



2016-2021 Released Tests

Aligned to the Standards

CONTENT BUILDER FOR THE PLC

Math

Algebra I

IQ Analysis | Investigating the Question – Released Tests User Guide

Student Expectation/Reporting Category
DISCUSS: How many questions for this Student Expectation were asked over the past years? Which parts were assessed?

IQ Analysis Investigating the Question	SE #	RC #
Units		
SE # Student Expectation ! [Year] [Question #]	Analysis of Assessed Standards Cluster Subcluster Content Process Item Type Stimulus	
	Data Analysis Item State Local	
	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Stopped Too Early <input type="checkbox"/> Careless Error <input type="checkbox"/> Mixed Up Concepts	
	Learning from Mistakes Instructional Implications	

*Correct Answer

Units
COMPLETE: Note the units in which the student expectation is taught.

Analysis of Assessed Standards
DISCUSS and NOTE: Review the cluster, subcluster, content/process standards, and item type assessed for each item.

Stimulus
COMPLETE: Note visual representation used.
DISCUSS and NOTE: How many different stimuli were used to assess this student expectation?

State-Level SE Data and Error Analysis
COMPLETE: Add local data for the item.
DISCUSS and NOTE: What are the most common error patterns?

Learning from Mistakes
DISCUSS and NOTE: What patterns in learning errors emerged across items? What is the best way to respond to those error patterns?

Instructional Implications
DISCUSS and NOTE: How will we adapt instruction to help students improve understanding and application of this student expectation?

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

[Learn more](#)

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.

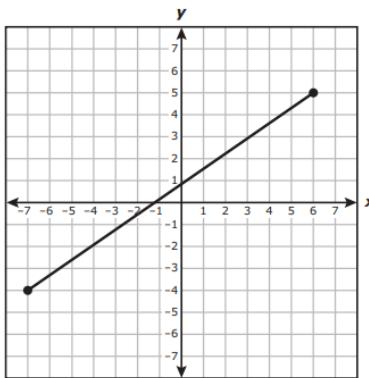
A.3 Linear functions, equations, and inequalities. The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations.

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

2021 – Q22

22 A part of linear function g is graphed on the grid.



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: $-4 \leq g(x) \leq 5$

*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	11	
G	19	
H	19	
J*	51	

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	

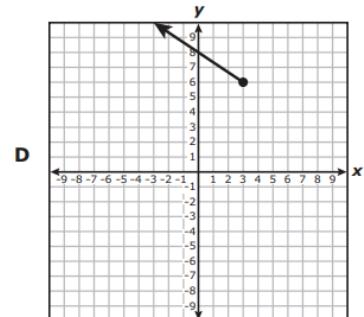
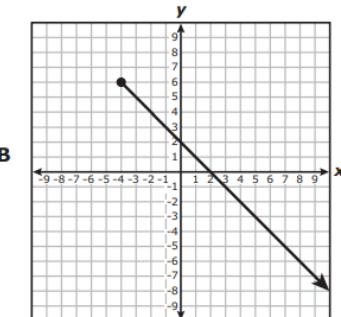
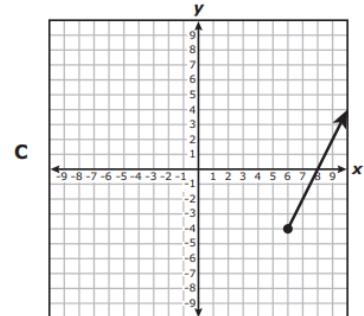
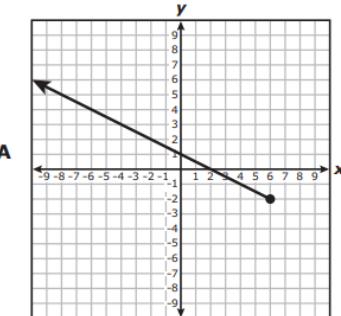
Data Analysis

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

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications



*Correct Answer (A)

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	

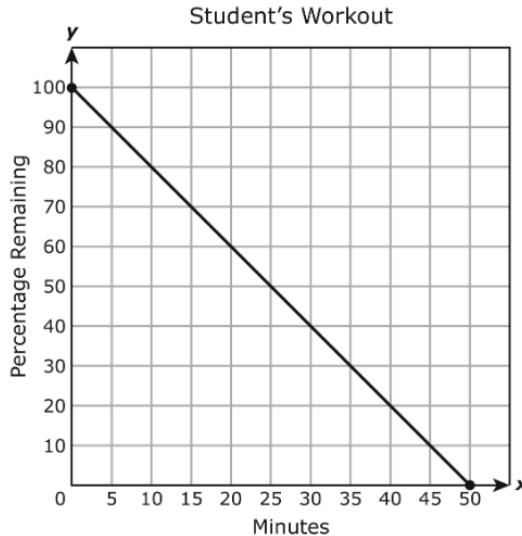
Data Analysis

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>! 2018 – Q13</p> <p>13 What are the domain and range of $f(x) = -37$?</p> <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>	<p>Analysis of Assessed Standards</p> <table border="1"> <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"></td></tr> <tr> <td>Stimulus</td><td colspan="2"></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>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> </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	A	12		B	15		C	22		D*	51		<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>*Correct Answer (D)</p>																																						

<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>2018 – Q47</p> <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> <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>Analysis of Assessed Standards</p> <table border="1"> <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"></td></tr> <tr> <td>Stimulus</td><td colspan="2"></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>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> </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	A	15		B*	67		C	5		D	13		<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>*Correct Answer (B)</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
2017 – Q5	Subcluster	Describing Linear Functions
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 $f(x) = 20x + 4$.	Content	Readiness
What is the range of the function for this situation?	Process	
<p>A {0, 1, 2, 3, 4, 5, 6}</p> <p>B {4, 24, 44, 64, 84, 104, 124}</p> <p>C {0, 2, 4, 6}</p> <p>D {4, 44, 84, 124}</p>	Stimulus	
	Data Analysis	
	Item	State
	A	9
	B*	75
	C	8
	D	8
*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.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	

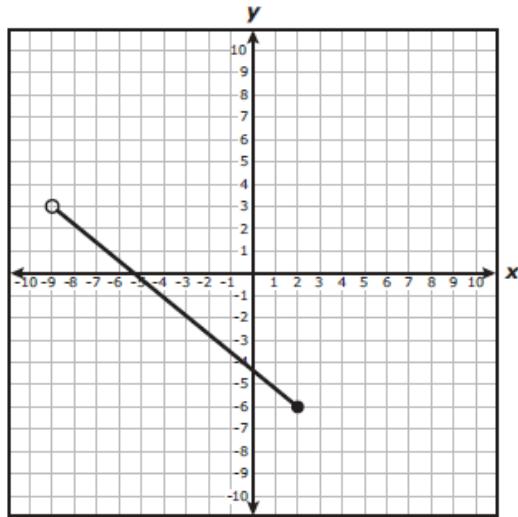
Data Analysis

Item	State	Local
F*	61	
G	18	
H	11	
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



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)

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(F)
Stimulus	

Data Analysis

Item	State	Local
F	22	
G	12	
H*	51	
J	15	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (H)

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	

Data Analysis

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

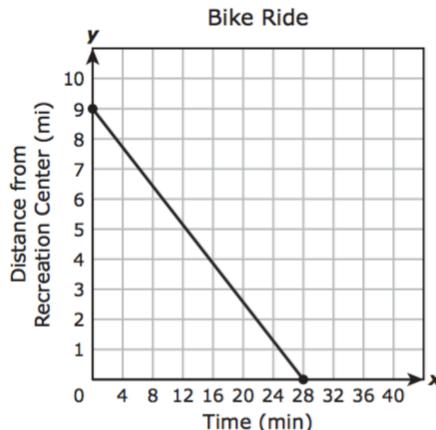
Error Analysis

- Guessing Mixed Up Concepts
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Learning from Mistakes Instructional Implications

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)

IQ Analysis | Investigating the Question

A.2(B)

RC 3

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	

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		
2019 – Q6	Cluster	Linear Functions	
What is the equation in slope-intercept form of the line that passes through the points $(-4, 2)$ and $(12, 6)$?	Subcluster	Writing Linear Equations	
F $y = 0.25x + 3$	Content	Supporting	
G $y = 0.25x - 4.5$	Process		
H $y = 4x + 18$	Stimulus		
J $y = 4x - 42$	Data Analysis		
	Item	State	Local
	F*	74	
	G	9	
	H	12	
	J	4	
*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(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		
2017 – Q23	Cluster	Linear Functions	
23 What is the equation in slope-intercept form of the line that passes through the points $(-4, 47)$ and $(2, -16)$?	Subcluster	Writing Linear Equations	
A $y = -\frac{21}{2}x + \frac{979}{21}$	Content	Supporting	
B $y = -\frac{2}{21}x + \frac{979}{21}$	Process		
C $y = -\frac{21}{2}x + 5$	Stimulus		
D $y = -\frac{2}{21}x + 5$	Data Analysis		
	Item	State	Local
	A	9	
	B	11	
	C*	69	
	D	11	
*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(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	
		Item	State
		F	17
		G	17
		H*	53
		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)

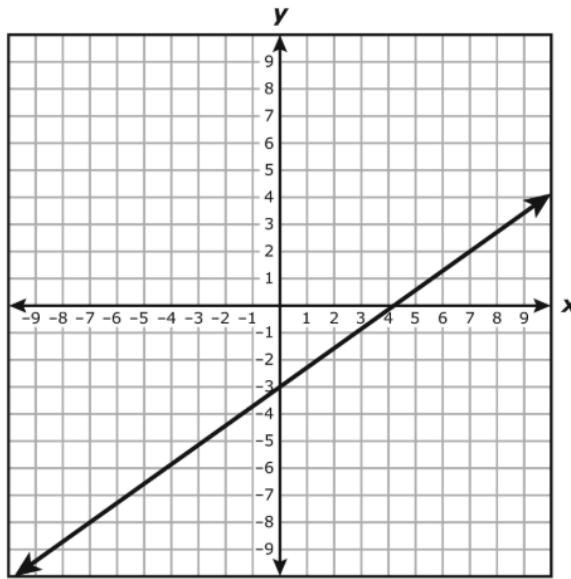
A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards																
2021 – Q2																		
2 The graph of a linear function is shown on the grid.																		
Which function is best represented by this graph?																		
F $g(x) = 6x + 4$																		
G $g(x) = 4x - \frac{2}{3}$																		
H $g(x) = -\frac{3}{2}x + 6$																		
J $g(x) = -\frac{2}{3}x + 4$																		
Correct Answer (J)		Data Analysis <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>16</td> <td></td> </tr> <tr> <td>G</td> <td>6</td> <td></td> </tr> <tr> <td>H</td> <td>9</td> <td></td> </tr> <tr> <td>J</td> <td>70</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	F	16		G	6		H	9		J*	70	
Item	State	Local																
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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											
2021 – Q44		Cluster	Linear Functions										
44 The table represents some points on the graph of linear function f .		Subcluster	Writing Linear Equations										
	<table border="1" data-bbox="376 270 861 354"> <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>	x	-3	2	5	11	$f(x)$	-130	0	78	234	Content	Readiness
x	-3	2	5	11									
$f(x)$	-130	0	78	234									
		Process											
		Stimulus											
Data Analysis													
	Item	State	Local										
	F*	58											
	G	15											
	H	15											
*Correct Answer (F)	J	12											
Error Analysis													
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	<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

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																		
<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;">F*</td><td style="text-align: center;">77</td><td></td></tr> <tr> <td style="text-align: center;">G</td><td style="text-align: center;">8</td><td></td></tr> <tr> <td style="text-align: center;">H</td><td style="text-align: center;">7</td><td></td></tr> <tr> <td style="text-align: center;">J</td><td style="text-align: center;">7</td><td></td></tr> </tbody> </table>				Item	State	Local	F*	77		G	8		H	7		J	7	
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<small>*Correct Answer (F)</small>																		

