
		Error Analysis	
		<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	
		Learning from Mistakes Instructional Implications	
*Correct Answer (43)			

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents		Analysis of Assessed Standards	
!	2018 – Q6	Cluster	Simplifying Expressions
6	Which expression is equivalent to $(144k^2r^{14})^{\frac{1}{2}}$ for all positive values of k and r ?	Subcluster	Radicals
F	$12kr^7$	Content	Readiness
G	$72k^2r^{14}$	Process	
H	$144kr^7$	Stimulus	
J	$12k^2r^{14}$	Data Analysis	
		Item	State
		F*	49
		G	23
		H	16
		J	12
Error Analysis			
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications			
*Correct Answer (F)			

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents		Analysis of Assessed Standards	
!	2018 – Q28	Cluster	Simplifying Expressions
28	Which expression is equivalent to $\frac{(q^4)^{-3}}{q^{-15}}$ for all values of q where the expression is defined?	Subcluster	Exponents
F	q^{27}	Content	Readiness
G	$\frac{1}{q^{27}}$	Process	
H	q^3	Stimulus	
J	$\frac{1}{q^3}$	Data Analysis	
		Item	State
		F	18
		G	21
		H*	45
		J	16
Error Analysis			
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications			
*Correct Answer (H)			

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>2018 – Q49</p> <p>49 Which expression is equivalent to $\frac{10q^5w^7}{2w^3} \cdot \frac{4(q^6)^2}{w^{-5}}$ for all values of q and w where the expression is defined?</p> <p>A $\frac{32q^7}{w}$</p> <p>B $20q^{17}w^9$</p> <p>C $32q^7w^9$</p> <p>D $20qw$</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td colspan="2">Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td colspan="2">Exponents</td></tr> <tr> <td>Content</td><td colspan="2">Readiness</td></tr> <tr> <td>Process</td><td colspan="2"></td></tr> <tr> <td>Stimulus</td><td colspan="2"></td></tr> <tr> <th colspan="3">Data Analysis</th></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>12</td><td></td></tr> <tr> <td>B*</td><td>61</td><td></td></tr> <tr> <td>C</td><td>19</td><td></td></tr> <tr> <td>D</td><td>8</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th></tr> </tbody> </table>	Analysis of Assessed Standards			Cluster	Simplifying Expressions		Subcluster	Exponents		Content	Readiness		Process			Stimulus			Data Analysis			Item	State	Local	A	12		B*	61		C	19		D	8		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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*Correct Answer (B)

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>! 2017 – Q6</p> <p>6 The area of a rectangle is $54x^9y^8$ square yards. If the length of the rectangle is $6x^3y^4$ yards, which expression represents the width of the rectangle in yards?</p> <p>F $9x^3y^2$</p> <p>G $48x^6y^4$</p> <p>H $9x^6y^4$</p> <p>J $60x^{12}y^{12}$</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td colspan="2">Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td colspan="2">Exponents</td></tr> <tr> <td>Content</td><td colspan="2">Readiness</td></tr> <tr> <td>Process</td><td colspan="2"></td></tr> <tr> <td>Stimulus</td><td colspan="2"></td></tr> <tr> <th colspan="3">Data Analysis</th> </tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>F</td><td>21</td><td></td></tr> <tr> <td>G</td><td>11</td><td></td></tr> <tr> <td>H*</td><td>57</td><td></td></tr> <tr> <td>J</td><td>11</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th> </tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th> </tr> </tbody> </table>	Analysis of Assessed Standards			Cluster	Simplifying Expressions		Subcluster	Exponents		Content	Readiness		Process			Stimulus			Data Analysis			Item	State	Local	F	21		G	11		H*	57		J	11		Error Analysis			<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications		
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*Correct Answer (H)

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>2017 – Q20</p> <p>20 The expression $(x^3)(x^{-17})$ is equivalent to x^n. What is the value of n?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Analysis of Assessed Standards																			
	Cluster	Simplifying Expressions																		
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Learning from Mistakes Instructional Implications																				

*Correct Answer (-14)

<p>A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents</p> <p>2017 – Q51</p> <p>51 Which expression is equivalent to $(7x^3)^2(x^8)^{\frac{1}{2}}$?</p> <p>A $14x^{10}$</p> <p>B $49x^{10}$</p> <p>C $14x^7$</p> <p>D $49x^7$</p>	Analysis of Assessed Standards																
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*Correct Answer (B)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
2016 – Q10	Cluster	Simplifying Expressions	
	Subcluster	Exponents	
	Content	Readiness	
	Process	A.1(B), A.1(C), A.1(F)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	F	22	
	G	27	
	H*	40	
	J	10	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
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*Correct Answer (H)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards	
2016 – Q31	Cluster	Simplifying Expressions
31 A circle has a radius of $6x^9y^5$ cm. The area of a circle can be found using $A = \pi r^2$. What is the area of this circle in square centimeters?	Subcluster	Exponents
A $12\pi x^{18}y^{10}$ B $36\pi x^{18}y^{10}$ C $36\pi x^{11}y^7$ D $12\pi x^{11}y^7$	Content	Readiness
	Process	A.1(B), A.1(C), A.1(F)
	Stimulus	
Data Analysis		
	Item	State
	A	23
	B*	49
	C	19
	D	9
Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications		
*Correct Answer (B)		

Quadratic Functions

A.6 Quadratic functions and equations. The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations.

A.7 Quadratic functions and equations. The student applies the mathematical process standards when using graphs of quadratic functions and their related transformations to represent in multiple ways and determine, with and without technology, the solutions to equations.

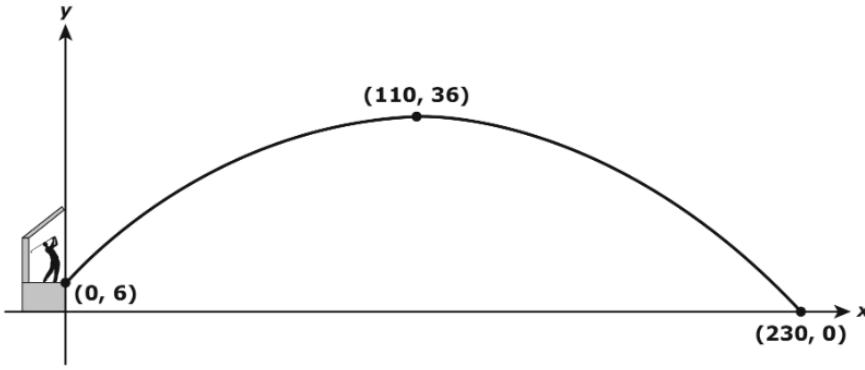
A.8 Quadratic functions and equations. The student applies the mathematical process standards to solve, with and without technology, quadratic equations and evaluate the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data.

Connected Knowledge and Skills A.12

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities		Analysis of Assessed Standards			
2021 – Q12		Cluster	Quadratic Functions		
12 A ball is placed in a machine that throws the ball up in the air. The table represents some points on the graph of a function that models the ball's distance from the ground with respect to the time since the ball has been thrown.		Subcluster	Describing Quadratic Functions		
		Content	Readiness		
		Process			
		Stimulus			
Data Analysis					
Item	State	Local			
F	21				
G	12				
H*	54				
J	13				
Error Analysis					
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts				
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early				
Learning from Mistakes Instructional Implications					
*Correct Answer (H)					

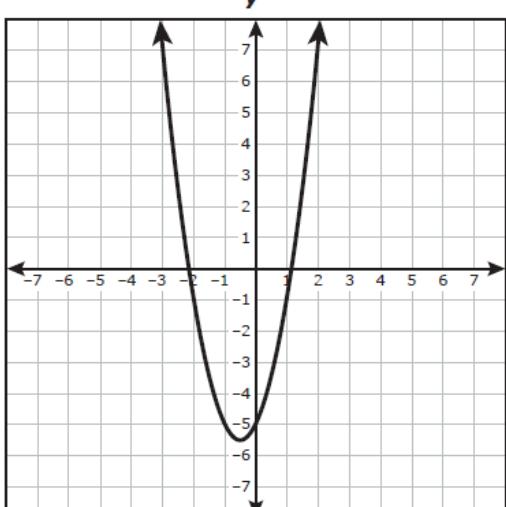
A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards		
2021 – Q43	Cluster	Quadratic Functions	
	Subcluster	Describing Quadratic Functions	
	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	18	
	B*	57	
	C	16	
	D	9	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
Which answer choice best represents the domain and range of the function? A Domain: $x \geq -3$ Range: $y \geq 5$ B Domain: All real numbers Range: $y \geq 5$ C Domain: $x \geq -3$ Range: All real numbers D Domain: $y \geq 5$ Range: $x \geq -3$			

*Correct Answer (B)

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards																			
2019 – Q2 A golfer hit a golf ball from a tee box that is 6 yards above the ground. The graph shows the height in yards of the golf ball above the ground as a quadratic function of x , the horizontal distance in yards of the golf ball from the tee box.	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Quadratic Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>		Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Stimulus									
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Data Analysis																				
Item	State	Local																		
F*	70																			
G	10																			
H	6																			
J	15																			
<p>What is the domain of the function for this situation?</p> <p>F $0 \leq x \leq 230$ G $6 \leq y \leq 36$ H $0 \leq y \leq 36$ J $6 \leq x \leq 230$</p> <p>* Correct Answer (F)</p>		<table border="1"> <tr> <td align="center" colspan="2">Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td align="center" colspan="2">Learning from Mistakes</td></tr> <tr> <td align="center" colspan="2">Instructional Implications</td></tr> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes		Instructional Implications									
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																			
Learning from Mistakes																				
Instructional Implications																				

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards		
2019 – Q50	Cluster	Quadratic Functions	
What are the domain and range of $g(x) = -\frac{1}{4}(x - 17)^2 + 61$?	Subcluster	Describing Quadratic Functions	
F Domain: All real numbers Range: $g(x) \leq 61$	Content	Readiness	
G Domain: $x \leq 17$ Range: $g(x) \leq 61$	Process		
H Domain: All real numbers Range: $x \leq 17$	Stimulus		
J Domain: $g(x) \geq 61$ Range: $x \leq 17$	Data Analysis		
	Item	State	Local
	F*	55	
	G	16	
	H	21	
	J	7	
*Correct Answer (F)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards		
2018 – Q5	Cluster	Quadratic Functions	
5 What is the range of $y = -x^2 - 2x + 3$?	Subcluster	Describing Quadratic Functions	
A $x \leq 4$	Content	Readiness	
B $x \geq -4$	Process		
C $y \leq 4$	Stimulus		
D $y \geq -4$	Data Analysis		
	Item	State	Local
	A	10	
	B	8	
	C*	69	
	D	13	
*Correct Answer (C)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

<p>A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities</p> <p>2018 – Q38</p> <p>38 The graph of quadratic function f is shown on the grid.</p>  <p>Which of these best represents the domain of f?</p> <p>F $-3 \leq x \leq 2$ G All real numbers H $y \geq 5.5$ J All real numbers less than -3 or greater than 2</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td style="width: 15%;">Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Quadratic Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Data Analysis</th></tr> <tr> <th style="width: 15%;">Item</th><th>State</th><th>Local</th></tr> <tr> <td>F</td><td>18</td><td></td></tr> <tr> <td>G*</td><td>60</td><td></td></tr> <tr> <td>H</td><td>12</td><td></td></tr> <tr> <td>J</td><td>11</td><td></td></tr> <tr> <th colspan="3" style="text-align: center; background-color: #cccccc;">Error Analysis</th></tr> <tr> <td colspan="3"> <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early </td></tr> <tr> <th colspan="3" style="text-align: center; background-color: #cccccc;">Learning from Mistakes Instructional Implications</th></tr> <tr> <td colspan="3"></td></tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Stimulus		Data Analysis		Item	State	Local	F	18		G*	60		H	12		J	11		Error Analysis			<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			Learning from Mistakes Instructional Implications					
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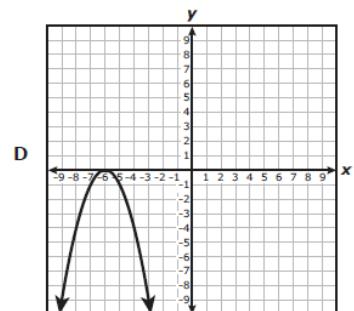
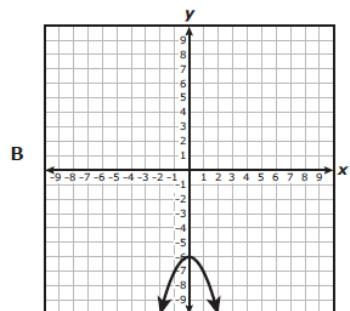
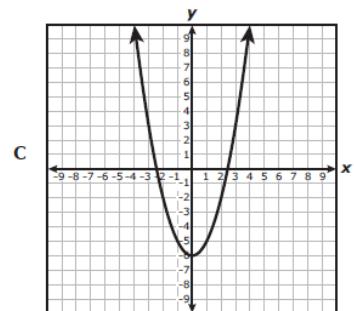
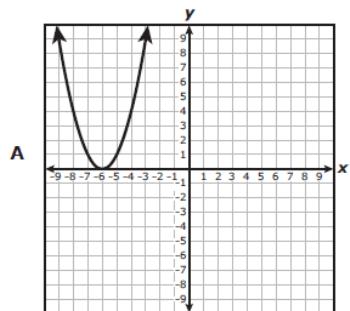
*Correct Answer (G)

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards		
2017 – Q30	Cluster	Quadratic Functions	
	Subcluster	Describing Quadratic Functions	
	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	F	9	
	G*	52	
	H	23	
	J	15	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
*Correct Answer (G)			

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities

2017 – Q53

- 53 Which graph best represents a function with a range of all real numbers greater than or equal to -6 ?