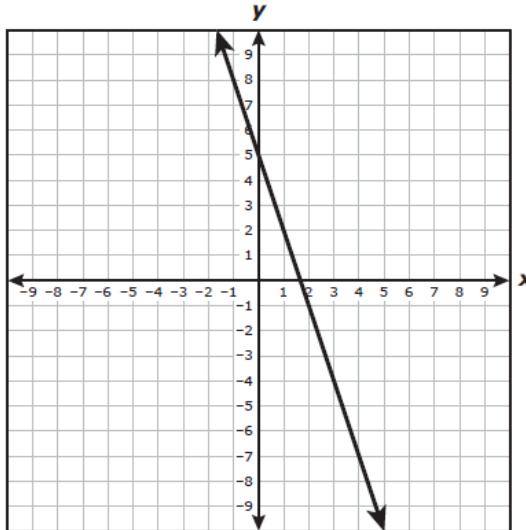
A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2018 – Q1		Cluster	Linear Functions
	1 At a restaurant jars of tomato sauce are stored in boxes in the pantry. Each box contains 8 jars of tomato sauce. A cook uses 2 jars from 1 of the boxes.	Subcluster	Writing Linear Equations
	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?	Content	Readiness
	A $y = 8x + 6$	Process	
	B $y = 8x$	Stimulus	
	C $y = 8x - 2$	Data Analysis	
	D $y = 6x$	Item	State
		A	7
		B	4
		C*	84
		D	5
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 (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

- 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	
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	5 The table represents some points on the graph of a linear function.	Cluster	Linear Functions															
	<table border="1" data-bbox="448 285 1077 390"> <tr> <td>x</td><td>-7.5</td><td>-3.5</td><td>-1</td><td>2</td><td>3.5</td></tr> <tr> <td>y</td><td>12</td><td>0</td><td>-7.5</td><td>-16.5</td><td>-21</td></tr> </table>	x	-7.5	-3.5	-1	2	3.5	y	12	0	-7.5	-16.5	-21	Subcluster	Writing Linear Equations			
x	-7.5	-3.5	-1	2	3.5													
y	12	0	-7.5	-16.5	-21													
	Which function represents the same relationship?	Content	Readiness															
	<p>A $h(x) = -3x - 10.5$</p> <p>B $h(x) = -x - 3.5$</p> <p>C $h(x) = 3x - 10.5$</p> <p>D $h(x) = x - 3.5$</p>	Process	A.1(B), A.1(D), A.1(F)															
*Correct Answer (A)		Stimulus																
Data Analysis																		
<table border="1" data-bbox="1142 411 1509 623"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A*</td><td>70</td><td></td></tr> <tr> <td>B</td><td>10</td><td></td></tr> <tr> <td>C</td><td>10</td><td></td></tr> <tr> <td>D</td><td>9</td><td></td></tr> </tbody> </table>				Item	State	Local	A*	70		B	10		C	10		D	9	
Item	State	Local																
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																		

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	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?	Cluster	Linear Functions															
	<p>A $f(x) = 2,070 + \frac{x}{4}$</p> <p>B $f(x) = 2,070 - \frac{x}{4}$</p> <p>C $f(x) = \frac{x + 2,070}{4}$</p> <p>D $f(x) = \frac{x - 2,070}{4}$</p>	Subcluster	Writing Linear Equations															
		Content	Readiness															
		Process	A.1(A), A.1(B), A.1(D), A.1(F)															
		Stimulus																
Data Analysis																		
<table border="1" data-bbox="1142 1362 1509 1573"> <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>24</td><td></td></tr> <tr> <td>C</td><td>14</td><td></td></tr> <tr> <td>D*</td><td>47</td><td></td></tr> </tbody> </table>				Item	State	Local	A	14		B	24		C	14		D*	47	
Item	State	Local																
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																		

IQ Analysis | Investigating the Question

A.2(D)

RC 3

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards	
!	2021 – Q42	Cluster	Linear Functions
42	The value of y is directly proportional to the value of x . When $x = 3.5$, the value of y is 14.	Subcluster	Solving Linear Equations
	What is the value of y when $x = 28$?	Content	Supporting
	Record your answer and fill in the bubbles on your answer document.	Process	
		Stimulus	
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		Cluster	Linear Functions
	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.	Subcluster	Solving Linear Equations
	What is the time in seconds the toy robot moves when the total distance is 408 centimeters?	Content	Supporting
F 24 s		Process	
G 17 s		Stimulus	
H 13 s		Data Analysis	
J 37 s		Item	State
		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	
!	2016 – Q42	Cluster	Linear Functions
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?	Subcluster	Solving Linear Equations
	Record your answer and fill in the bubbles on your answer document.	Content	Supporting
		Process	A.1(A), A.1(B), A.1(F)
		Stimulus	
Data Analysis			
	Item	State	Local
	60	58*	
		40	
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 (60)

IQ Analysis | Investigating the Question

A.2(E)

RC 3

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	

IQ Analysis | Investigating the Question

A.2(F)

RC 3

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 $y = -\frac{4}{9}x + 5$?			
F $y = \frac{4}{9}x + 16$			
G $y = \frac{4}{9}x - 16$			
H $y = \frac{9}{4}x + 81$			
J $y = \frac{9}{4}x - 81$			
*Correct Answer (J)		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	

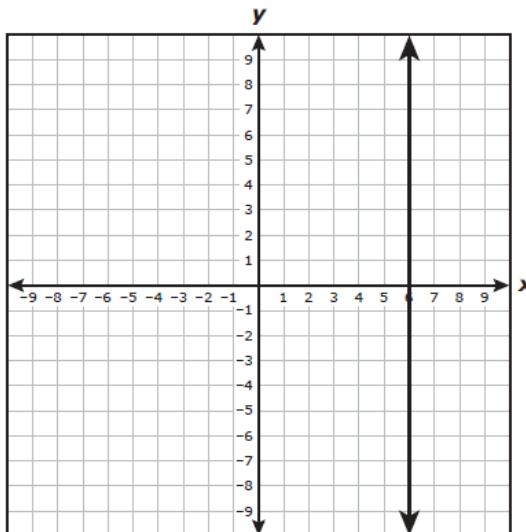
A.2(F) write the equation of a line that contains a given point and is perpendicular to a given line		Analysis of Assessed Standards	
2018 – Q39			
39 What is the equation in slope-intercept form of the line that passes through the point $(2, -2)$ and is perpendicular to the line represented by $y = \frac{2}{5}x + 2$?			
A $y = \frac{5}{2}x - 7$			
B $y = \frac{5}{2}x + 7$			
C $y = -\frac{5}{2}x - 3$			
D $y = -\frac{5}{2}x + 3$			
*Correct Answer (D)		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	

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		
2021 – Q39 39 Which statement best represents the equation of the line shown on the grid and its relationship to the x-axis?	Cluster	Linear Functions	
	Subcluster	Writing Linear Equations	
	Content	Supporting	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	17	
	B	7	
	C*	66	
	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	
*Correct Answer (C)	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

! 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)

Analysis of Assessed Standards

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	
!	2017 – Q36	Cluster	Linear Functions
		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	F	11	
	G	14	
	H	28	
*	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			
*Correct Answer (J)			

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 $y - y_1 = m(x - x_1)$

2021 – Q17

17 The table of values shows a linear relationship between x and y .

x	y
-7	9
-2	1
3	-7
8	-15

What is the slope of the line represented by the table of values?

A $-\frac{8}{5}$

B $-\frac{5}{8}$

C $\frac{8}{5}$

D $\frac{5}{8}$

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

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

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (A)

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			
2019 – Q1	Cluster	Linear Functions			
What is the slope of the graph of $y = 12x - 19$?	Subcluster	Writing Linear Equations			
	Content	Supporting			
	Process				
	Stimulus				
Data Analysis					
	Item	State	Local		
A	19				
B	8				
C	8				
D*	64				
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 -19

B $-\frac{12}{19}$

C $\frac{19}{12}$

D 12

*Correct Answer (D)

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			
2018 – Q51	Cluster	Linear Functions			
51 What is the slope of the line that passes through the points $(5, -11)$ and $(-9, 17)$?	Subcluster	Writing Linear Equations			
	Content	Supporting			
	Process				
	Stimulus				
Data Analysis					
	Item	State	Local		
A*	60				
B	15				
C	15				
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 -2

B $-\frac{1}{2}$

C 7

D 2

*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>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																	
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Item	State	Local															
F	16																
G	12																
H	13																
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																	

*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																	
<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;">50</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">25</td><td></td></tr> <tr> <td style="text-align: center;">C</td><td style="text-align: center;">13</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">12</td><td></td></tr> </tbody> </table>			Item	State	Local	A*	50		B	25		C	13		D	12	
Item	State	Local															
A*	50																
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Learning from Mistakes Instructional Implications																	

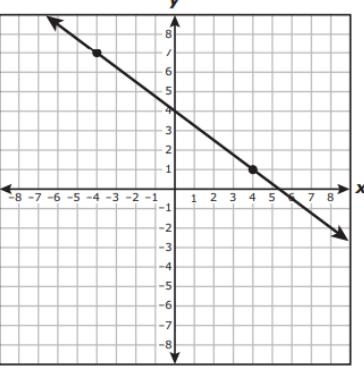
*Correct Answer (A)

IQ Analysis | Investigating the Question

A.3(B)

RC 2

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="1101 424 1509 635"> <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 $-\frac{3}{4}$	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)

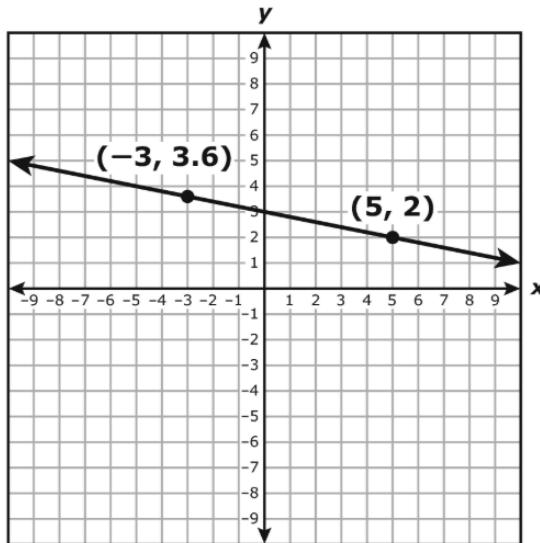
A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards																
2021 – Q36	36 A contractor's total earnings from a job include a fixed amount plus an amount 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.	Cluster Linear Functions Subcluster Writing Linear Equations Content Readiness Process Stimulus															
	Contractor																
	<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		
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35	\$326.25																
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	What is the rate of change of the contractor's total earnings in dollars with respect to the number of hours worked?	Data Analysis <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Item</th> <th style="width: 15%;">State</th> <th style="width: 15%;">Local</th> </tr> </thead> <tbody> <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> </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*	60		G	18		H	11		J	10	
Item	State	Local															
F*	60																
G	18																
H	11																
J	10																
*Correct Answer (F)	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	
2019 – Q5		Cluster	Linear Functions
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.		Subcluster	Writing Linear Equations
		Content	Readiness
		Process	
		Stimulus	
		Data Analysis	
		Item	State
A 14 ft/yr		A	10
B 3 ft/yr		B	8
C 7 ft/yr		C*	77
D 10 ft/yr		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.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems

2019 – Q20

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



What is the rate of change of y with respect to x for this function?