*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	10	
B	7	
C*	77	
D	6	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

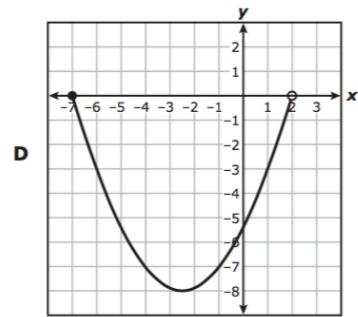
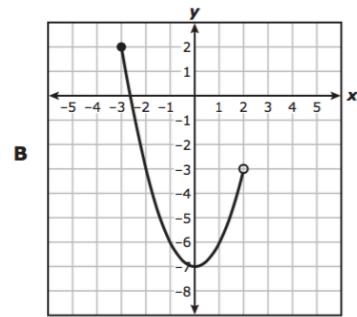
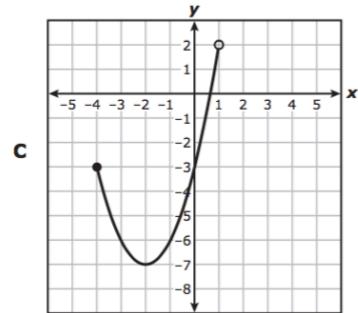
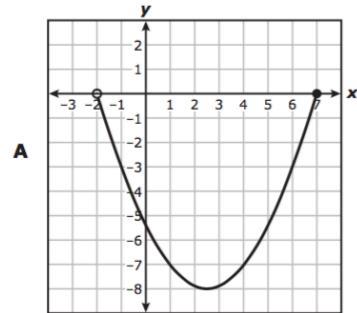
Learning from Mistakes Instructional Implications

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards																
<p>! 2016 – Q12</p> <p>12 The table shows some ordered pairs that belong to quadratic function h.</p> <table border="1" data-bbox="388 318 1090 413"> <thead> <tr> <th>x</th><th>-4</th><th>-2</th><th>0</th><th>2</th><th>3</th><th>4</th><th>6</th></tr> </thead> <tbody> <tr> <th>$h(x)$</th><td>41</td><td>17</td><td>1</td><td>-7</td><td>-8</td><td>-7</td><td>1</td></tr> </tbody> </table> <p>What is the range of h?</p> <p>F All real numbers G All real numbers greater than or equal to -7 H All real numbers greater than or equal to -8 J All real numbers greater than or equal to 0</p>	x	-4	-2	0	2	3	4	6	$h(x)$	41	17	1	-7	-8	-7	1	Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process A.1(B), A.1(E), A.1(F) Stimulus
x	-4	-2	0	2	3	4	6										
$h(x)$	41	17	1	-7	-8	-7	1										
<p>*Correct Answer (H)</p>	Data Analysis <table border="1" data-bbox="1122 439 1512 650"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>F</td><td>29</td><td></td></tr> <tr> <td>G</td><td>12</td><td></td></tr> <tr> <td>H*</td><td>47</td><td></td></tr> <tr> <td>J</td><td>12</td><td></td></tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> Learning from Mistakes Instructional Implications	Item	State	Local	F	29		G	12		H*	47		J	12		
Item	State	Local															
F	29																
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H*	47																
J	12																

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities

2016 – Q53

- 53 Which graph represents a function with a domain of all real numbers greater than or equal to -7 and less than 2 ?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A	8	
B	10	
C	14	
D*	67	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

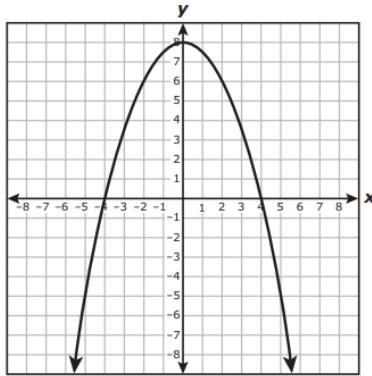
Learning from Mistakes Instructional Implications

<p>A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)</p>	<p>Analysis of Assessed Standards</p>																				
<p>2019 – Q43</p> <p>Which function is equivalent to $y = 3(x + 2)^2 + 7$?</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus											
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<p>A $y = 3x^2 + 12x + 33$</p> <p>B $y = 3x^2 + 12x + 19$</p> <p>C $y = 3x^2 + 19$</p> <p>D $y = 3x^2 + 33$</p>	<table border="1"> <tr> <td colspan="3">Data Analysis</td></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>8</td><td></td></tr> <tr> <td>B*</td><td>62</td><td></td></tr> <tr> <td>C</td><td>24</td><td></td></tr> <tr> <td>D</td><td>5</td><td></td></tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <table border="1"> <tr> <td>Learning from Mistakes</td></tr> <tr> <td>Instructional Implications</td></tr> </table>	Data Analysis			Item	State	Local	A	8		B*	62		C	24		D	5		Learning from Mistakes	Instructional Implications
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<p>A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)</p>	<p>Analysis of Assessed Standards</p>																			
<p>! 2018 – Q26</p> <p>26 Which function is equivalent to $f(x) = -4(x + 7)^2 - 6$?</p> <p>F $f(x) = -4x^2 - 56x - 202$</p> <p>G $f(x) = -4x^2 + 14x + 43$</p> <p>H $f(x) = -4x^2 - 56x - 172$</p> <p>J $f(x) = -4x^2 + 190$</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus										
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Item	State	Local																		
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*Correct Answer (F)																				

<p>A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)</p>	<p>Analysis of Assessed Standards</p>																													
<p>2017 – Q43</p> <p>43 Which quadratic function in vertex form can be represented by the graph that has a vertex at $(3, -7)$ and passes through the point $(1, -10)$?</p> <p>A $y = \frac{3}{4}(x + 3)^2 + 7$</p> <p>B $y = -\frac{3}{4}(x + 3)^2 - 7$</p> <p>C $y = \frac{3}{4}(x - 3)^2 + 7$</p> <p>D $y = -\frac{3}{4}(x - 3)^2 - 7$</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A</td><td>8</td><td></td></tr> <tr> <td>B</td><td>19</td><td></td></tr> <tr> <td>C</td><td>18</td><td></td></tr> <tr> <td>D*</td><td>54</td><td></td></tr> </tbody> </table> <p>Error Analysis</p> <table> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus		Item	State	Local	A	8		B	19		C	18		D*	54		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
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*Correct Answer (D)																														

A.6(C) write quadratic functions when given real solutions and graphs of their related equations		Analysis of Assessed Standards	
2021 – Q16		Cluster	Quadratic Functions
16 The graph of a quadratic function is shown on the grid.		Subcluster	Writing and Solving Quadratic Equations
		Content	Supporting
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		F	6
		G	9
		H*	68
		J	17
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
*Correct Answer (H)		Learning from Mistakes Instructional Implications	



Which function is best represented by this graph?

F $f(x) = -\frac{1}{2}x^2 + 16$

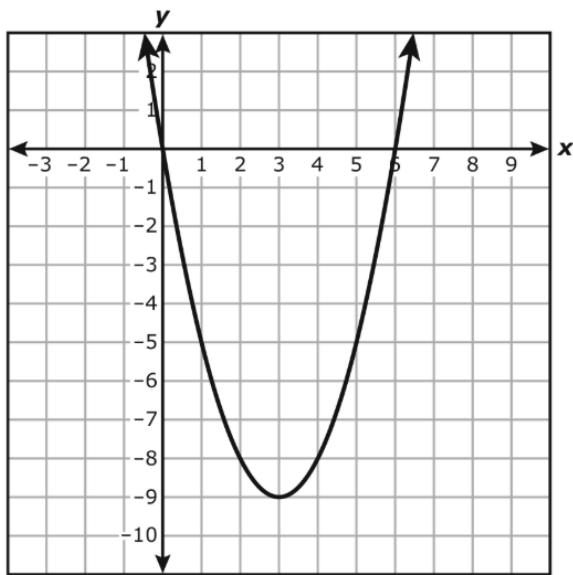
G $f(x) = -x^2 + 16$

H $f(x) = -\frac{1}{2}x^2 + 8$

J $f(x) = -x^2 + 8$

2019 – Q28

The graph of a quadratic function is shown on the grid.



Which function is best represented by this graph?

F $h(x) = x^2 - 3x - 9$

G $h(x) = x^2 + 3x - 9$

H $h(x) = x^2 - 6x$

J $h(x) = x^2 + 6x$

*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Writing and Solving Quadratic Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
F	7	
G	11	
H*	76	
J	6	

Error Analysis

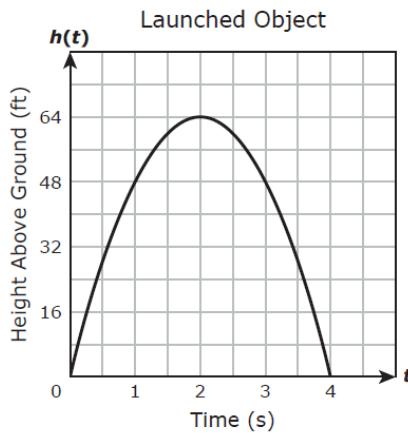
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

A.6(C) write quadratic functions when given real solutions and graphs of their related equations

! 2018 – Q7

- 7 The graph shows the height in feet of an object above the ground t seconds after it was launched from the ground.



Which function is best represented by the graph of this situation?

- A $h(t) = -16t^2 - 64t$
- B $h(t) = -16t^2 + 128t - 256$
- C $h(t) = -16t^2 + 64t$
- D $h(t) = -16t^2 - 128t - 256$

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Writing and Solving Quadratic Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	11	
B	11	
C*	72	
D	6	

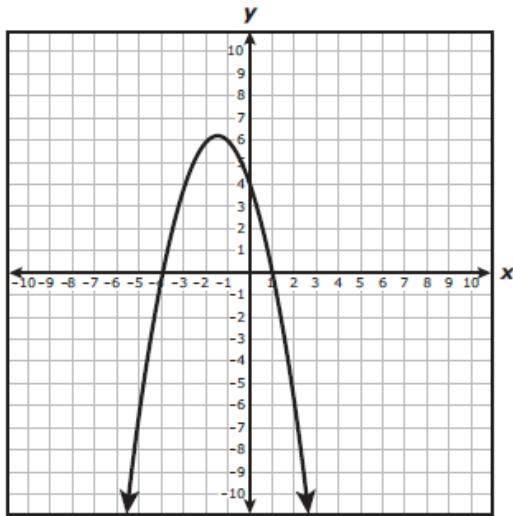
Error Analysis

- Guessing
- Mixed Up Concepts
- Careless Error
- Stopped Too Early

**Learning from Mistakes
Instructional Implications**

! 2017 – Q10

10 The graph of a quadratic function is shown on the grid.



Which function is best represented by this graph?

- F $f(x) = x^2 + 3x - 4$
- G $f(x) = -x^2 - 3x + 4$
- H $f(x) = x^2 - 3x - 4$
- J $f(x) = -x^2 + 3x + 4$

*Correct Answer (G)

Cluster	Quadratic Functions
Subcluster	Writing and Solving Quadratic Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
F	6	
G*	83	
H	5	
J	6	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

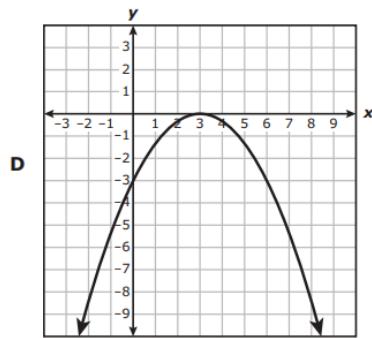
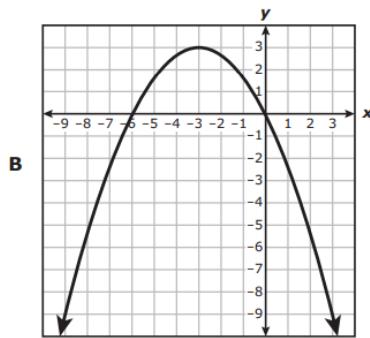
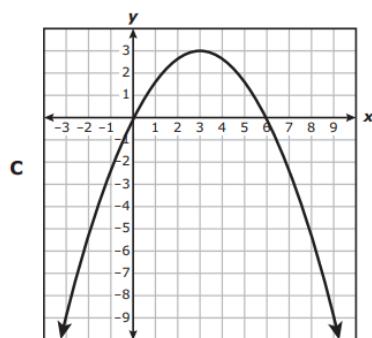
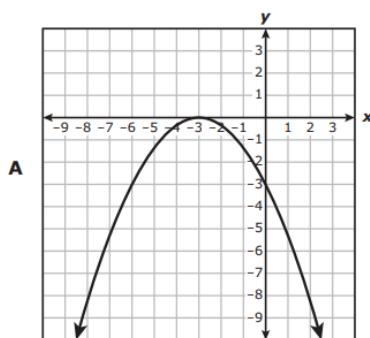
A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2021 – Q7

7 Two characteristics of quadratic function p are given.

- The axis of symmetry of the graph of p is $x = -3$.
- Function p has exactly one zero.