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

*Correct Answer (-0.2)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
-0.2	38*	
	61	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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>2019 – Q39</p> <p>The table shows a linear relationship between x and y.</p> <table border="1"> <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> <p>What is the rate of change of y with respect to x?</p> <p>A $-\frac{9}{2}$</p> <p>B $\frac{2}{9}$</p> <p>C $-\frac{2}{9}$</p> <p>D $\frac{9}{2}$</p>	x	y	-20	96	-12	60	-6	33	-2	15	<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> <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>64</td><td></td></tr> <tr> <td>B</td><td>10</td><td></td></tr> <tr> <td>C</td><td>15</td><td></td></tr> <tr> <td>D</td><td>11</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	Writing Linear Equations	Content	Readiness	Process		Stimulus		Item	State	Local	A*	64		B	10		C	15		D	11		<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.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 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.	<table border="1"> <tr> <td data-bbox="1117 147 1215 179">Cluster</td><td data-bbox="1215 147 1509 179">Linear Functions</td></tr> <tr> <td data-bbox="1117 190 1215 221">Subcluster</td><td data-bbox="1215 190 1509 221">Writing Linear Equations</td></tr> <tr> <td data-bbox="1117 232 1215 264">Content</td><td data-bbox="1215 232 1509 264">Readiness</td></tr> <tr> <td data-bbox="1117 274 1215 306">Process</td><td data-bbox="1215 274 1509 306"></td></tr> <tr> <td data-bbox="1117 316 1215 348">Stimulus</td><td data-bbox="1215 316 1509 348"></td></tr> </table>		Cluster	Linear Functions	Subcluster	Writing Linear Equations	Content	Readiness	Process		Stimulus						
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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> <p> A $200 \text{ ft}^2/\text{gal}$ B $\frac{1}{200} \text{ ft}^2/\text{gal}$ C $400 \text{ ft}^2/\text{gal}$ D $\frac{1}{400} \text{ ft}^2/\text{gal}$ </p> <p>*Correct Answer (C)</p>		Error Analysis <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> Learning from Mistakes Instructional Implications	<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.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems

2018 – Q42

- 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.

Savings Account

Week	0	1	3	6	8	13
Balance (dollars)	32	39	53	74	88	123

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?

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

*Correct Answer (7)

Analysis of Assessed Standards

Cluster Linear Functions

Subcluster Writing Linear Equations

Content Readiness

Process

Stimulus

Data Analysis

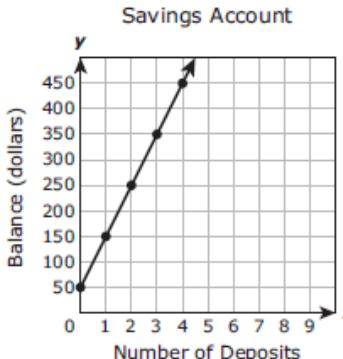
Item	State	Local
7	66*	
	33	

Error Analysis

Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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
	Subcluster	Writing Linear Equations	
	Content	Readiness	
	Process		
	Stimulus		
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>	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															
 <p>Savings Account</p> <p>What is the rate of change of the balance with respect to the number of deposits?</p> <p>A \$100 per deposit B \$50 per deposit C \$0.50 per deposit D \$2 per deposit</p>	Data Analysis <table border="1" data-bbox="1101 422 1509 633"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A*</td> <td>87</td> <td></td> </tr> <tr> <td>B</td> <td>11</td> <td></td> </tr> <tr> <td>C</td> <td>1</td> <td></td> </tr> <tr> <td>D</td> <td>2</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*	87		B	11		C	1		D	2	
Item	State	Local														
A*	87															
B	11															
C	1															
D	2															
*Correct Answer (A)	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	
2016 – Q19		Cluster	Linear Functions
19 The table represents some points on the graph of a linear function.		Subcluster	Writing Linear Equations
		Content	Readiness
		Process	A.1(B), A.1(C), A.1(E), A.1(F)
		Stimulus	
Data Analysis			
	Item	State	Local
	A	12	
	B*	59	
	C	14	
	D	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			

What is the rate of change of y with respect to x for this function?

A $\frac{2}{9}$

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

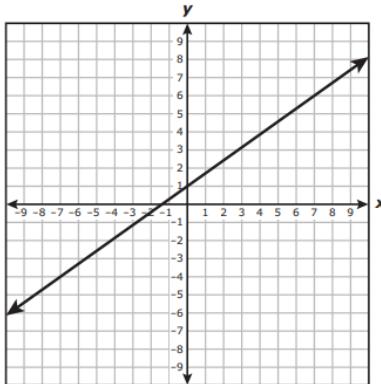
C $\frac{9}{2}$

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

*Correct Answer (B)

<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> <p>Volume of Gas (mL)</p> <p>Temperature (°C)</p> <p>Which of these best represents the rate of change in the volume of the gas sample with respect to the temperature?</p> <p>F $\frac{7}{100}$ mL/°C G $\frac{1}{12}$ mL/°C H 12 mL/°C J $22\frac{2}{5}$ mL/°C</p> <p>*Correct Answer (G)</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>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> <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>15</td><td></td></tr> <tr> <td>G*</td><td>40</td><td></td></tr> <tr> <td>H</td><td>17</td><td></td></tr> <tr> <td>J</td><td>27</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	Writing Linear Equations	Content	Readiness	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus		Item	State	Local	F	15		G*	40		H	17		J	27		<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.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	Local
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)			



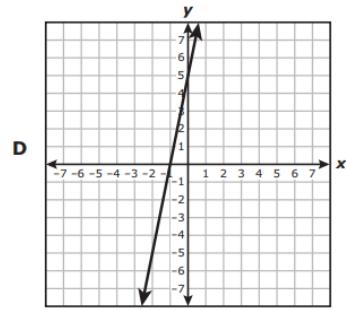
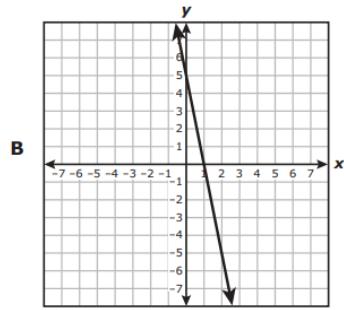
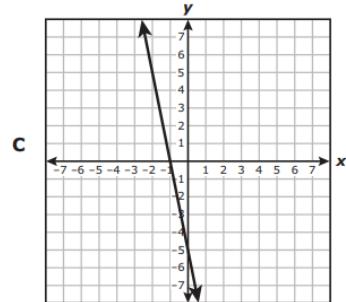
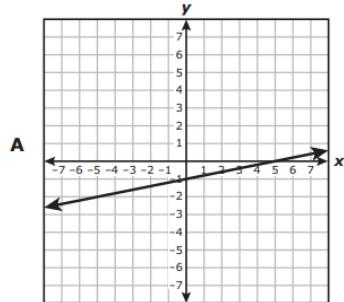
What are the slope and y -intercept of the graph of g ?

- 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 .

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	

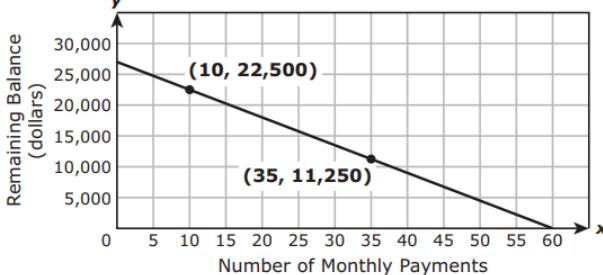
Data Analysis

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

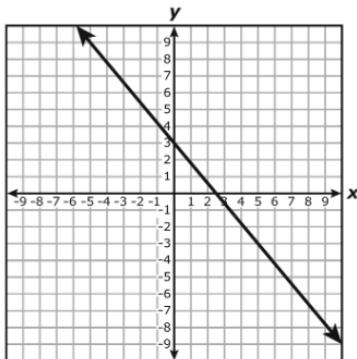
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards															
<p>2021 – Q51</p> <p>51 The graph models the linear relationship between the number of monthly payments made on a loan and the remaining balance in dollars left to pay on the loan.</p>	Cluster Linear Functions Subcluster Describing Linear Functions Content Readiness Process Stimulus															
 <p>Remaining Balance (dollars)</p> <p>Number of Monthly Payments</p>	Data Analysis <table border="1" data-bbox="1158 432 1493 633"> <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>	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early															
<p>*Correct Answer (C)</p>	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

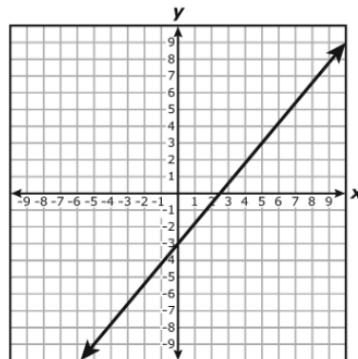
2019 – Q7

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

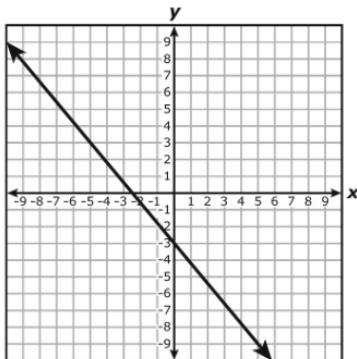
A



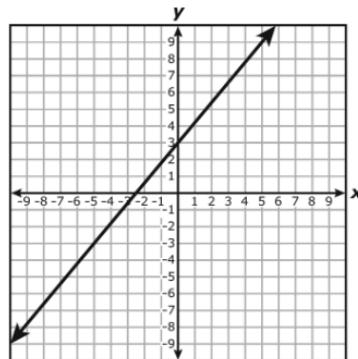
C



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	

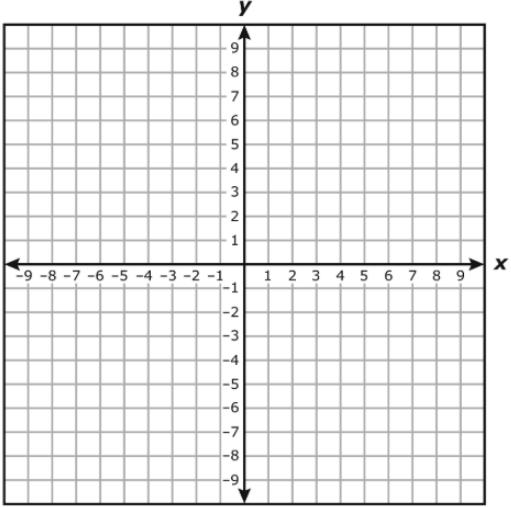
Error Analysis

- 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"> <thead> <tr> <th>Item</th> <th>State</th> <th>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 $-\frac{4}{3}$.</p> <p>B The graph of k passes through the point $(-1, -8)$.</p> <p>C The zero of k is 7.</p> <p>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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Learning from Mistakes Instructional Implications																																								

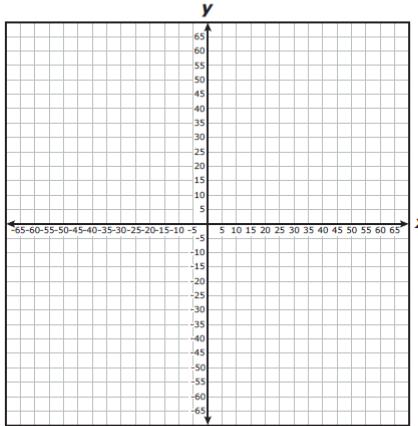
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards																				
2018 – Q16	<p>16 The water level of a river was measured each day during a 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"> <caption>Data points from the Water Level of River graph</caption> <thead> <tr> <th>Number of Days (x)</th> <th>Water Level (ft) (y)</th> </tr> </thead> <tbody> <tr> <td>14</td> <td>20</td> </tr> </tbody> </table>	Number of Days (x)	Water Level (ft) (y)	14	20	<p>Cluster Linear Functions</p> <p>Subcluster Describing Linear Functions</p> <p>Content Readiness</p> <p>Process</p> <p>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>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> <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</p> <p>Instructional Implications</p>	Item	State	Local	F	12		G	11		H*	71		J	6	
Number of Days (x)	Water Level (ft) (y)																				
14	20																				
Item	State	Local																			
F	12																				
G	11																				
H*	71																				
J	6																				