Based on this information, which graph could represent p ?



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	74	
B	14	
C	5	
D	7	

Error Analysis

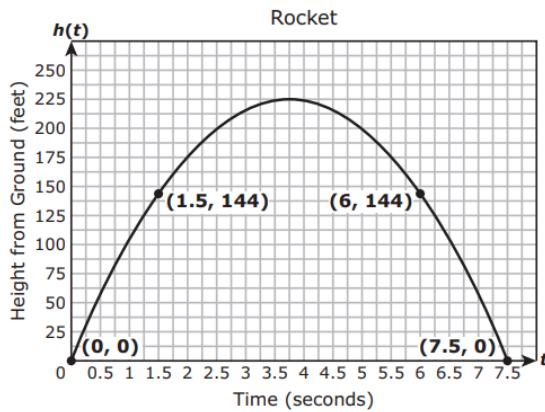
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2021 – Q34

- 34** Quadratic function h can be used to model the height in feet of a rocket from the ground t seconds after it was launched. The graph of the function is shown.



What is the maximum value of the graph of the function?

Record your answer and fill in the bubbles on your answer document.

*Correct Answer (225)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
225	57*	
	42	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

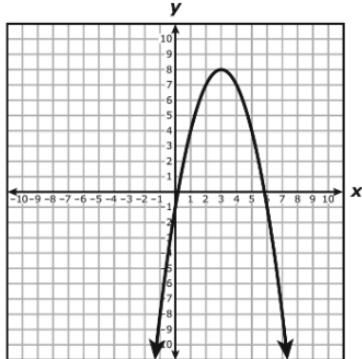
Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

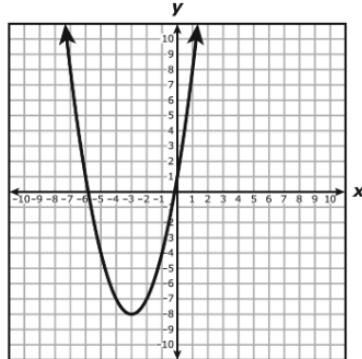
2019 – Q21

Which graph best represents $y = -x^2 + 6x - 1$?

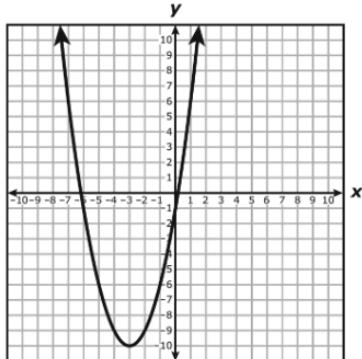
A



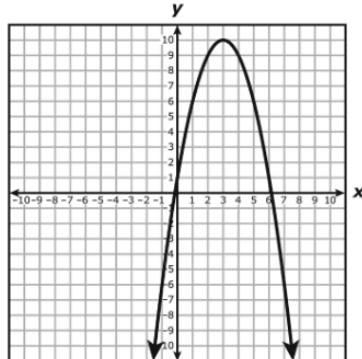
C



B



D



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	79	
B	6	
C	3	
D	11	

Error Analysis

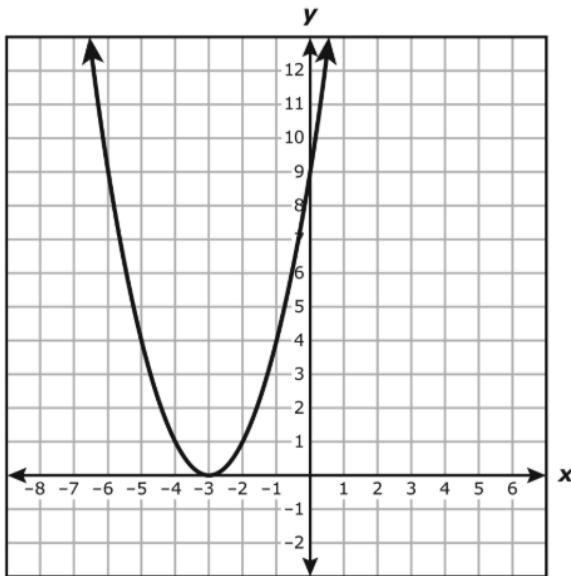
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

! 2019 – Q46

The graph of quadratic function k is shown on the grid.



Which statements are best supported by the graph of k ?

- I. The x -intercept is located at $(-3, 0)$.
- II. The coordinates of the y -intercept are $(0, 9)$.
- III. The axis of symmetry is $x = -3$.

F I and II only

G I and III only

H II and III only

J I, II, and III

*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	11	
G	10	
H	13	
J*	67	

Error Analysis

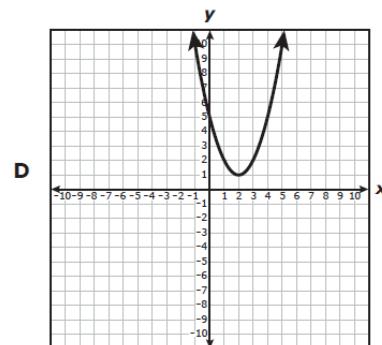
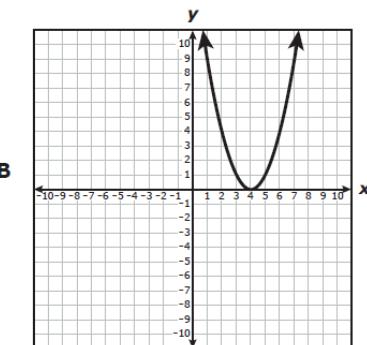
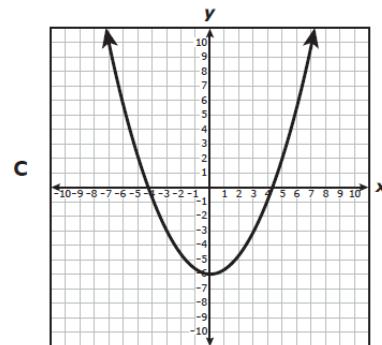
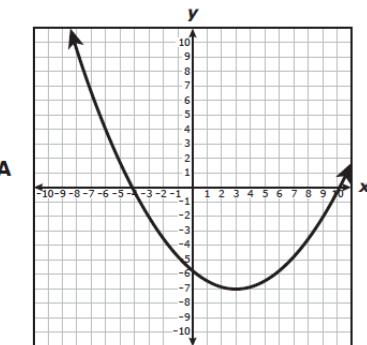
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2018 – Q29

29 Which graph best represents a quadratic function that has only one zero?



*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	7	
B*	68	
C	11	
D	15	

Error Analysis

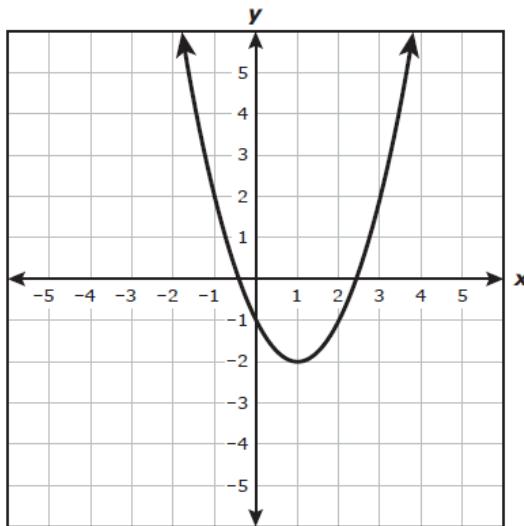
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2018 – Q50

50 A graph of a quadratic function is shown on the grid.



Which coordinates best represent the vertex of the graph?

- F** (2.4, 0)
- G** (0, -1)
- H** (-0.4, 0)
- J** (1, -2)

*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	8	
G	7	
H	4	
J*	80	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

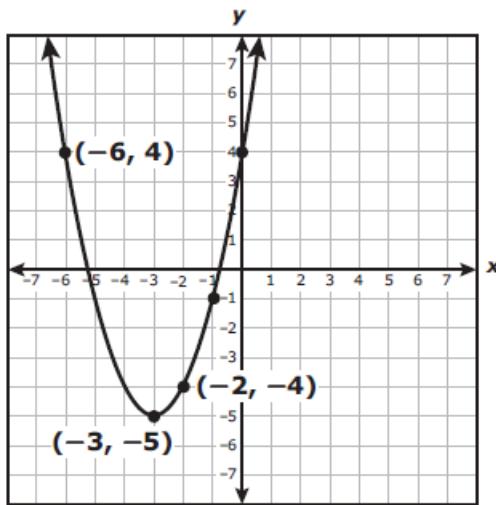
Learning from Mistakes Instructional Implications

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

Analysis of Assessed Standards

2017 – Q14

14 The graph of quadratic function f is shown on the grid.



What is the y -intercept of the graph of f ?

Record your answer and fill in the bubbles on your answer document.

Cluster Quadratic Functions

Subcluster Describing Quadratic Functions

Content Readiness

Process

Stimulus

Data Analysis

Item	State	Local
4	77*	
	22	

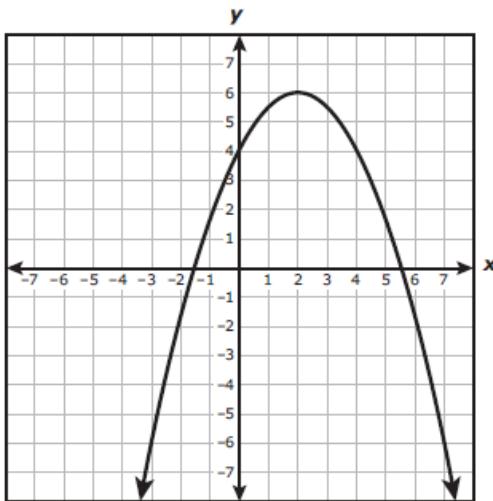
Error Analysis
 Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

*Correct Answer (4)

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2017 – Q46

46 The graph of a quadratic function is shown on the grid.



Which equation best represents the axis of symmetry?

- F** $y = 6$
- G** $x = 2$
- H** $y = 4$
- J** $x = 0$

*Correct Answer (G)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

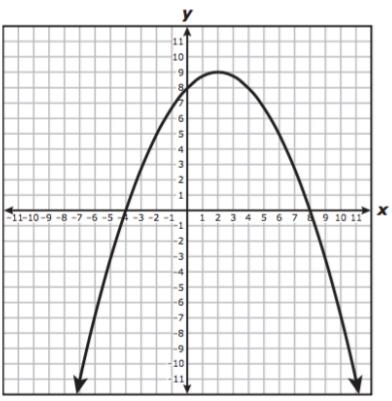
Data Analysis

Item	State	Local
F	23	
G*	62	
H	12	
J	3	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

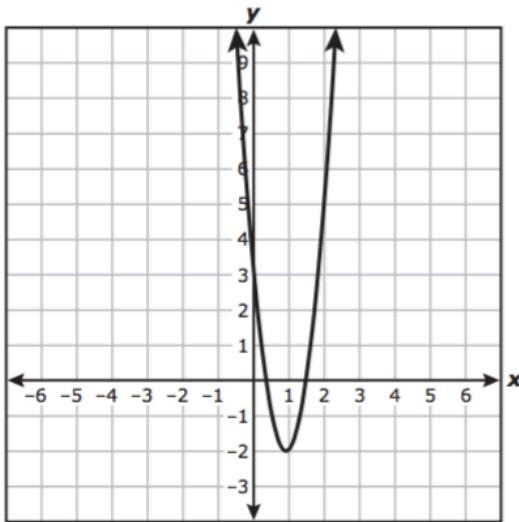
Learning from Mistakes Instructional Implications

<p>A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry</p>	<p>Analysis of Assessed Standards</p>																		
<p>2016 – Q34</p>	<p>Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process A.1(B), A.1(E), A.1(F) Stimulus</p>																		
<p>34 The graph of quadratic function g is shown on the grid. The coordinates of the x-intercepts, the y-intercept, and the vertex are integers.</p>	<p>Data Analysis</p>																		
	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>75*</td> <td></td> </tr> <tr> <td></td> <td>24</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Item	State	Local	9	75*			24										
Item	State	Local																	
9	75*																		
	24																		
<p>What is the maximum value of g? Record your answer and fill in the bubbles on your answer document.</p> <p>*Correct Answer (9)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>																		

A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

2016 – Q45

45 A graph of $f(x) = 6x^2 - 11x + 3$ is shown on the grid.



What are the zeros of f ?

- A** 3
- B** 2 and 9
- C** $\frac{11}{12}$
- D** $\frac{1}{3}$ and $\frac{3}{2}$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A	19	
B	12	
C	4	
D*	65	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions		Analysis of Assessed Standards	
2021 – Q4		Cluster	Quadratic Functions
		Subcluster	Writing and Solving Quadratic Equations
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
		Item	State
		F	13
		G	12
		H*	64
		J	10
Error Analysis			
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		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications			

*Correct Answer (H)

A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions	Analysis of Assessed Standards		
2018 – Q18	Cluster	Quadratic Functions	
	Subcluster	Writing and Solving Quadratic Equations	
	Content	Supporting	
	Process		
	Stimulus		
Data Analysis			
	Item	State	Local
	F	11	
	G	11	
	H*	63	
	J	14	
Error Analysis			
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
*Correct Answer (H)			

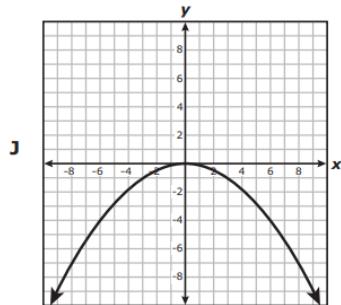
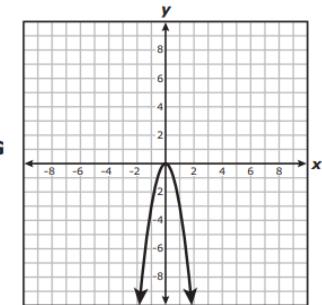
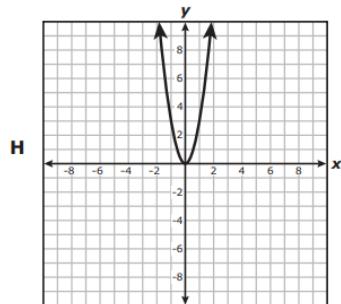
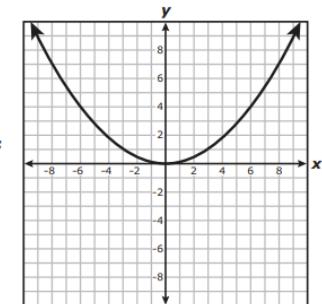
A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions	Analysis of Assessed Standards		
2016 – Q16	Cluster	Quadratic Functions	
	Subcluster	Writing and Solving Quadratic Equations	
	Content	Supporting	
	Process	A.1(B), A.1(G)	
	Stimulus		
Data Analysis			
	Item	State	Local
	F	14	
	G*	61	
	H	14	
	J	11	
Error Analysis			
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Learning from Mistakes Instructional Implications			
*Correct Answer (G)			

A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions	Analysis of Assessed Standards		
2016 – Q37	Cluster	Quadratic Functions	
37 Which statement about $f(x) = 2x^2 - 3x - 5$ is true?	Subcluster	Writing and Solving Quadratic Equations	
A The zeros are $-\frac{5}{2}$ and -1 , because $f(x) = (x + 1)(2x + 5)$.	Content	Supporting	
B The zeros are $-\frac{5}{2}$ and 1 , because $f(x) = (x - 1)(2x + 5)$.	Process	A.1(B), A.1(G)	
C The zeros are -1 and $\frac{5}{2}$, because $f(x) = (x + 1)(2x - 5)$.	Stimulus		
D The zeros are 1 and $\frac{5}{2}$, because $f(x) = (x - 1)(2x - 5)$.	Data Analysis		
*Correct Answer (C)	Item	State	Local
A	10		
B	14		
C*	67		
D	9		
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications			

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

! 2021 – Q28

- 28 The graph of $f(x) = x^2$ is reflected over the x -axis and is stretched horizontally to create the graph of function g . Which graph could represent g ?



*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	25	
G	12	
H	28	
J*	35	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d</p>	<p>Analysis of Assessed Standards</p>															
<p>2021 – Q52</p> <p>52 The graph of $f(x) = x^2$ was translated 4.5 units to the left to create the graph of function g. Which function represents g?</p> <p>F $g(x) = (x - 4.5)^2$</p> <p>G $g(x) = (x + 4.5)^2$</p> <p>H $g(x) = x^2 - 4.5$</p> <p>J $g(x) = x^2 + 4.5$</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Quadratic Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Stimulus						
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	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>F</td><td>19</td><td></td></tr> <tr> <td>G*</td><td>47</td><td></td></tr> <tr> <td>H</td><td>22</td><td></td></tr> <tr> <td>J</td><td>12</td><td></td></tr> </tbody> </table>	Item	State	Local	F	19		G*	47		H	22		J	12	
Item	State	Local														
F	19															
G*	47															
H	22															
J	12															
	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

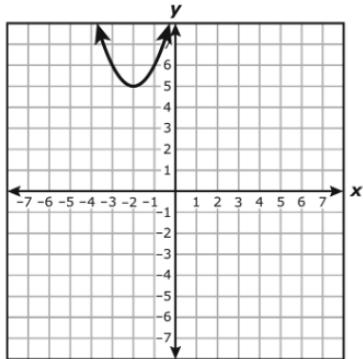
*Correct Answer (G)

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

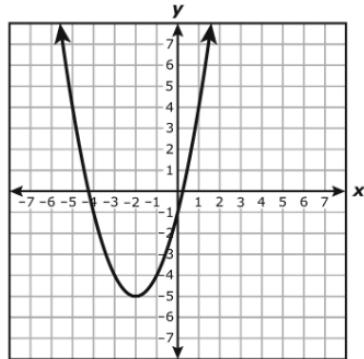
2019 – Q12

The graph of quadratic parent function f was transformed to create the graph of $g(x) = f(x + 2) - 5$. Which graph best represents g ?

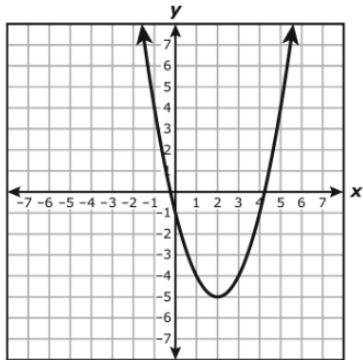
F



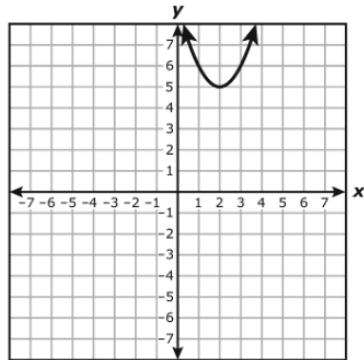
H



G



J



*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	4	
G	38	
H*	52	
J	6	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

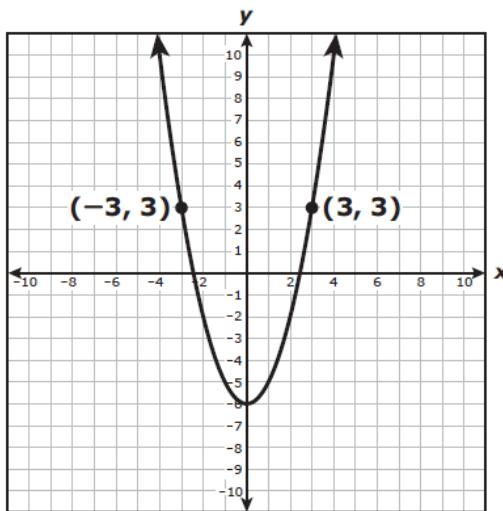
A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards																		
<p>2019 – Q33</p> <p>The graph of $f(x) = x^2$ was transformed to create the graph of $g(x) = f(x) - 9$. Which statement about the graphs is true?</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Quadratic Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Stimulus									
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Subcluster	Describing Quadratic Functions																		
Content	Readiness																		
Process																			
Stimulus																			
<p>A The graph of g is a reflection of the graph of f across the x-axis.</p> <p>B The vertex of the graph of g is 9 units to the right of the vertex of the graph of f.</p> <p>C The graph of g is a reflection of the graph of f across the y-axis.</p> <p>D The y-intercept of the graph of g is 9 units below the y-intercept of the graph of f.</p>	<table border="1"> <tr> <td align="center" colspan="3">Data Analysis</td></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>11</td><td></td></tr> <tr> <td>B</td><td>14</td><td></td></tr> <tr> <td>C</td><td>12</td><td></td></tr> <tr> <td>D*</td><td>63</td><td></td></tr> </table>	Data Analysis			Item	State	Local	A	11		B	14		C	12		D*	63	
Data Analysis																			
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D*	63																		
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Error Analysis																			
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<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																			
Learning from Mistakes Instructional Implications																			

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

Analysis of Assessed Standards

2018 – Q14

14 The graph of quadratic function p is shown on the grid.



If $k(x) = x^2$ and $p(x) = k(x) + n$, what is the value of n ?

Record your answer and fill in the bubbles on your answer document.

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
-6	52*	
	47	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

*Correct Answer (-6)

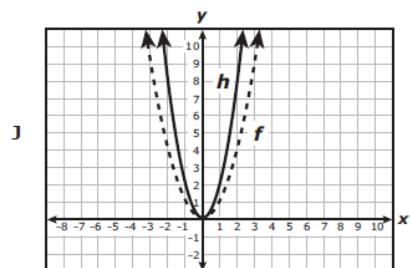
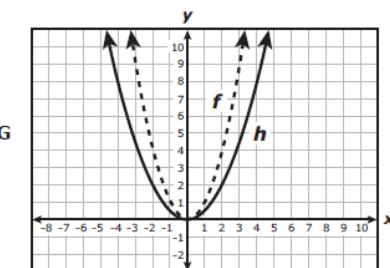
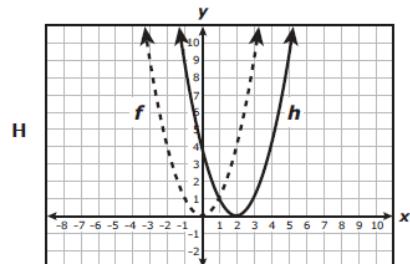
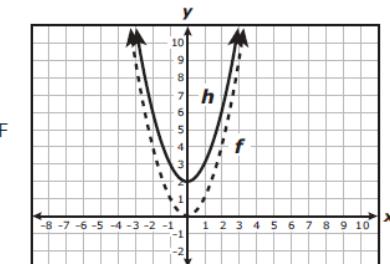
A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d		Analysis of Assessed Standards
! 2018 – Q48	Cluster	Quadratic Functions
48 The graph of $g(x) = x^2$ was transformed to create the graph of $h(x) = -\left(\frac{x}{4}\right)^2$. Which of these describes the transformation from the graph of g to the graph of h ?	Subcluster	Describing Quadratic Functions
F A reflection over the x -axis and a horizontal stretch	Content	Readiness
G A reflection over the y -axis and a horizontal stretch	Process	
H A reflection over the x -axis and a vertical stretch	Stimulus	
J A reflection over the y -axis and a vertical stretch	Data Analysis	
	Item	State
	F*	55
	G	16
	H	20
	J	9
*Correct Answer (F)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d		Analysis of Assessed Standards
2017 – Q4	Cluster	Quadratic Functions
4 The graph of $f(x) = x^2$ was transformed to create the graph of $g(x) = (x - 7.5)^2$. Which of these describes this transformation?	Subcluster	Describing Quadratic Functions
F A horizontal shift to the right 7.5 units	Content	Readiness
G A horizontal shift to the left 7.5 units	Process	
H A vertical shift down 56.25 units	Stimulus	
J A vertical shift up 56.25 units	Data Analysis	
	Item	State
	F*	70
	G	15
	H	9
	J	6
*Correct Answer (F)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

! 2017 – Q24

- 24 The graph of $f(x) = x^2$ is transformed to create the graph of $h(x) = 2f(x)$. Which graph best represents f and h ?



*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	14	
G	25	
H	15	
J*	45	

Error Analysis

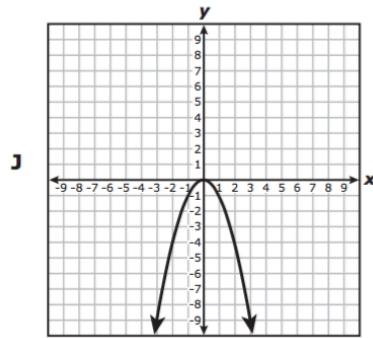
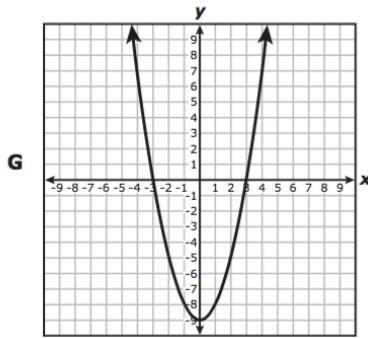
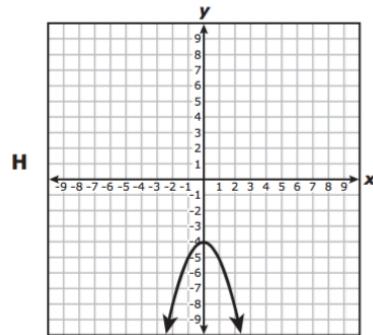
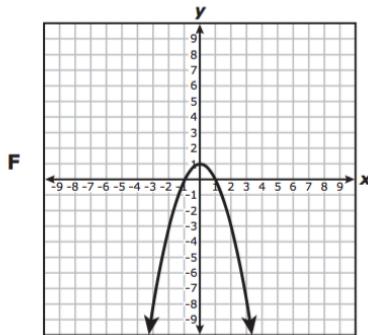
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

2016 – Q4

- 4 Function p is in the form $y = ax^2 + c$. If the values of a and c are both less than 0, which graph could represent p ?