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	Cluster	Linear Functions	
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.	Subcluster	Describing Linear Functions	
	Content	Readiness	
	Process		
	Stimulus		
Data Analysis			
	Item	State	Local
	40	52*	
		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		



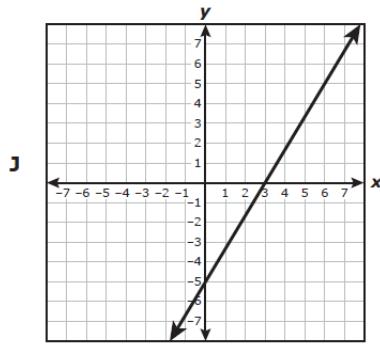
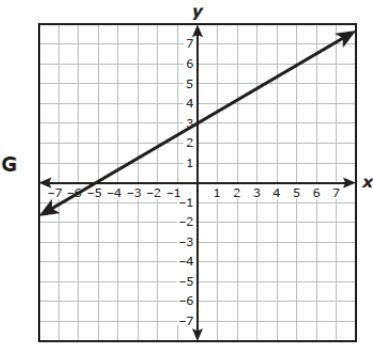
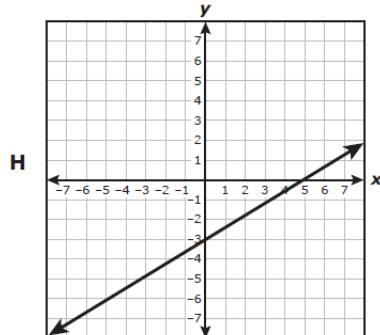
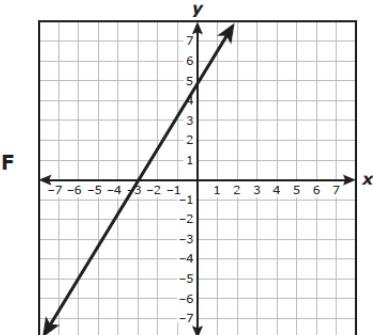
How many seconds did it take the paper airplane to reach the ground?

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

2018 – Q54

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



*Correct Answer (G)

Analysis of Assessed Standards

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

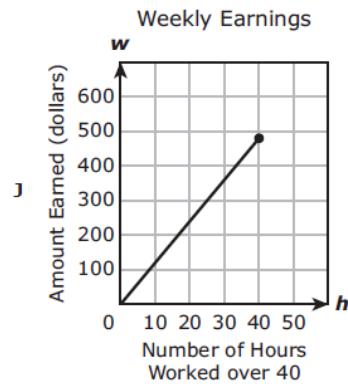
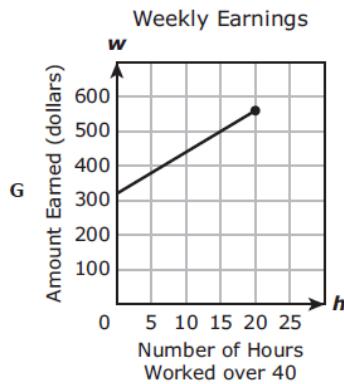
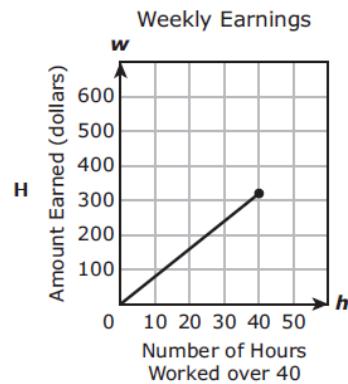
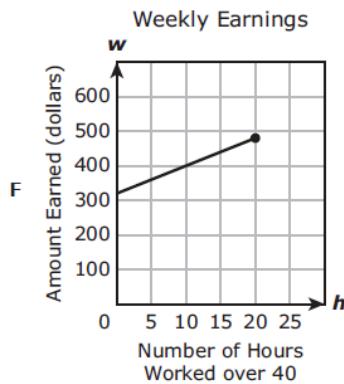
Learning from Mistakes Instructional Implications

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

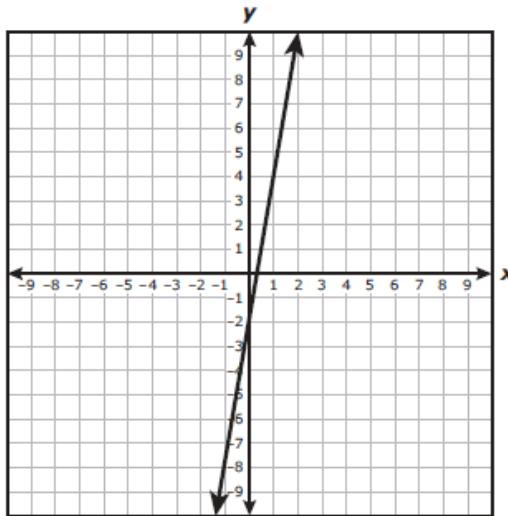
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

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 – Q32

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



Which ordered pair best represents the location of the *y*-intercept?

F $(\frac{1}{3}, 0)$

G $(0, -2)$

H $(0, \frac{1}{3})$

J $(-2, 0)$

*Correct Answer (G)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

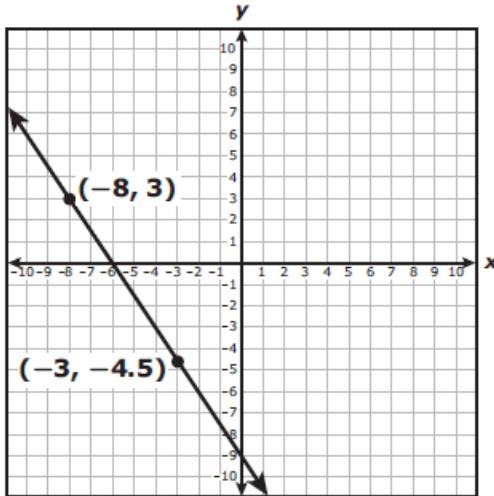
Item	State	Local
F	5	
G*	78	
H	7	
J	9	

Error Analysis

- 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																			
2017 – Q42 <p>42 The graph of linear function g is shown on the grid.</p>	<table border="1"> <tr> <td data-bbox="1111 149 1204 185">Cluster</td><td data-bbox="1204 149 1509 185">Linear Functions</td></tr> <tr> <td data-bbox="1111 192 1204 228">Subcluster</td><td data-bbox="1204 192 1509 228">Describing Linear Functions</td></tr> <tr> <td data-bbox="1111 234 1204 270">Content</td><td data-bbox="1204 234 1509 270">Readiness</td></tr> <tr> <td data-bbox="1111 276 1204 312">Process</td><td data-bbox="1204 276 1509 312"></td></tr> <tr> <td data-bbox="1111 318 1204 354">Stimulus</td><td data-bbox="1204 318 1509 354"></td></tr> </table>			Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Stimulus								
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Subcluster	Describing Linear Functions																			
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Data Analysis																				
Item	State	Local																		
-6	61*																			
	38																			
	<table border="1"> <tr> <td data-bbox="1111 656 1204 692">Error Analysis</td><td data-bbox="1204 656 1509 692"></td></tr> <tr> <td data-bbox="1111 699 1297 734"><input type="checkbox"/> Guessing</td><td data-bbox="1297 699 1509 734"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td data-bbox="1111 741 1297 777"><input type="checkbox"/> Careless Error</td><td data-bbox="1297 741 1509 777"><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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	<table border="1"> <tr> <td data-bbox="1111 762 1204 798">Learning from Mistakes</td><td data-bbox="1204 762 1509 798"></td></tr> <tr> <td data-bbox="1111 804 1444 840">Instructional Implications</td><td data-bbox="1444 804 1509 840"></td></tr> </table>			Learning from Mistakes		Instructional Implications														
Learning from Mistakes																				
Instructional Implications																				
<p>What is the zero of g?</p> <p>Record your answer and fill in the bubbles on your answer document.</p> <p>*Correct Answer (-6)</p>																				



What is the zero of g ?

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

*Correct Answer (-6)

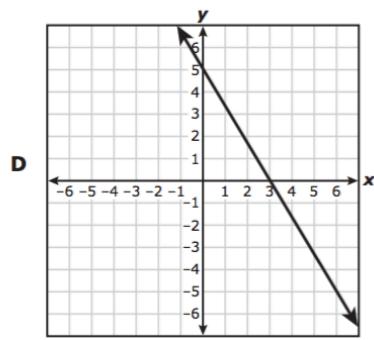
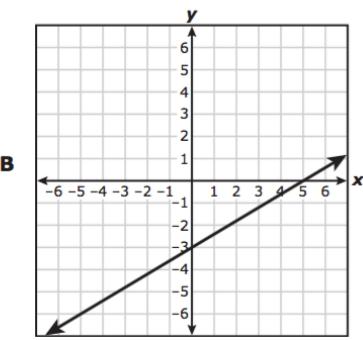
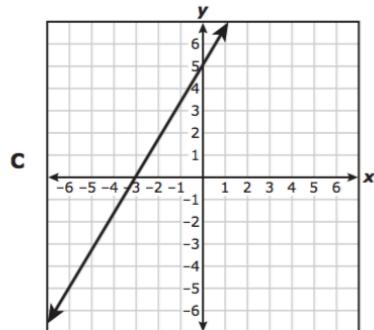
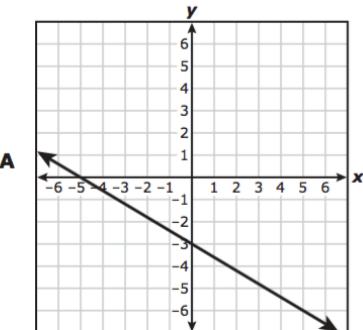
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards	
2016 – Q14	Cluster	Linear Functions
14 What is the y -intercept of the line graphed on the grid?	Subcluster	Describing Linear Functions
	Content	Readiness
	Process	A.1(B), A.1(E), A.1(F)
	Stimulus	
	Data Analysis	
	Item	State
5.5	68*	
	32	
*Correct Answer (5.5)	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	

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

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

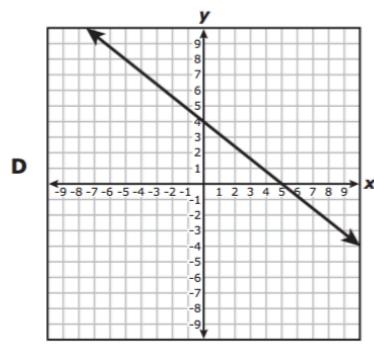
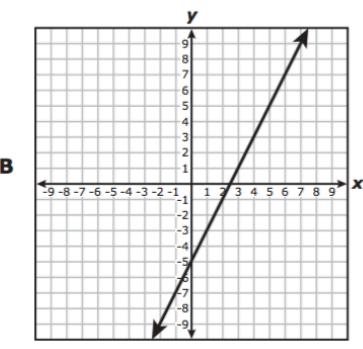
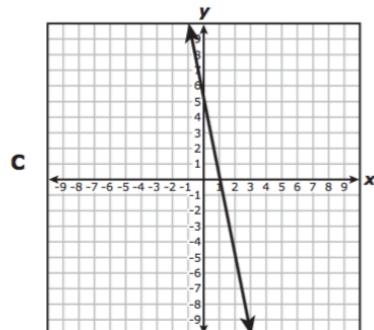
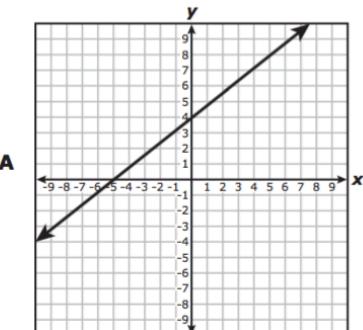
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

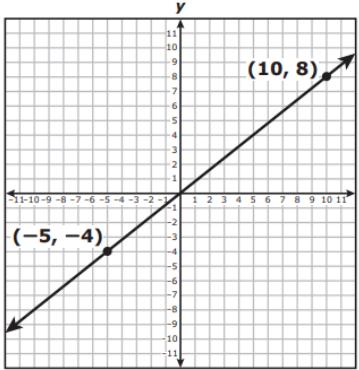
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- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question

A.3(E)

RC 2

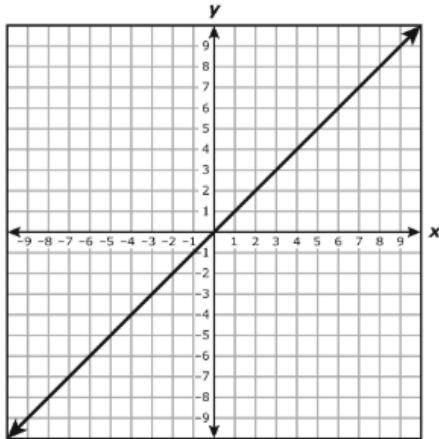
A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d		Analysis of Assessed Standards
! 2021 – Q20	Cluster	Linear Functions
20 The graph of linear function h is shown on the grid.	Subcluster	Describing Linear Functions
	Content	Supporting
	Process	
	Stimulus	
	Data Analysis	
	Item	State
0.8	25*	
	74	
	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 (0.8)		

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

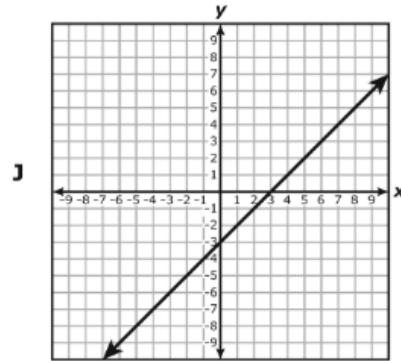
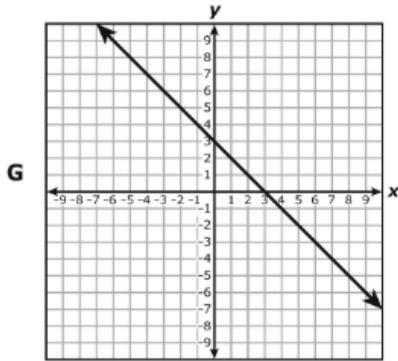
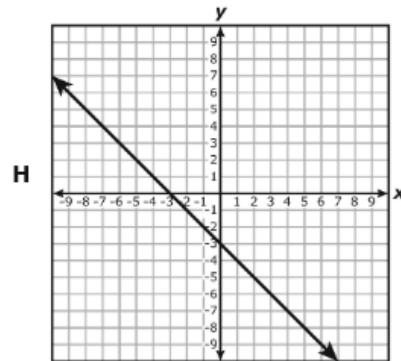
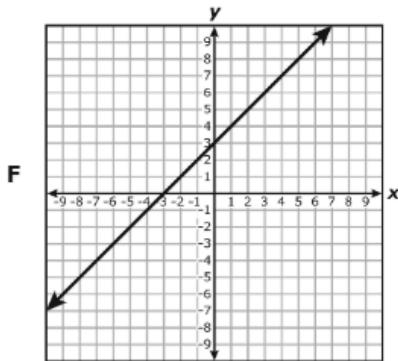
Item	State	Local
F	30	
G*	52	
H	7	
J	11	

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)

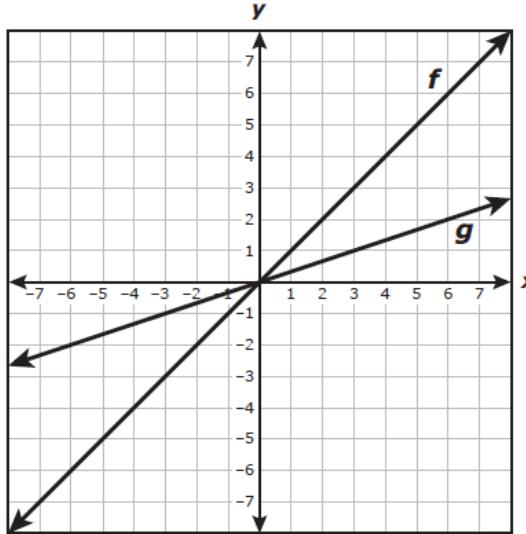
A.3(E) determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Stimulus	

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

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

*Correct Answer (B)

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		

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

! 2017 – Q19

19 The table shows the heights and the lengths of several rectangles.

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

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?

- A Weak negative correlation
- B Strong negative correlation
- C Weak positive correlation
- D Strong positive correlation

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	18	
B	13	
C*	50	
D	19	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question

A.4(B)

RC 2

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	Local
	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	Local
	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

! 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.

Website Advertisement

Number of Visits to Website, x	Number of Clicks on Advertisement, y
153	14
629	38
471	30
914	53
307	21
1,045	60
510	32
1,106	63

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)

Analysis of Assessed Standards

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

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

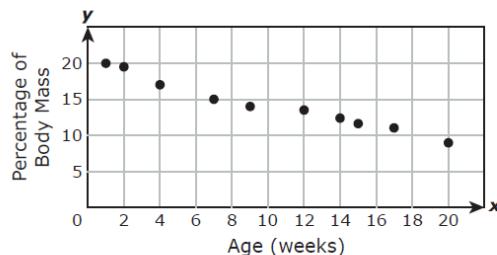
A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

! 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)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

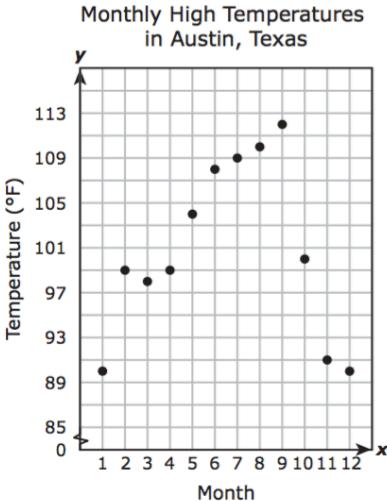
Data Analysis

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

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																
! 2016 – Q26 26 The scatterplot shows the monthly high temperatures for Austin, Texas, in degrees Fahrenheit over a 12-month period.	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>Monthly High Temperatures in Austin, Texas</p> <p>Temperature (°F)</p> <p>Month</p>		Data Analysis															
<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <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> </tbody> </table>		Item	State	Local	F	15		G	27		H*	52		J	5		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	15																
G	27																
H*	52																
J	5																
<p>Which function best models the data from Month 1 to Month 9?</p> <p>F $y = -1.6x + 111$ G $y = 3.5x + 85$ H $y = 2.5x + 90$ J $y = -3.3x + 130$</p> <p>*Correct Answer (H)</p>		Learning from Mistakes Instructional Implications															

IQ Analysis | Investigating the Question

A.5(A)

RC 3

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)			

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	
2019 – Q3	Cluster	Linear Functions
Which value of x makes the equation $1.25(4x - 10) = 7.5$ true?	Subcluster	Solving Linear Equations
A 3.5	Content	Readiness
B -1	Process	
C -0.5	Stimulus	
D 4	Data Analysis	
	Item	State
	A	8
	B	4
	C	5
	D*	82
*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.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	
2019 – Q42	Cluster	Linear Functions
What is the solution to $-(6m + 8) = 4(17 - m)$?	Subcluster	Solving Linear Equations
Record your answer and fill in the bubbles on your answer document.	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	-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
*Correct Answer (-38)	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	
2018 – Q8	Cluster	Linear Functions
8 What value of n makes the equation $4(0.5n - 3) = n - 0.25(12 - 8n)$ true?	Subcluster	Solving Linear Equations
F 3	Content	Readiness
G -9	Process	
H 0	Stimulus	
J -15	Data Analysis	
	Item	State
	F	16
	G*	69
	H	7
	J	7
*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.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	Cluster	Linear Functions
34 What is the solution to $34x + 95 = 3(14x + 9)$?	Subcluster	Solving Linear Equations
Record your answer and fill in the bubbles on your answer document.	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	8.5	53*
		46
	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 (8.5)	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	
2017 – Q11	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)		

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	
2017 – Q40	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
	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
	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

2019 – Q44

Which table shows y as a function of x ?

F

x	-13	-13	-13	-13
y	-2	0	5	7

H

x	1	3	7	12
y	4	4	4	4

G

x	-6	-1	-1	10
y	3	-1	5	-9

J

x	-9	-2	0	0
y	-7	-5	0	6

*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
F	9	
G	11	
H*	67	
J	13	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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 ?

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

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

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

	x	y
J	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
		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)

IQ Analysis | Investigating the Question

A.12(D)

RC 1

<p>A.12(D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms</p>	Analysis of Assessed Standards																	
<p>! 2018 – Q9</p> <p>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 nth term in the sequence, a_n?</p>	Cluster Subcluster Content Process Stimulus	Linear Functions Writing Linear Equations Supporting 																
<p>A $a_n = -6n + 18$</p> <p>B $a_n = -18n + 6$</p> <p>C $a_n = 6n - 18$</p> <p>D $a_n = 18n - 6$</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>14</td> <td></td> </tr> <tr> <td>B</td> <td>21</td> <td></td> </tr> <tr> <td>C*</td> <td>53</td> <td></td> </tr> <tr> <td>D</td> <td>11</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A	14		B	21		C*	53		D	11		
Item	State	Local																
A	14																	
B	21																	
C*	53																	
D	11																	
<p>*Correct Answer (C)</p>	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		
Subcluster	Solving Linear Equations	Content	Supporting		
Process	A.1(B), A.1(F)	Stimulus			
Data Analysis					
Item	State	Local			
F	6				
G	15				
H	16				
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)					

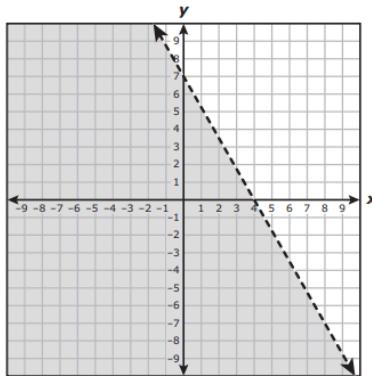
Systems of Equations and Inequalities

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			



- F** $4x + 7y \leq 49$
G $4x + 7y < 49$
H $7x + 4y \leq 28$
J $7x + 4y < 28$

*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 $42x + 56y \leq 800$	Content	Supporting
	B $42x + 31.5y \leq 800$	Process	A.1(A), A.1(B), A.1(D), A.1(F)
	C $42x + 56y > 800$	Stimulus	
	D $42x + 31.5y > 800$	Data Analysis	
		Item	State
		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)

IQ Analysis | Investigating the Question

A.2(I)