*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
F	3	
G	9	
H*	67	
J	21	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	A.1(B), A.1(E), A.1(G)
Stimulus	

Data Analysis

Item	State	Local
F*	75	
G	12	
H	5	
J	7	

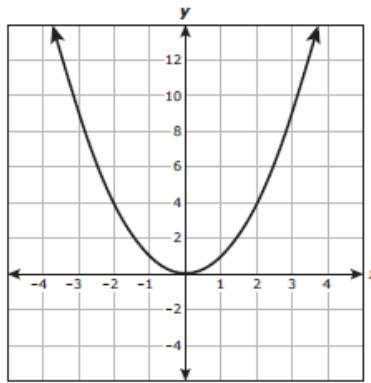
Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

2016 – Q24

24 The graph of $f(x) = x^2$ is shown on the grid.



Which statement about the relationship between the graph of f and the graph of $g(x) = 7x^2$ is true?

- F** The graph of g is narrower than the graph of f .
- G** The graph of g is wider than the graph of f .
- H** The graph of g is 7 units below the graph of f .
- J** The graph of g is 7 units above the graph of f .

*Correct Answer (F)

<p>A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d</p>	<p>Analysis of Assessed Standards</p>																		
<p>2016 – Q41</p> <p>41 Quadratic functions q and w are graphed on the same coordinate grid. The vertex of the graph of q is 18 units below the vertex of the graph of w. Which pair of functions could have been used to create the graphs of q and w?</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Quadratic Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td>A.1(B), A.1(F)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process	A.1(B), A.1(F)	Stimulus									
Cluster	Quadratic Functions																		
Subcluster	Describing Quadratic Functions																		
Content	Readiness																		
Process	A.1(B), A.1(F)																		
Stimulus																			
<p>A $q(x) = 18x^2$ and $w(x) = x^2$</p> <p>B $q(x) = x^2 + 18$ and $w(x) = x^2$</p> <p>C $q(x) = -18x^2$ and $w(x) = x^2$</p> <p>D $q(x) = x^2 - 18$ and $w(x) = x^2$</p>	<table border="1"> <tr> <td align="center" colspan="3">Data Analysis</td></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>A</td><td>10</td><td></td></tr> <tr> <td>B</td><td>13</td><td></td></tr> <tr> <td>C</td><td>19</td><td></td></tr> <tr> <td>D*</td><td>57</td><td></td></tr> </table>	Data Analysis			Item	State	Local	A	10		B	13		C	19		D*	57	
Data Analysis																			
Item	State	Local																	
A	10																		
B	13																		
C	19																		
D*	57																		
<p>*Correct Answer (D)</p>	<table border="1"> <tr> <td>Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td>Learning from Mistakes</td></tr> <tr> <td>Instructional Implications</td></tr> </table>	Error Analysis	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	Learning from Mistakes	Instructional Implications													
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Learning from Mistakes																			
Instructional Implications																			

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula		Analysis of Assessed Standards	
2021 – Q23		Cluster	Quadratic Functions
23 Which value of x is a solution to this equation?		Subcluster	Writing and Solving Quadratic Equations
$3x^2 - 30x - 72 = 0$		Content	Readiness
A $x = -12$		Process	
B $x = -4$		Stimulus	
C $x = -2$		Data Analysis	
D $x = -6$		Item	State
		A	15
		B	17
		C*	53
		D	15
*Correct Answer (C)		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards		
! 2021 – Q37	Cluster	Quadratic Functions	
37 What is the solution set for $2x^2 + 15 = -11x$?	Subcluster	Writing and Solving Quadratic Equations	
A $\{-5, -1.5\}$	Content	Readiness	
B $\{2.5, 3\}$	Process		
C $\{1.5, 5\}$	Stimulus		
D $\{-3, -2.5\}$	Data Analysis		
	Item	State	Local
	A	15	
	B	26	
	C	22	
	D*	36	
*Correct Answer (D)	Error Analysis		
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards		
2019 – Q14	Cluster	Quadratic Functions	
What is the positive solution to this equation?	Subcluster	Writing and Solving Quadratic Equations	
$4x^2 + 12x = 135$	Content	Readiness	
Record your answer and fill in the bubbles on your answer document.	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	4.5	46*	
		53	
*Correct Answer (4.5)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards		
2019 – Q40	Cluster	Quadratic Functions	
Which value of x is a solution to this equation?	Subcluster	Writing and Solving Quadratic Equations	
$5x^2 - 36x + 36 = 0$	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
F $x = -6$	F	14	
G $x = 4$	G	10	
H $x = -1.8$	H	8	
J $x = 1.2$	J*	68	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
*Correct Answer (J)			

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards		
2018 – Q22	Cluster	Quadratic Functions	
22 What are the solutions to $(x + 7)^2 = 81$?	Subcluster	Writing and Solving Quadratic Equations	
	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
F -74 and 88	F	8	
G -2 and 16	G	19	
H -88 and 74	H	10	
J -16 and 2	J*	63	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
*Correct Answer (J)			

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards	
2018 – Q41	Cluster	Quadratic Functions
41 The area of a rectangular trampoline is 112 ft^2 . The length of the trampoline is 6 ft greater than the width of the trampoline. This situation can be represented by the equation $w^2 + 6w - 112 = 0$. What is the width of the trampoline in feet? A 7 ft B 16 ft C 8 ft D 14 ft	Subcluster	Writing and Solving Quadratic Equations
	Content	Readiness
	Process	
	Stimulus	
Data Analysis		
	Item	State
	A	7
	B	17
	C*	64
	D	12
Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications		
*Correct Answer (C)		

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards	
2017 – Q7	Cluster	Quadratic Functions
7 The total number of seats in an auditorium is modeled by $f(x) = 2x^2 - 6x$, where x represents the number of rows of seats. How many rows are there in the auditorium if it has a total of 416 seats? A 32 B 13 C 20 D 16	Subcluster	Writing and Solving Quadratic Equations
	Content	Readiness
	Process	
	Stimulus	
Data Analysis		
	Item	State
	A	11
	B	9
	C	9
	D*	71
Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Learning from Mistakes Instructional Implications		
*Correct Answer (D)		

<p>A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula</p> <p>2017 – Q34</p> <p>34 What is the positive solution to the equation $0 = \frac{1}{3}x^2 - 3$?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Analysis of Assessed Standards																						
	Cluster	Quadratic Functions																					
	Subcluster	Writing and Solving Quadratic Equations																					
	Content	Readiness																					
	Process																						
	Stimulus																						
	Data Analysis																						
<p>Item</p> <table border="1"> <tr> <td>3</td> <td>49*</td> <td></td> </tr> <tr> <td></td> <td>49</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	3	49*			49																	Item	State
3	49*																						
	49																						
Local																							

*Correct Answer (3)

<p>A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula</p> <p>! 2016 – Q22</p> <p>22 The sum of the first n consecutive even numbers can be found using $S = n^2 + n$, where $n \geq 2$. What is the value of n when the sum is 156?</p> <p>F 6 G 39 H 26 J 12</p>	Analysis of Assessed Standards																						
	Cluster	Quadratic Functions																					
	Subcluster	Writing and Solving Quadratic Equations																					
	Content	Readiness																					
	Process	A.1(B), A.1(F)																					
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<p>Item</p> <table border="1"> <tr> <td>F</td> <td>7</td> <td></td> </tr> <tr> <td>G</td> <td>13</td> <td></td> </tr> <tr> <td>H</td> <td>13</td> <td></td> </tr> <tr> <td>J*</td> <td>67</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	F	7		G	13		H	13		J*	67											Item	State
F	7																						
G	13																						
H	13																						
J*	67																						
Local																							

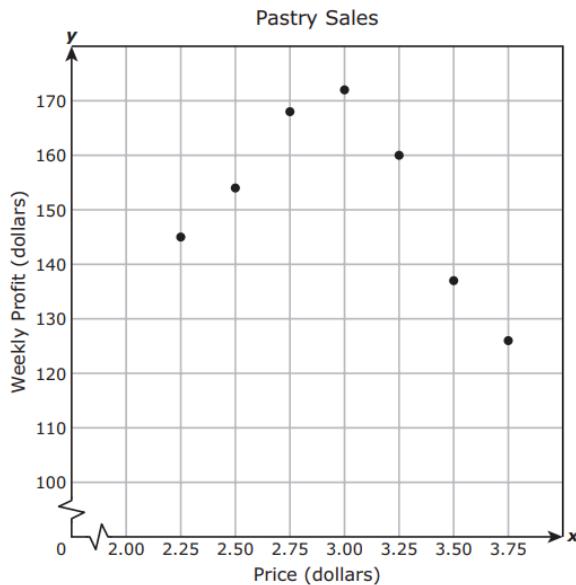
*Correct Answer (J)

A.8(A) solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula	Analysis of Assessed Standards		
2016 – Q29	Cluster	Quadratic Functions	
	Subcluster	Writing and Solving Quadratic Equations	
	Content	Readiness	
	Process	A.1(B), A.1(C), A.1(F)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	26	
	B	13	
	C*	51	
	D	10	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		
*Correct Answer (C)			

A.8(B) write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

! 2021 – Q47

- 47 The scatterplot and table show the weekly profit in dollars earned from the sale of pastries at seven different prices. The data can be modeled by a quadratic function.



x	y
2.25	145
2.50	154
2.75	168
3.00	172
3.25	160
3.50	137
3.75	126

Which function best models the data?

- A $y = 0.001x^2 - 0.426x + 35.672$
- B $y = -60.4x^2 + 348.1x - 334.2$
- C $y = 0.001x^2 + 35.672$
- D $y = -60.4x^2 - 334.2$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Writing and Solving Quadratic Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	16	
B*	48	
C	21	
D	15	

Error Analysis

- Guessing
- Mixed Up Concepts
- Careless Error
- Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.8(B) write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p> <p>2019 – Q19</p> <p>A company collected data for the number of text messages sent and received using a text-message application since October 2011. The table shows the number of text messages sent and received in billions over time. The data can be modeled by a quadratic function.</p> <p style="text-align: center;">Text Messages</p> <table border="1" data-bbox="359 369 856 813"> <thead> <tr> <th data-bbox="359 369 612 454">Number of Months since October 2011, t</th><th data-bbox="612 369 856 454">Number of Text Messages, $n(t)$ (billions)</th></tr> </thead> <tbody> <tr><td data-bbox="359 475 612 517">5</td><td data-bbox="612 475 856 517">3</td></tr> <tr><td data-bbox="359 517 612 559">10</td><td data-bbox="612 517 856 559">10</td></tr> <tr><td data-bbox="359 559 612 601">15</td><td data-bbox="612 559 856 601">17</td></tr> <tr><td data-bbox="359 601 612 644">20</td><td data-bbox="612 601 856 644">27</td></tr> <tr><td data-bbox="359 644 612 686">25</td><td data-bbox="612 644 856 686">44</td></tr> <tr><td data-bbox="359 686 612 728">30</td><td data-bbox="612 686 856 728">64</td></tr> <tr><td data-bbox="359 728 612 770">35</td><td data-bbox="612 728 856 770">86</td></tr> <tr><td data-bbox="359 770 612 813">40</td><td data-bbox="612 770 856 813">112</td></tr> </tbody> </table> <p>Which function best models the data?</p> <p>A $n(t) = -0.002t^2 + 0.55t + 5.02$</p> <p>B $n(t) = 0.072t^2 - 0.15t + 2.73$</p> <p>C $n(t) = -0.002t^2 + 5.02$</p> <p>D $n(t) = 0.072t^2 + 2.73$</p> <p>*Correct Answer (B)</p>	Number of Months since October 2011, t	Number of Text Messages, $n(t)$ (billions)	5	3	10	10	15	17	20	27	25	44	30	64	35	86	40	112	<p>Analysis of Assessed Standards</p> <table border="1" data-bbox="1117 147 1493 359"> <tr><td>Cluster</td><td>Quadratic Functions</td></tr> <tr><td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr><td>Content</td><td>Supporting</td></tr> <tr><td>Process</td><td></td></tr> <tr><td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1" data-bbox="1117 432 1493 644"> <tr><th>Item</th><th>State</th><th>Local</th></tr> <tr><td>A</td><td>13</td><td></td></tr> <tr><td>B*</td><td>58</td><td></td></tr> <tr><td>C</td><td>13</td><td></td></tr> <tr><td>D</td><td>16</td><td></td></tr> </table> <p>Error Analysis</p> <table border="1" data-bbox="1117 665 1493 749"> <tr><td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr><td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus		Item	State	Local	A	13		B*	58		C	13		D	16		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Number of Months since October 2011, t	Number of Text Messages, $n(t)$ (billions)																																															
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Process																																																
Stimulus																																																
Item	State	Local																																														
A	13																																															
B*	58																																															
C	13																																															
D	16																																															
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																																															
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																																															