RC 3

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.	<ul style="list-style-type: none"> Each black-and-white copy cost \$0.08. Each color copy cost \$0.15. <p>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?</p>	Subcluster	Systems of Equations
A $b + c = 6.00$ $0.08b + 0.15c = 68$		Content	Readiness
B $b + c = 68$ $0.15b + 0.08c = 6.00$		Process	
C $b + c = 6.00$ $0.15b + 0.08c = 68$		Stimulus	
D $b + c = 68$ $0.08b + 0.15c = 6.00$		Data Analysis	
*Correct Answer (D)		Item	State
		A	18
		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 .	<p>Line f</p> <table border="1"> <thead> <tr> <th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>2</td><td>7</td></tr> <tr><td>4</td><td>10.5</td></tr> <tr><td>7</td><td>15.75</td></tr> <tr><td>11</td><td>22.75</td></tr> </tbody> </table> <p>Line g</p> <table border="1"> <thead> <tr> <th>x</th><th>y</th></tr> </thead> <tbody> <tr><td>-3</td><td>4</td></tr> <tr><td>-2</td><td>0</td></tr> <tr><td>1</td><td>-12</td></tr> <tr><td>4</td><td>-24</td></tr> </tbody> </table> <p>Which system of equations represents lines f and g?</p>	x	y	2	7	4	10.5	7	15.75	11	22.75	x	y	-3	4	-2	0	1	-12	4	-24	Subcluster	Systems of Equations
x	y																						
2	7																						
4	10.5																						
7	15.75																						
11	22.75																						
x	y																						
-3	4																						
-2	0																						
1	-12																						
4	-24																						
F $y = 1.75x + 3.5$ $y = -4x - 8$		Content	Readiness																				
G $y = 1.75x + 3.5$ $y = -4x - 2$		Process																					
H $y = 3.5x + 1.75$ $y = -4x - 8$		Stimulus																					
J $y = 3.5x + 1.75$ $y = -4x - 2$		Data Analysis																					
*Correct Answer (F)		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																					

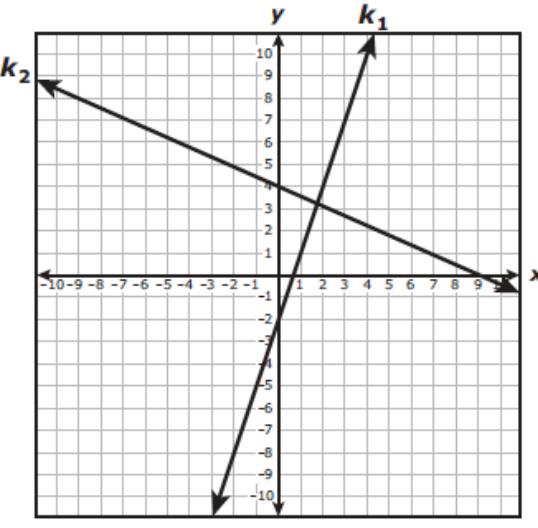
A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description	Analysis of Assessed Standards															
2019 – Q30 A system of equations is graphed on the grid.	<table border="1"> <tr> <td>Cluster</td><td>Systems of Equations and Inequalities</td></tr> <tr> <td>Subcluster</td><td>Systems of 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	Systems of Equations and Inequalities	Subcluster	Systems of Equations	Content	Readiness	Process		Stimulus						
Cluster	Systems of Equations and Inequalities															
Subcluster	Systems of Equations															
Content	Readiness															
Process																
Stimulus																
	Data Analysis <table border="1"> <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> </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	F	7		G	10		H	10		J*	73	
Item	State	Local														
F	7															
G	10															
H	10															
J*	73															
Which system of equations does the graph represent? F $y = -x - 4$ $y = 2x - 2$ G $y = -x + 4$ $y = 2x - 4$ H $y = x - 4$ $y = -2x - 2$ J $y = x + 4$ $y = -2x - 4$ *Correct Answer (J)	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	Local
*Correct Answer (C)		A	11	
		B	9	
		C*	72	
		D	9	
Error Analysis		Learning from Mistakes Instructional Implications		
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts				
<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										
Data Analysis		Learning from Mistakes Instructional Implications										
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts												
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early												
Line q		Item										
<table border="1"><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	State		
x	-9	-3	2									
y	0	18	33									
Line v		Local										
<table border="1"><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			
x	-4	0	10									
y	10	8	3									
Which system of equations is represented by lines q and v ?												
F $21x - y = 9$ $5x + 6y = 40$		F 10										
G $3x - y = -27$ $x + 2y = 16$		G* 58										
H $21x - y = 9$ $5x + 6y = 20$		H 17										
J $9x - y = -27$ $x + 2y = 8$		J 15										
*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.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
		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
		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		Analysis of Assessed Standards	
2017 – Q48		Cluster	Systems of Equations and Inequalities
48 The graphs of lines k_1 and k_2 are shown on the grid.		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>Which system of equations is best represented by this graph?</p> <p>F $3x - y = 2$ $4x + 9y = 36$</p> <p>G $3x - y = 6$ $4x + 9y = 4$</p> <p>H $x - 3y = -18$ $9x + 4y = 9$</p> <p>J $x + y = 10$ $9x + 4y = 13$</p>			
<p>*Correct Answer (F)</p>			

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2016 – Q13		Cluster	Systems of Equations and Inequalities
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?		Subcluster	Systems of Equations
A $s = t - 18$ $12s = 10t + 32$		Content	Readiness
B $t = s - 18$ $10t = 12s + 32$		Process	A.1(A), A.1(B), A.1(D), A.1(F)
C $s = t - 18$ $10s = 12t + 32$		Stimulus	
D $t = s - 18$ $12t = 10s + 32$		Data Analysis	
*Correct Answer (A)		Item	State
		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	

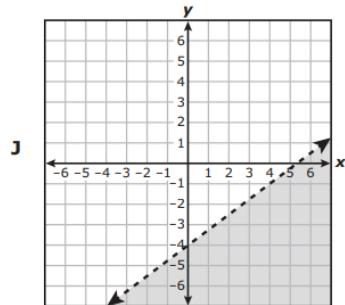
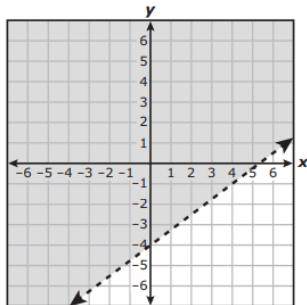
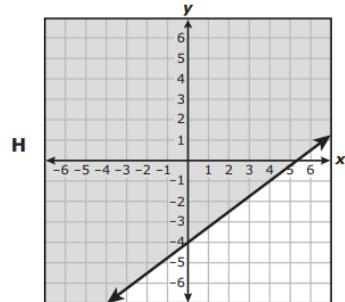
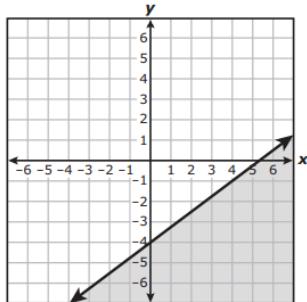
A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2016 – Q48		Cluster	Systems of Equations and Inequalities
48 A bag contains 18 coins consisting of quarters and dimes. The total value of the coins is \$2.85. Which system of equations can be used to determine the number of quarters, q , and the number of dimes, d , in the bag?		Subcluster	Systems of Equations
F $0.10q + 0.25d = 2.85$ $q + d = 18$		Content	Readiness
G $0.10q + 0.25d = 18$ $q + d = 2.85$		Process	A.1(A), A.1(B), A.1(D), A.1(F)
H $0.25q + 0.10d = 2.85$ $q + d = 18$		Stimulus	
J $0.25q + 0.10d = 18$ $q + d = 2.85$		Data Analysis	
*Correct Answer (H)		Item	State
		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	

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	
Data Analysis			
Item	State	Local	
A	25		
B*	39		
C	10		
D	25		
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.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	

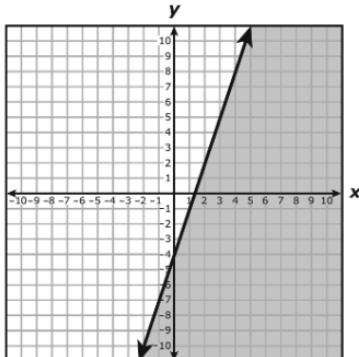
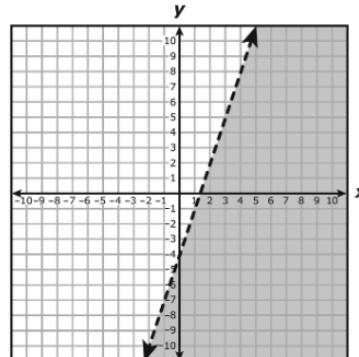
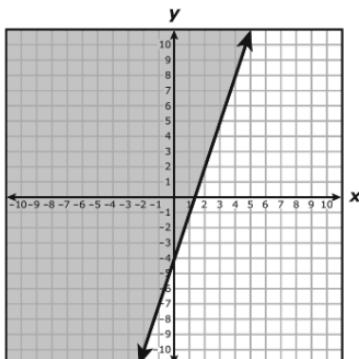
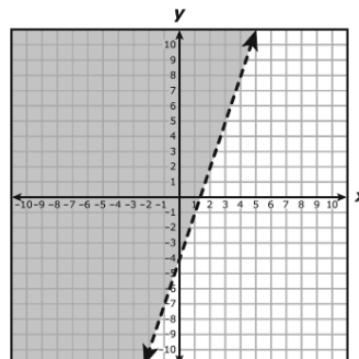
Error Analysis

- 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

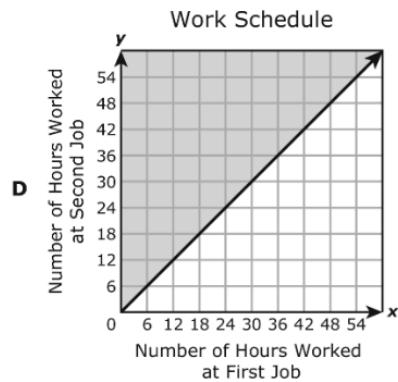
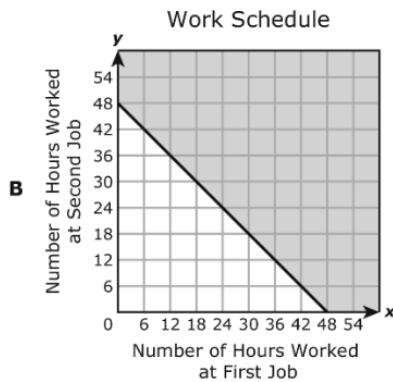
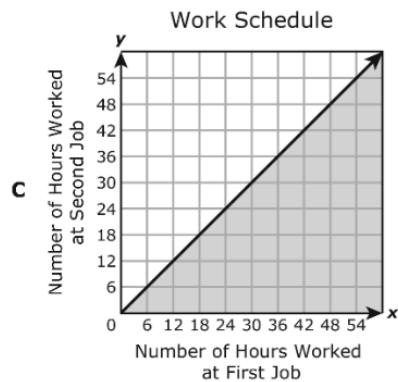
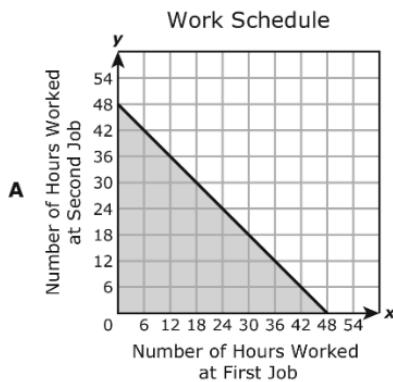
**Learning from Mistakes
Instructional Implications**