<p>A.8(B) write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p> <p>! 2017 – Q39</p> <p>39 A projectile is launched into the air from the ground. The table shows the height of the projectile, $h(t)$, at different times.</p> <p style="text-align: center;">Projectile Height</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Time (seconds)</th> <th>Height (meters)</th> </tr> </thead> <tbody> <tr><td>5</td><td>1,353</td></tr> <tr><td>10</td><td>2,460</td></tr> <tr><td>15</td><td>3,323</td></tr> <tr><td>20</td><td>3,940</td></tr> <tr><td>25</td><td>4,313</td></tr> <tr><td>30</td><td>4,440</td></tr> <tr><td>35</td><td>4,323</td></tr> </tbody> </table> <p>Based on the table, which function can best be used to model this situation?</p> <p> A $h(t) = 99t^2 + 858$ B $h(t) = -4.9t^2 + 295t + 0.6$ C $h(t) = -4.9t^2 + 295t + 2$ D $h(t) = 99t^2 + 1,470.3$ </p> <p>*Correct Answer (B)</p>	Time (seconds)	Height (meters)	5	1,353	10	2,460	15	3,323	20	3,940	25	4,313	30	4,440	35	4,323	<p>Analysis of Assessed Standards</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Cluster</td> <td>Quadratic Functions</td> </tr> <tr> <td>Subcluster</td> <td>Writing and Solving Quadratic Equations</td> </tr> <tr> <td>Content</td> <td>Supporting</td> </tr> <tr> <td>Process</td> <td></td> </tr> <tr> <td>Stimulus</td> <td></td> </tr> </table> <p>Data Analysis</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 15%;">Item</th> <th style="width: 15%;">State</th> <th style="width: 15%;">Local</th> </tr> <tr> <td>A</td> <td>11</td> <td></td> </tr> <tr> <td>B*</td> <td>54</td> <td></td> </tr> <tr> <td>C</td> <td>19</td> <td></td> </tr> <tr> <td>D</td> <td>16</td> <td></td> </tr> </table> <p>Error Analysis</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Guessing</td> <td style="width: 50%;"><input type="checkbox"/> Mixed Up Concepts</td> </tr> <tr> <td><input type="checkbox"/> Careless Error</td> <td><input type="checkbox"/> Stopped Too Early</td> </tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus		Item	State	Local	A	11		B*	54		C	19		D	16		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
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A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains		Analysis of Assessed Standards	
2021 – Q14		Cluster	Quadratic Functions
14 Given $p(x) = -4(x - 15)^2 + 2$, what is the value of $p(7)$?	Record your answer and fill in the bubbles on your answer document.	Subcluster	Describing Quadratic Functions
		Content	Supporting
		Process	
		Stimulus	
		Data Analysis	
		Item	State
-254		37*	
		61	
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (-254)			

A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains		Analysis of Assessed Standards	
2019 – Q8		Cluster	Quadratic Functions
A baker determined the annual profit in dollars from selling pies using $p(n) = 52n - 0.05n^2$, where n is the number of pies sold. What is the annual profit if the baker sells 400 pies?		Subcluster	Describing Quadratic Functions
F \$20,780		Content	Supporting
G \$12,800		Process	
H \$28,800		Stimulus	
J \$20,760			
		Data Analysis	
		Item	State
F		12	
G*		71	
H		9	
J		8	
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	
*Correct Answer (G)			

A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains	Analysis of Assessed Standards	
2018 – Q20	Cluster	Quadratic Functions
20 Given $f(x) = \frac{1}{3}(4 - x)^2$, what is the value of $f(16)$?	Subcluster	Describing Quadratic Functions
Record your answer and fill in the bubbles on your answer document.	Content	Supporting
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	48	56*
		43
	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	
*Correct Answer (48)		

A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains	Analysis of Assessed Standards	
2017 – Q47	Cluster	Quadratic Functions
47 If $p(x) = 5(x^2 + 1) + 16$, what is the value of $p(11)$?	Subcluster	Describing Quadratic Functions
A 690	Content	Supporting
B 736	Process	
C 622	Stimulus	
D 626	Data Analysis	
	Item	State
	A	6
	B	8
	C	18
	D*	67
	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	
*Correct Answer (D)		

Exponential Functions

A.9 Exponential functions and equations. The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data.

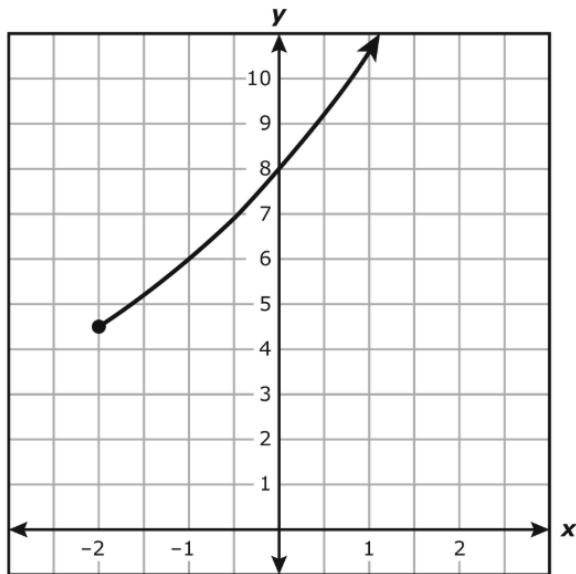
Connected Knowledge and Skills A.12

A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities		Analysis of Assessed Standards
2021 – Q49		Cluster Exponential Functions Subcluster Describing Exponential Functions Content Supporting Process Stimulus
49 A part of exponential function f is graphed on the grid.		
Which inequality best represents the domain of the part shown?		Data Analysis
A $x > 1$ B $y > 1$ C $x > -2$ D $y > -2$	Item	State
	A	9
	B	17
	C*	64
	D	10
*Correct Answer (C)		Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications

A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities

2019 – Q41

A part of an exponential function is graphed on the grid.



Which inequality best represents the domain of the part shown?

- A** $x \geq -2$
- B** $y \geq 4.5$
- C** $x \geq 4.5$
- D** $y \geq -2$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	67	
B	15	
C	11	
D	7	

Error Analysis

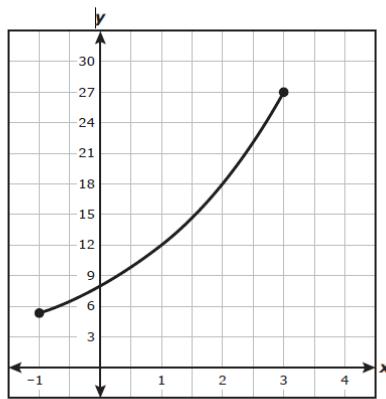
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities

2018 – Q23

23 What appears to be the domain of the part of the exponential function graphed on the grid?



- A** $-1 \leq x \leq 3$
- B** $-1 \leq y \leq 3$
- C** $5.3 \leq x \leq 27$
- D** $5.3 \leq y \leq 27$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	69	
B	10	
C	11	
D	10	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities</p>	<p>Analysis of Assessed Standards</p>																						
<p>! 2017 – Q21</p> <p>21 The population of Center City is modeled by exponential function f, where x is the number of years after the year 2015. The graph of f is shown on the grid.</p>	<table border="1"> <tr> <td>Cluster</td><td>Exponential Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Exponential Functions</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Exponential Functions	Subcluster	Describing Exponential Functions	Content	Supporting	Process		Stimulus													
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<p>Which inequality best represents the range of f in this situation?</p> <p>A $x \geq 0$ B $y \geq 250,000$ C $0 \leq x \leq 110$ D $250,000 \leq y \leq 1,000,000$</p>	<p>Learning from Mistakes Instructional Implications</p>																						

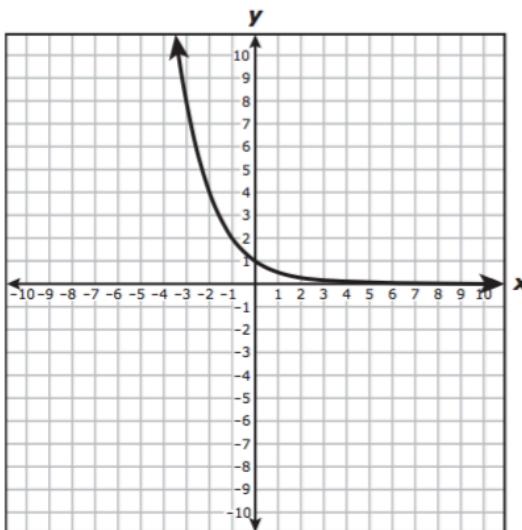
*Correct Answer (B)

A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities

Analysis of Assessed Standards

! 2016 – Q21

21 The graph of an exponential function is shown on the grid.



Based on the graph, which statement about the function is true?

- A** The range is the set of all real numbers less than 0.
- B** The domain is the set of all real numbers greater than -4.
- C** The range is the set of all real numbers greater than 0.
- D** The domain is the set of all real numbers less than -4.

*Correct Answer (C)

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	A.1(B), A.1(E), A.1(G)
Stimulus	

Data Analysis

Item	State	Local
A	6	
B	25	
C*	64	
D	5	

Error Analysis

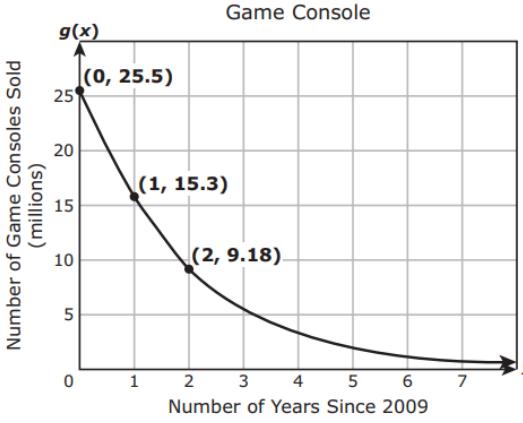
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

A.9(B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems		Analysis of Assessed Standards	
2019 – Q18		Cluster	Exponential Functions
A bank account earning annual compound interest was opened, and no additional deposits or withdrawals were made after the initial deposit. The balance in the account after x years can be modeled by $b(x) = 850(1.025)^x$.		Subcluster	Describing Exponential Functions
Which statement is the best interpretation of one of the values in this function?		Content	Supporting
F The initial balance of the account decreases at a rate of 97.5% each year.		Process	
G The balance in the account increases at a rate of 2.5% each year.		Stimulus	
H The initial balance of the account was \$1,025.		Data Analysis	
J The balance in the account at the end of one year is \$850.		Item	State
*Correct Answer (G)		F	7
		G*	63
		H	12
		J	18
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.9(B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems	Analysis of Assessed Standards		
! 2018 – Q46	Cluster	Exponential Functions	
46 Scientists are studying a bacteria sample. The function $f(x) = 245(1.12)^x$ gives the number of bacteria in the sample at the end of x days.	Subcluster	Describing Exponential Functions	
Which statement is the best interpretation of one of the values in this function?	Content	Supporting	
F The initial number of bacteria is 12.	Process		
G The initial number of bacteria decreases at a rate of 88% each day.	Stimulus		
H The number of bacteria increases at a rate of 12% each day.			
J The number of bacteria at the end of one day is 245.			
Data Analysis			
	Item	State	Local
	F	7	
	G	9	
	H*	67	
*Correct Answer (H)	J	17	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

A.9(B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems	Analysis of Assessed Standards		
2017 – Q31	Cluster	Exponential Functions	
31 A student used $f(x) = 5.00(1.012)^x$ to show how the balance in a savings account will increase over time. What does the 5.00 represent?	Subcluster	Describing Exponential Functions	
A The interest the savings account earned for the first year	Content	Supporting	
B The annual interest rate of the savings account	Process		
C The number of years the savings account has earned interest	Stimulus		
D The starting balance of the savings account			
Data Analysis			
	Item	State	Local
	A	9	
	B	17	
	C	9	
Correct Answer (D)	D	65	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

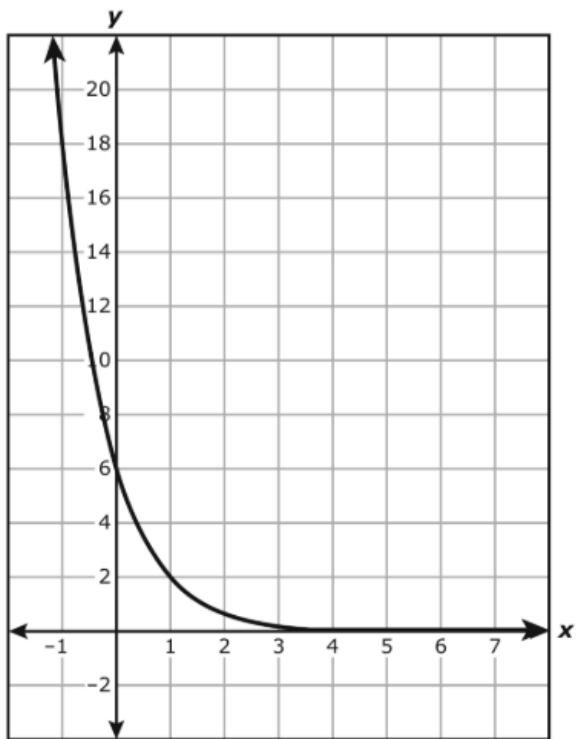
<p>A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay</p>	<p>Analysis of Assessed Standards</p>															
<p>2021 – Q11</p> <p>11 The graph shows the number of game consoles sold in millions since 2009.</p>	<table border="1"> <tr> <td>Cluster</td><td>Exponential Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Exponential Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Exponential Functions	Subcluster	Writing Exponential Functions	Content	Readiness	Process		Stimulus						
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Item	State	Local														
A	13															
B*	61															
C	15															
D	12															
<p>Based on this information, which function best models the number of game consoles sold in millions x years since 2009?</p> <p>A $g(x) = 0.6(25.5)^x$ B $g(x) = 25.5(0.6)^x$ C $g(x) = 6.12(25.5)^x$ D $g(x) = 25.5(6.12)^x$</p> <p>*Correct Answer (B)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards																											
2021 – Q38	Cluster Exponential Functions Subcluster Writing Exponential Functions Content Readiness Process Stimulus																											
38 The table represents some points on the graph of an exponential function.	Data Analysis																											
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>x</th> <th>f(x)</th> </tr> <tr> <td>2</td> <td>36</td> </tr> <tr> <td>3</td> <td>54</td> </tr> <tr> <td>4</td> <td>81</td> </tr> <tr> <td>5</td> <td>121.5</td> </tr> <tr> <td>6</td> <td>182.25</td> </tr> </table>	x	f(x)	2	36	3	54	4	81	5	121.5	6	182.25	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F*</td> <td>50</td> <td></td> </tr> <tr> <td>G</td> <td>18</td> <td></td> </tr> <tr> <td>H</td> <td>19</td> <td></td> </tr> <tr> <td>J</td> <td>13</td> <td></td> </tr> </tbody> </table>	Item	State	Local	F*	50		G	18		H	19		J	13	
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F*	50																											
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Which function represents this relationship?	Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>																											
F $f(x) = 16\left(\frac{3}{2}\right)^x$	Learning from Mistakes Instructional Implications																											
G $f(x) = 16\left(\frac{2}{3}\right)^x$																												
H $f(x) = 36\left(\frac{3}{2}\right)^x$																												
J $f(x) = 36\left(\frac{2}{3}\right)^x$																												
*Correct Answer (F)																												

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay

2019 – Q9

An exponential function is graphed on the grid.