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

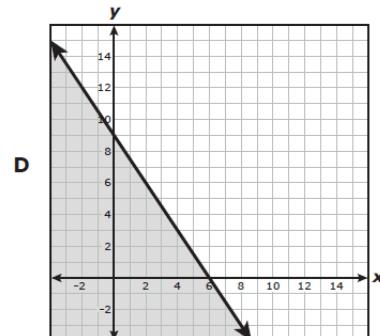
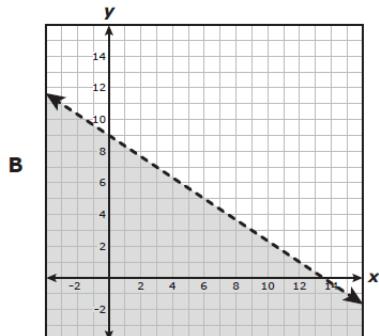
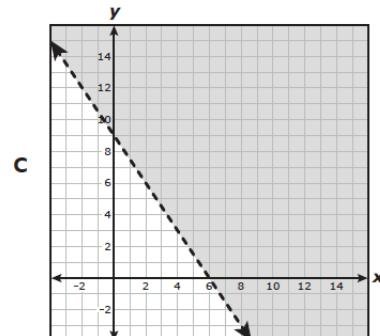
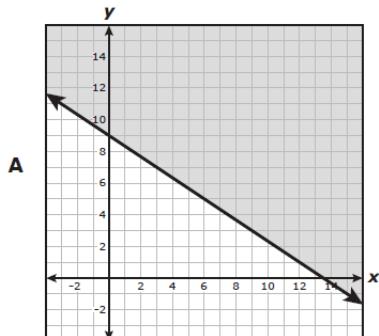
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

**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

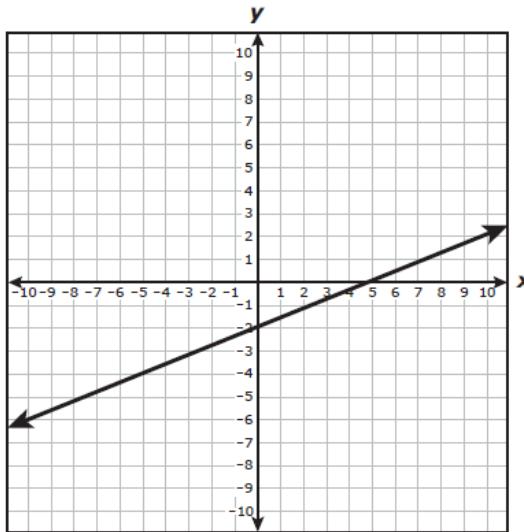
Item	State	Local
A*	55	
B	8	
C	11	
D	26	

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		Analysis of Assessed Standards	
2018 – Q45	45 The graph of $2x - 5y = 10$ is shown on the grid.	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			
	<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 ordered pair is in the solution set of $2x - 5y \geq 10$?

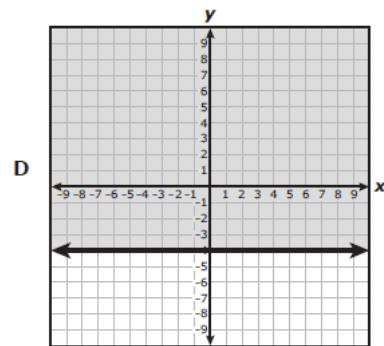
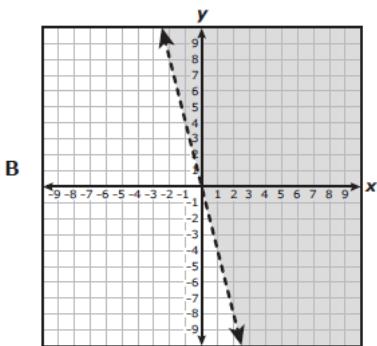
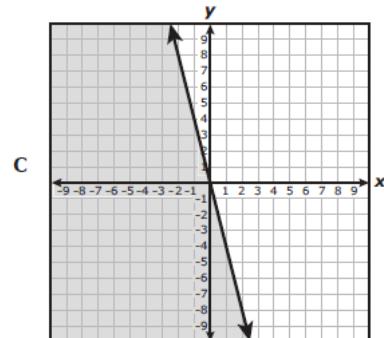
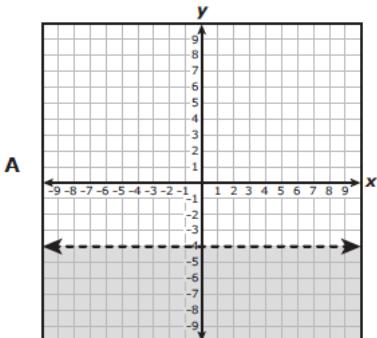
- A** (0, 5)
- B** (5, 0)
- C** (-2, 5)
- D** (-5, 2)

*Correct Answer (B)

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

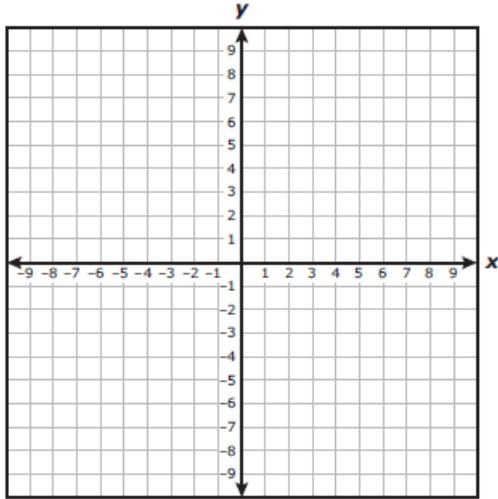
Item	State	Local
A	10	
B	7	
C*	73	
D	11	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

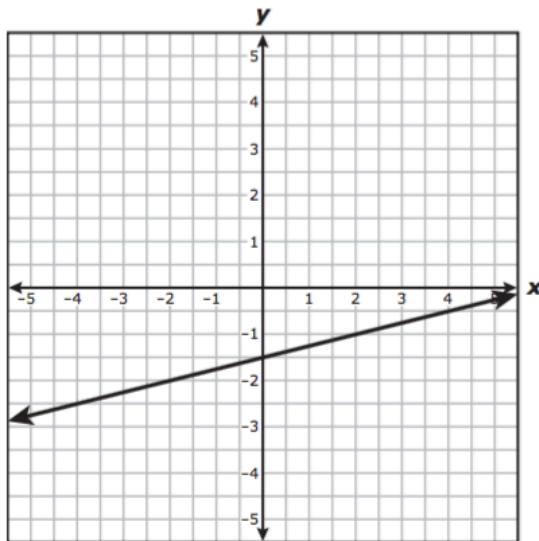
A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards	
2017 – Q37	37 Which ordered pair is in the solution set of $y \geq \frac{1}{3}x + 4$?	Cluster	Systems of Equations and Inequalities
		Subcluster	Inequalities
		Content	Readiness
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	A	21	
	B*	55	
	C	16	
	D	8	
Error Analysis			
	<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** $(-6, 1)$
- B** $(-1, 6)$
- C** $(6, -1)$
- D** $(1, -6)$

*Correct Answer (B)

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards	
2016 – Q7	7 The graph of $0.5x - 2y = 3$ is shown on the grid.	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			
	<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 ordered pair is in the solution set of $0.5x - 2y \geq 3$?

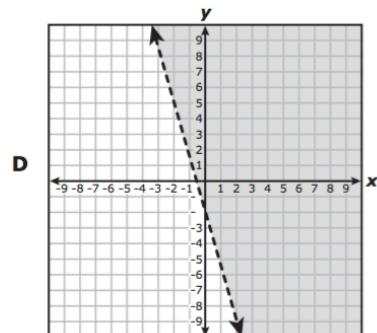
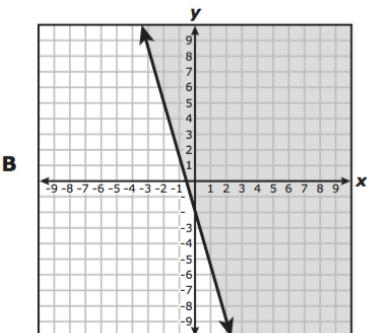
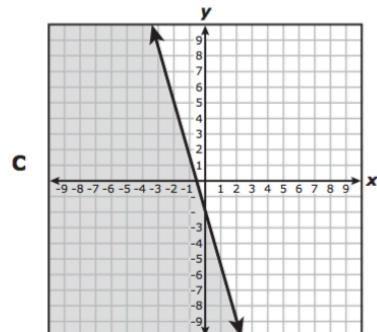
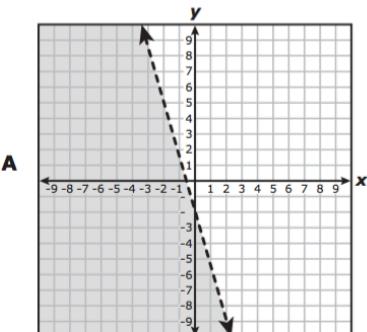
- A** $(-2, 0.5)$
- B** $(2, 1)$
- C** $(2, -1)$
- D** $(-2, -0.5)$

*Correct Answer (C)

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

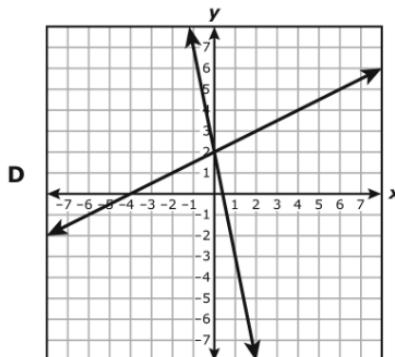
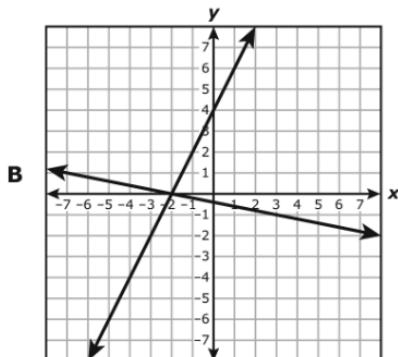
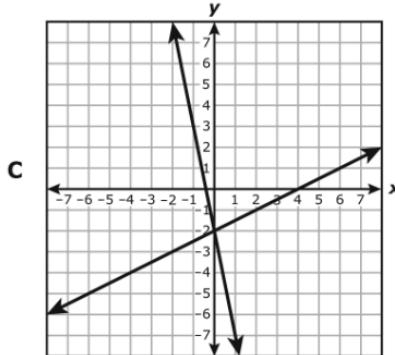
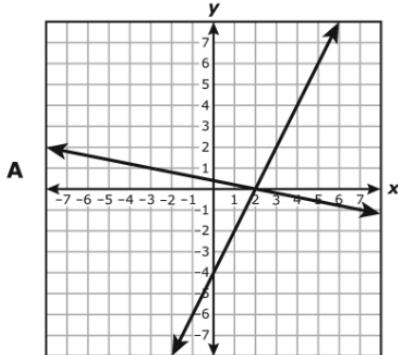
**Learning from Mistakes
Instructional Implications**

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

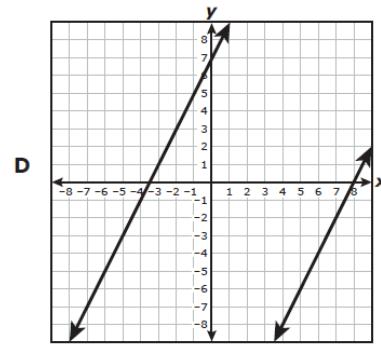
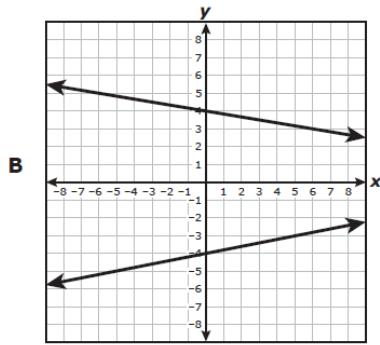
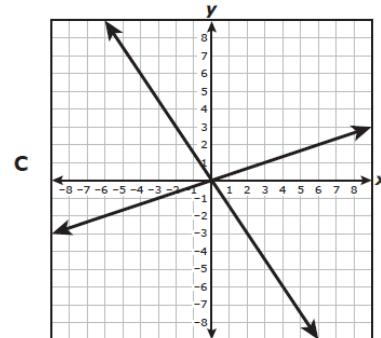
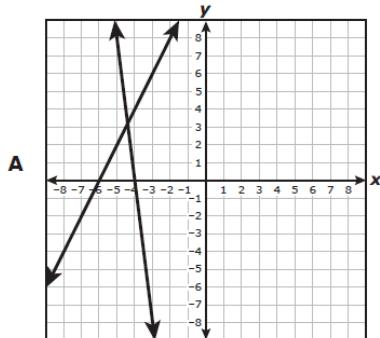
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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	