Which function is best represented by the graph?

A $g(x) = 6\left(\frac{1}{3}\right)^x$

B $g(x) = 6(3)^x$

C $g(x) = 6 - \left(\frac{1}{3}\right)^x$

D $g(x) = 6 - (3)^x$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	79	
B	9	
C	7	
D	5	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay

2019 – Q31

The table represents some points on the graph of an exponential function.

x	f(x)
-2	12.5
-1	15
0	18
1	21.6
2	25.92

Which function represents the same relationship?

A $f(x) = 15\left(\frac{5}{6}\right)^x$

B $f(x) = 18\left(\frac{6}{5}\right)^x$

C $f(x) = 15\left(\frac{6}{5}\right)^x$

D $f(x) = 18\left(\frac{5}{6}\right)^x$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	8	
B*	72	
C	10	
D	10	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards																
2018 – Q17	Cluster Exponential Functions Subcluster Writing Exponential Functions Content Readiness Process Stimulus																
<p>17 There are 1,024 players in a tennis tournament. In each round, half the players are eliminated. Which function can be used to find the number of players remaining in the tournament at the end of x rounds?</p> <p>A $f(x) = 1,024(1.50)^x$ B $f(x) = 1,024(0.50)^x$ C $f(x) = 1,024(1.05)^x$ D $f(x) = 1,024(0.05)^x$</p>	Data Analysis <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Item</th> <th style="text-align: center;">State</th> <th style="text-align: center;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td><td style="text-align: center;">9</td><td></td></tr> <tr> <td style="text-align: center;">B*</td><td style="text-align: center;">77</td><td></td></tr> <tr> <td style="text-align: center;">C</td><td style="text-align: center;">6</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">7</td><td></td></tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>	Item	State	Local	A	9		B*	77		C	6		D	7		
Item	State	Local															
A	9																
B*	77																
C	6																
D	7																
<p>*Correct Answer (B)</p>	Learning from Mistakes Instructional Implications																

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards																
2018 – Q33	Cluster Exponential Functions Subcluster Writing Exponential Functions Content Readiness Process Stimulus																
<p>33 In the year 1900, the total number of metric tons of copper produced in the world was 495,000. Each year since 1900, the total number of metric tons of copper produced has increased on average by about 3.25% over the amount produced the previous year.</p> <p>Which function models the total number of metric tons of copper produced in the year that is x years since 1900?</p> <p>A $c(x) = 495,000(1.0325)^x$ B $c(x) = 495,000(0.9675)^x$ C $c(x) = 495,000x^{1.0325}$ D $c(x) = 495,000x^{0.9675}$</p>	Data Analysis <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Item</th> <th style="text-align: center;">State</th> <th style="text-align: center;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A*</td><td style="text-align: center;">68</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">15</td><td></td></tr> <tr> <td style="text-align: center;">C</td><td style="text-align: center;">11</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">5</td><td></td></tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>	Item	State	Local	A*	68		B	15		C	11		D	5		
Item	State	Local															
A*	68																
B	15																
C	11																
D	5																
<p>*Correct Answer (A)</p>	Learning from Mistakes Instructional Implications																

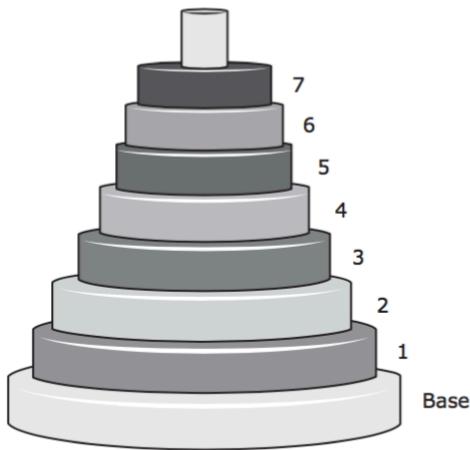
A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards	
2017 – Q15	Cluster	Exponential Functions
15 A particular type of cell doubles in number every hour. Which function can be used to find the number of cells present at the end of h hours if there are initially 4 of these cells?	Subcluster	Writing Exponential Functions
A $n = 4\left(\frac{1}{2}\right)^h$	Content	Readiness
B $n = 4(2)^h$	Process	
C $n = 4 + (2)^h$	Stimulus	
D $n = 4 + \left(\frac{1}{2}\right)^h$	Data Analysis	
	Item	State
	A	7
	B*	69
	C	19
	D	5
*Correct Answer (B)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards	
! 2017 – Q35	Cluster	Exponential Functions
35 The amount of fertilizer in a landscaping company's warehouse decreases at a rate of 3% per week. The amount of fertilizer in the warehouse was originally 78,000 cubic yards.	Subcluster	Writing Exponential Functions
Which function models the amount of fertilizer in cubic yards left after w weeks?	Content	Readiness
A $f(w) = 0.97(78,000)^w$	Process	
B $f(w) = 1.03(78,000)^w$	Stimulus	
C $f(w) = 78,000(0.97)^w$	Data Analysis	
D $f(w) = 78,000(1.03)^w$	Item	State
	A	9
	B	14
	C*	44
	D	33
*Correct Answer (C)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay

! 2016 – Q28

- 28** A toy is made up of cylindrical rings stacked on a base, as shown in the diagram. The diameter of Ring 1 is 87% of the diameter of the base. For Ring 2 through Ring 7, the diameter of each ring is 87% of the diameter of the ring directly below it.



The diameter of the base is 5 inches. Which function can be used to find the diameter in inches of Ring r , where $1 \leq r \leq 7$?

- F** $d(r) = 5(0.87)^r$
- G** $d(r) = 0.87(r - 5)$
- H** $d(r) = 0.87(5)^r$
- J** $d(r) = 5(r - 0.87)$

*Correct Answer (F)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	A.1(A), A.1(B), A.1(E), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
F*	43	
G	19	
H	18	
J	19	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay

Analysis of Assessed Standards

2016 – Q40

40 The table contains some points on the graph of an exponential function.

x	y
0	0.0625
1	0.25
2	1
3	4

Based on the table, which function represents the same relationship?

F $q(x) = (0.25)^x$

G $q(x) = 256(0.25)^x$

H $q(x) = 0.0625(4)^x$

J $q(x) = 0.5(4)^x$

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	A.1(B), A.1(D), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
F	15	
G	10	
H*	66	
J	9	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

*Correct Answer (H)

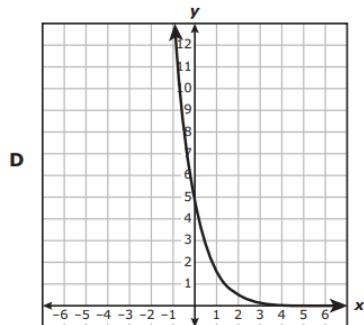
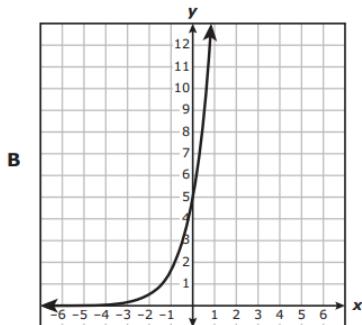
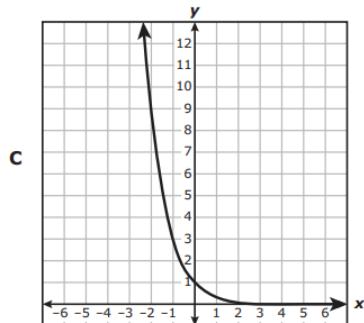
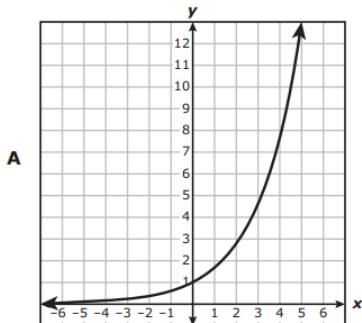
A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems		Analysis of Assessed Standards	
2021 – Q27		Cluster	Exponential Functions
27 What is the value of the y-intercept of the graph of $g(x) = 73\left(\frac{4}{5}\right)^x$?		Subcluster	Describing Exponential Functions
Record your answer and fill in the bubbles on your answer document.		Content	Readiness
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	73	43*	
		56	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

*Correct Answer (73)

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems

2021 – Q53

- 53 Which graph best represents $y = 5\left(\frac{1}{3}\right)^x$?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Exponential Functions	
Subcluster	Describing Exponential Functions	
Content	Readiness	
Process		
Stimulus		

Data Analysis

Item	State	Local
A	8	
B	13	
C	12	
D*	66	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

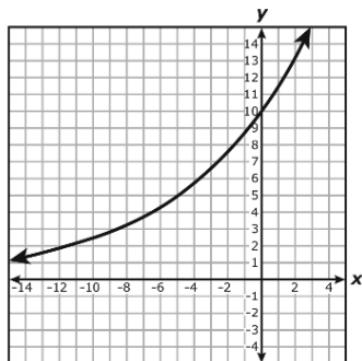
A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems	Analysis of Assessed Standards				
2019 – Q27	Cluster	Exponential Functions			
What is the value of the y -intercept of the graph of $h(x) = 29(5.2)^x$?	Subcluster	Describing Exponential Functions			
Record your answer and fill in the bubbles on your answer document.	Content	Readiness			
	Process				
	Stimulus				
	Data Analysis				
	Item	State	Local		
	29	56*			
		43			
Error Analysis					
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts				
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early				
Learning from Mistakes					
Instructional Implications					
*Correct Answer (29)					

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems

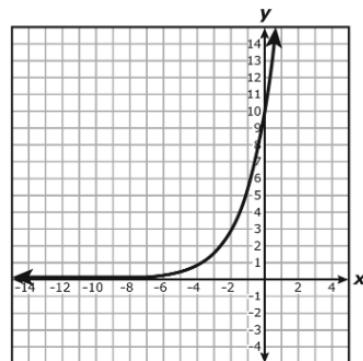
2019 – Q38

Which graph best represents $y = 10(0.85)^x$?

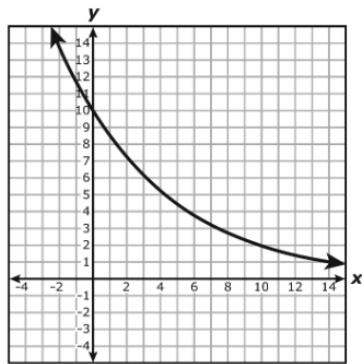
F



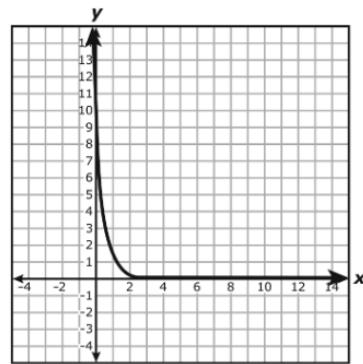
H



G



J



*Correct Answer (G)

Analysis of Assessed Standards

Cluster	Exponential Functions	
Subcluster	Describing Exponential Functions	
Content	Readiness	
Process		
Stimulus		

Data Analysis

Item	State	Local
F	5	
G*	82	
H	6	
J	7	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems	Analysis of Assessed Standards																	
2018 – Q4 4 Which statement about the graph of $y = 8(0.25)^x$ is true? F The coordinates of the x -intercept are $(0.25, 0)$. G The coordinates of the y -intercept are $(0, 8)$. H The equation of the asymptote is $x = 0$. J The graph includes the point $(2, 1)$.	<table border="1"> <tr> <td data-bbox="1114 143 1220 175">Cluster</td><td data-bbox="1220 143 1506 175">Exponential Functions</td></tr> <tr> <td data-bbox="1114 175 1220 217">Subcluster</td><td data-bbox="1220 175 1506 217">Describing Exponential Functions</td></tr> <tr> <td data-bbox="1114 217 1220 249">Content</td><td data-bbox="1220 217 1506 249">Readiness</td></tr> <tr> <td data-bbox="1114 249 1220 280">Process</td><td data-bbox="1220 249 1506 280"></td></tr> <tr> <td data-bbox="1114 280 1220 312">Stimulus</td><td data-bbox="1220 280 1506 312"></td></tr> </table>			Cluster	Exponential Functions	Subcluster	Describing Exponential Functions	Content	Readiness	Process		Stimulus						
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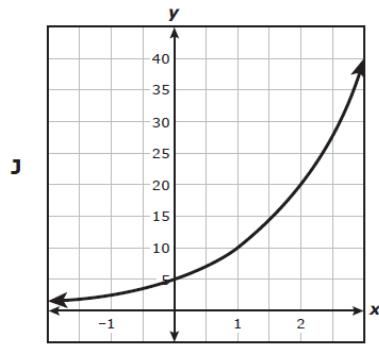
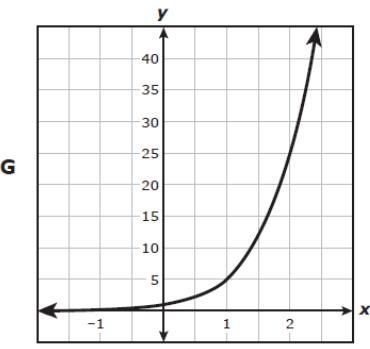
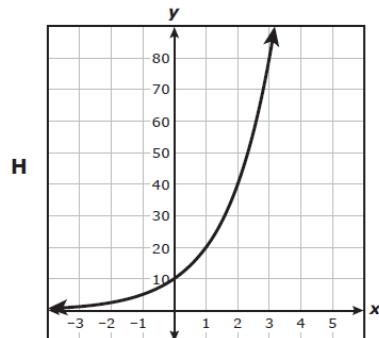
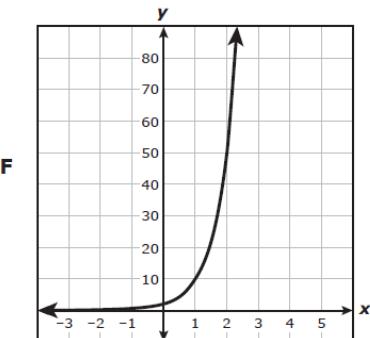
*Correct Answer (G)

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems

Analysis of Assessed Standards

! 2018 – Q40

40 Which graph best represents $f(x) = 2(5)^x$?



Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F*	53	
G	16	
H	19	
J	11	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

* Correct Answer (F)

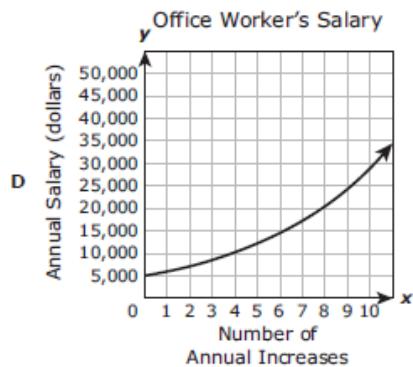
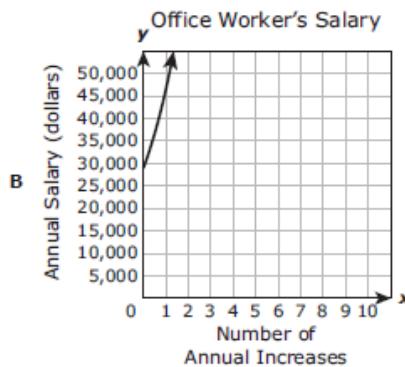
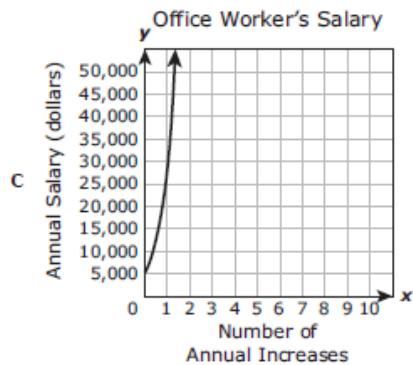
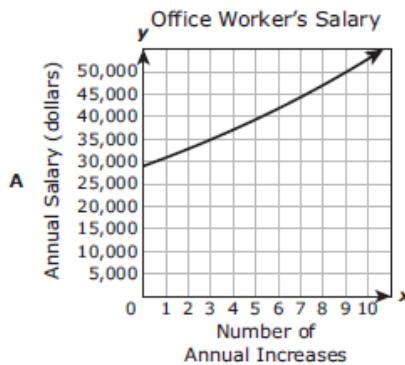
<p>A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems</p> <p>2017 – Q8</p> <p>8 The graph of an exponential function is shown on the grid.</p>	<p>Analysis of Assessed Standards</p> <table border="1"> <tr> <td>Cluster</td> <td>Exponential Functions</td> </tr> <tr> <td>Subcluster</td> <td>Describing Exponential Functions</td> </tr> <tr> <td>Content</td> <td>Readiness</td> </tr> <tr> <td>Process</td> <td></td> </tr> <tr> <td>Stimulus</td> <td></td> </tr> </table> <p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>9</td> <td></td> </tr> <tr> <td>G</td> <td>15</td> <td></td> </tr> <tr> <td>H*</td> <td>69</td> <td></td> </tr> <tr> <td>J</td> <td>7</td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <table> <tr> <td><input type="checkbox"/> Guessing</td> <td><input type="checkbox"/> Mixed Up Concepts</td> </tr> <tr> <td><input type="checkbox"/> Careless Error</td> <td><input type="checkbox"/> Stopped Too Early</td> </tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Exponential Functions	Subcluster	Describing Exponential Functions	Content	Readiness	Process		Stimulus		Item	State	Local	F	9		G	15		H*	69		J	7		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
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<p>Which dashed line is an asymptote for the graph?</p> <p>F Line <i>q</i> G Line <i>r</i> H Line <i>s</i> J Line <i>t</i></p> <p>*Correct Answer (H)</p>																														

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems	Analysis of Assessed Standards																	
! 2017 – Q49	Cluster Exponential Functions Subcluster Describing Exponential Functions Content Readiness Process Stimulus																	
<p>49 Which statement about the graph of $y = \frac{1}{3} \left(\frac{2}{3}\right)^x$ is true?</p> <p>A The graph has a vertical asymptote.</p> <p>B The graph crosses the y-axis at $(0, \frac{2}{9})$.</p> <p>C The graph has an asymptote at $y = \frac{1}{3}$.</p> <p>D The graph decreases from left to right.</p> <p>*Correct Answer (D)</p>			Data Analysis <table border="1" data-bbox="1106 439 1509 650"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>13</td> <td></td> </tr> <tr> <td>B</td> <td>13</td> <td></td> </tr> <tr> <td>C</td> <td>24</td> <td></td> </tr> <tr> <td>D*</td> <td>49</td> <td></td> </tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> Learning from Mistakes Instructional Implications	Item	State	Local	A	13		B	13		C	24		D*	49	
Item	State	Local																
A	13																	
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D*	49																	

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems

2016 – Q9

- 9 The starting annual salary for an office worker at a company is \$29,000. If the company awards an annual increase of 6.2%, which graph models this situation after the office worker receives x annual increases?



*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Readiness
Process	A.1(A), A.1(B), A.1(D), A.1(F)
Stimulus	

Data Analysis

Item	State	Local
A*	74	
B	17	
C	4	
D	6	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems</p>	<p>Analysis of Assessed Standards</p>																					
<p>! 2016 – Q50</p>	<table border="1"> <tr> <td>Cluster</td><td>Exponential Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Exponential Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td>A.1(A), A.1(B), A.1(E), A.1(G)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Exponential Functions	Subcluster	Describing Exponential Functions	Content	Readiness	Process	A.1(A), A.1(B), A.1(E), A.1(G)	Stimulus												
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Process	A.1(A), A.1(B), A.1(E), A.1(G)																					
Stimulus																						
<p>50 The number of stores opened by a coffee company can be modeled by the exponential function graphed on the grid, where x is the number of years since 1992.</p>	<table border="1"> <tr> <td>Data Analysis</td><td></td></tr> </table>	Data Analysis																				
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<p style="text-align: center;">Coffee Stores</p> <table border="1"> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>F</td><td>10</td><td></td></tr> <tr> <td>G</td><td>18</td><td></td></tr> <tr> <td>H</td><td>13</td><td></td></tr> <tr> <td>J*</td><td>59</td><td></td></tr> </table>	Item	State	Local	F	10		G	18		H	13		J*	59		<table border="1"> <tr> <td>Error Analysis</td><td></td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
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Error Analysis																						
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																					
<p>Based on the graph, which statement does not appear to be true?</p> <p>F The coffee company had opened 400 stores by the end of 1992. G The coffee company opened 100 stores in one year. H Every year the number of stores the coffee company opened increased by 25%. J Since 1992 the coffee company has opened 250 stores each year.</p> <p>*Correct Answer (J)</p>	<p>Learning from Mistakes Instructional Implications</p>																					

A.9(E) write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems		Analysis of Assessed Standards	
2021 – Q21		Cluster	Exponential Functions
21 A conservation agency tracks the sea turtle population by counting the number of nesting sites where the turtles lay their eggs. The table shows the numbers of nesting sites for several years since 2001. The data can be modeled by an exponential function.		Subcluster	Writing Exponential Functions
		Content	Supporting
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		A	17
		B*	53
		C	19
		D	12
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
*Correct Answer (B)		Learning from Mistakes Instructional Implications	

<p>A.9(E) write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems</p>	<p>Analysis of Assessed Standards</p>																																				
<p>! 2016 – Q17</p> <p>17 The exponential function modeled below represents the number of square kilometers of land occupied by cane toads x years after this animal was first introduced into Australia.</p>	<table border="1"> <tr> <td>Cluster</td><td>Exponential Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Exponential Functions</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td>A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Exponential Functions	Subcluster	Writing Exponential Functions	Content	Supporting	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus																											
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Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)																																				
Stimulus																																					
<p style="text-align: center;">Area Occupied by Cane Toads</p> <table border="1"> <thead> <tr> <th>Time (yr)</th> <th>Area (km²)</th> </tr> </thead> <tbody> <tr><td>0</td><td>36,500</td></tr> <tr><td>5</td><td>53,600</td></tr> <tr><td>10</td><td>78,800</td></tr> <tr><td>15</td><td>115,780</td></tr> <tr><td>20</td><td>170,120</td></tr> <tr><td>25</td><td>250,000</td></tr> <tr><td>30</td><td>367,300</td></tr> <tr><td>35</td><td>539,700</td></tr> </tbody> </table>	Time (yr)	Area (km ²)	0	36,500	5	53,600	10	78,800	15	115,780	20	170,120	25	250,000	30	367,300	35	539,700	<table border="1"> <tr> <td colspan="3">Data Analysis</td> </tr> <tr> <td>Item</td> <td>State</td> <td>Local</td> </tr> <tr> <td>A</td> <td>13</td> <td></td> </tr> <tr> <td>B</td> <td>6</td> <td></td> </tr> <tr> <td>C</td> <td>27</td> <td></td> </tr> <tr> <td>D*</td> <td>53</td> <td></td> </tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p>	Data Analysis			Item	State	Local	A	13		B	6		C	27		D*	53	
Time (yr)	Area (km ²)																																				
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<p>Based on the data, which measurement is closest to the number of square kilometers of land that will be occupied by cane toads 40 years after this animal was first introduced into Australia?</p> <p>A 550,000 km² B 1,250,000 km² C 600,000 km² D 800,000 km²</p> <p>*Correct Answer (D)</p>	<p>Learning from Mistakes Instructional Implications</p>																																				

A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes		Analysis of Assessed Standards	
! 2017 – Q22		Cluster	Exponential Functions
22 A sequence can be generated by using $a_n = 4a_{(n-1)}$, where $a_1 = 6$ and n is a whole number greater than 1. What are the first four terms in the sequence?		Subcluster	Writing Exponential Functions
F 6, 24, 96, 384		Content	Supporting
G 6, 10, 14, 18		Process	
H 6, 20, 100, 500		Stimulus	
J 6, 20, 76, 300		Data Analysis	
		Item	State
		F*	53
		G	25
		H	11
		J	11
Error Analysis		Learning from Mistakes	
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		Instructional Implications	
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			
*Correct Answer (F)			

			Analysis of Assessed Standards					
			Cluster					
			Subcluster					
			Content					
			Process					
			Item Type					
			Stimulus					
			Data Analysis			Error Analysis		
			Item	State	Local	<input type="checkbox"/> Guessing <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early <input type="checkbox"/> Mixed Up Concepts		
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* Correct Answer ()								

			Analysis of Assessed Standards					
			Cluster					
			Subcluster					
			Content					
			Process					
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			Stimulus					
			Data Analysis			Error Analysis		
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* Correct Answer ()								