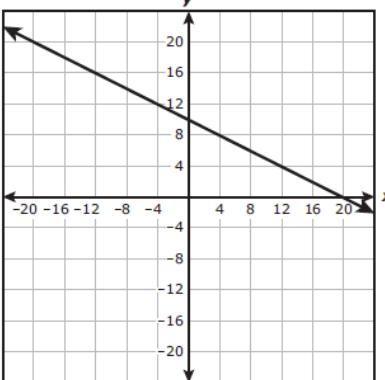
Data Analysis

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

A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist		Analysis of Assessed Standards
!	2017 – Q29	Cluster Systems of Equations and Inequalities
29	The line graphed on the grid represents the first of two equations in a system of linear equations.	Subcluster Systems of Equations
		Content Supporting
		Process
		Stimulus
Data Analysis		
Item	State	Local
A	11	
B	13	
C*	47	
D	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 (C)		

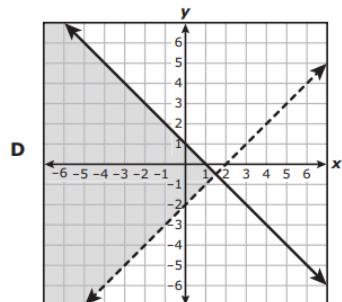
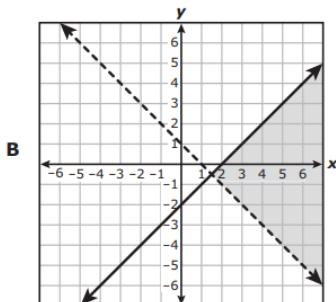
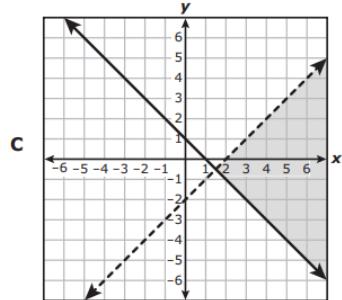
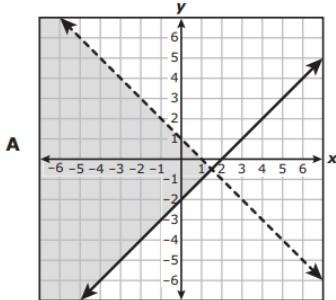
A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist		Analysis of Assessed Standards			
2016 – Q32	32 Which graph can be used to find the solution to the system of equations below?	Cluster	Systems of Equations and Inequalities		
	$\begin{aligned}2x + y &= -4 \\ -3y &= 2x + 12\end{aligned}$	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					
<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(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	
	Cluster	Systems of Equations and Inequalities
2018 – Q30	Subcluster	Inequalities
30 What is the solution set for $-4x + 10 \geq 5x + 55$?	Content	Supporting
F $x \geq 5$	Process	
G $x \geq 45$	Stimulus	
H $x \leq -5$	Data Analysis	
J $x \leq -45$	Item	State
*Correct Answer (H)	F	14
	G	15
	H*	61
	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	

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			
<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.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	
		<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(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		
D 39		
Data Analysis		
	Item	State
	A*	65
	B	16
	C	13
	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 (A)		

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		
D -0.5		
Data Analysis		
	Item	State
	A	12
	B	11
	C*	68
	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.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
		A*	47
		B	9
		C	26
		D	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	
*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
		Content	Readiness
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		F	17
		G	15
		H*	61
		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 (H)			

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards	
2017 – Q18		Cluster	Systems of Equations and Inequalities
18 A bus travels two different routes: the Green Route and the Blue Route. The routes are different lengths.		Subcluster	Systems of Equations
<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. 		Content	Readiness
What is the length of the Green Route in miles?		Process	
F 4.4 mi		Stimulus	
G 4.5 mi		Data Analysis	
H 6.4 mi		Item	State
J 6.8 mi		F	16
Correct Answer (G)		G	53
		H	19
		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	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards	
2017 – Q54		Cluster	Systems of Equations and Inequalities
54 What is the value of x in the solution to this system of equations?		Subcluster	Systems of Equations
	$y + 2x = -1$	Content	Readiness
	$y = \frac{1}{2}x + 4$	Process	
F $\frac{6}{5}$		Stimulus	
G -2		Data Analysis	
H $-\frac{10}{3}$		Item	State
J 3		F	11
Correct Answer (G)		G	63
		H	10
		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	

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards	
2016 – Q20		Cluster	Systems of Equations and Inequalities
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?		Subcluster	Systems of Equations
Record your answer and fill in the bubbles on your answer document.		Content	Readiness
		Process	A.1(A), A.1(B), A.1(F)
		Stimulus	
Data Analysis			
	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			

*Correct Answer (13)

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards	
2016 – Q39		Cluster	Systems of Equations and Inequalities
39 What is the solution to this system of equations?		Subcluster	Systems of Equations
		Content	Readiness
		Process	A.1(B), A.1(F)
		Stimulus	
Data Analysis			
	Item	State	Local
	A*	59	
	B	18	
	C	15	
	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			

A (6, 7)

B (2, 33)

C (7, 6)

D (33, 2)

*Correct Answer (A)

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.

IQ Analysis | Investigating the Question

A.10(A)

RC 1

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	

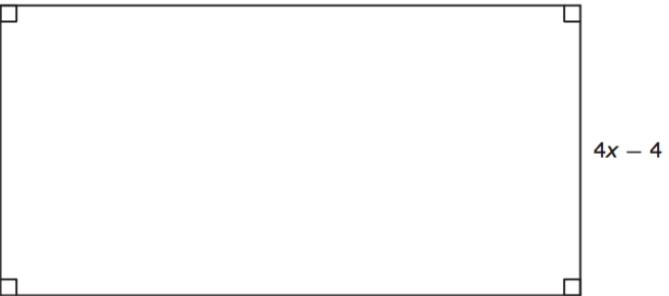
IQ Analysis | Investigating the Question

A.10(B)

RC 1

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
		F	16
		G*	65
		H	9
		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
*Correct Answer (G)		Learning from Mistakes Instructional Implications	

IQ Analysis | Investigating the Question

A.10(D)

RC 1

<p>A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property</p> <p>2021 – Q48</p> <p>48 Which expression is equivalent to $35m^2 - 63$?</p> <p>F $7(5m^2 - 9)$</p> <p>G $-7(5m^2 + 9)$</p> <p>H $7m(5m - 9)$</p> <p>J $-7m(5m + 9)$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Supporting
	Process	
	Stimulus	
	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)		

<p>A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property</p> <p>2019 – Q36</p> <p>Which expression is equivalent to $210d^2 - 63d$?</p> <p>F $21d(10d - 3)$</p> <p>G $21d(10d + 3)$</p> <p>H $21(10d + 3)$</p> <p>J $21(10d - 3)$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Supporting
	Process	
	Stimulus	
	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>2018 – Q2</p> <p>2 Which expression is equivalent to $-28x^2 + 35x$?</p> <p>F $7x(4x + 5)$</p> <p>G $-7x(4x - 5)$</p> <p>H $7x(4x - 5)$</p> <p>J $-7x(4x + 5)$</p>	Analysis of Assessed Standards																
	Cluster	Simplifying Expressions															
	Subcluster	Polynomials															
	Content	Supporting															
	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;">F</td><td style="text-align: center;">7</td><td></td></tr> <tr> <td style="text-align: center;">G*</td><td style="text-align: center;">72</td><td></td></tr> <tr> <td style="text-align: center;">H</td><td style="text-align: center;">6</td><td></td></tr> <tr> <td style="text-align: center;">J</td><td style="text-align: center;">14</td><td></td></tr> </tbody> </table>			Item	State	Local	F	7		G*	72		H	6		J	14	
Item	State	Local															
F	7																
G*	72																
H	6																
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 (G)

<p>A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property</p> <p>! 2016 – Q15</p> <p>15 Which expression is equivalent to $9q^2 - \frac{2}{3}(3q - 7) + 5q^2$?</p> <p>A $9q^2 - \frac{5}{3}q - 3$</p> <p>B $9q^2 - 2q - 3$</p> <p>C $14q^2 - 2q + \frac{14}{3}$</p> <p>D $14q^2 - \frac{5}{3}q - \frac{14}{3}$</p>	Analysis of Assessed Standards																
	Cluster	Simplifying Expressions															
	Subcluster	Polynomials															
	Content	Supporting															
	Process	A.1(B), A.1(F)															
	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;">7</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">10</td><td></td></tr> <tr> <td style="text-align: center;">C*</td><td style="text-align: center;">73</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">10</td><td></td></tr> </tbody> </table>			Item	State	Local	A	7		B	10		C*	73		D	10	
Item	State	Local															
A	7																
B	10																
C*	73																
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.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		

<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</p> <p>2019 – Q4</p> <p>Which function is equivalent to $g(x) = x^2 + 15x - 54$?</p> <p>F $g(x) = (x + 9)(x - 6)$</p> <p>G $g(x) = (x + 18)(x - 3)$</p> <p>H $g(x) = (x - 9)(x + 6)$</p> <p>J $g(x) = (x - 18)(x + 3)$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Readiness
	Process	
	Stimulus	
Data Analysis		
Item State Local		
F	7	
G*	77	
H	8	
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)

<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</p> <p>2019 – Q29</p> <p>Which expression is equivalent to $24x^2 - 22x + 5$?</p> <p>A $(12x + 5)(2x + 1)$</p> <p>B $(8x - 5)(3x - 1)$</p> <p>C $(12x - 5)(2x - 1)$</p> <p>D $(8x + 5)(3x + 1)$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Readiness
	Process	
	Stimulus	
Data Analysis		
Item State Local		
A	14	
B	10	
C*	71	
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.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two

2019 – Q48

Which function is equivalent to $q(x) = 9x^2 - 24x + 16$?

F $q(x) = (9x - 4)(x - 4)$

G $q(x) = (3x + 4)^2$

H $q(x) = (9x + 4)(x + 4)$

J $q(x) = (3x - 4)^2$

*Correct Answer (J)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	10	
G	11	
H	12	
J*	67	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error 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

2018 – Q11

11 Which expression is equivalent to $x^2 - 17x - 60$?

A $(x - 20)(x + 3)$

B $(x - 5)(x - 12)$

C $(x - 20)(x - 3)$

D $(x + 5)(x - 12)$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	74	
B	10	
C	9	
D	7	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error 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

! 2018 – Q31

31 Which expression is a factor of $21x^2 + 13x - 20$?

A $3x - 4$

B $7x - 5$

C $7x + 4$

D $3x + 5$

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	18	
B*	47	
C	21	
D	14	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (B)

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

2018 – Q44

44 Which expression is a factor of $9r^2 - 4r + 1$?

F $3r - 1$

G $r - 1$

H $9r - 1$

J There are no real factors.

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	16	
G	8	
H	11	
J*	65	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (J)

<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</p> <p>2017 – Q17</p> <p>17 Which expression is equivalent to $6x^2 + 13x + 5$?</p> <p>A $(2x + 5)(3x - 1)$</p> <p>B $(2x - 5)(3x + 1)$</p> <p>C $(2x + 1)(3x + 5)$</p> <p>D $(2x - 1)(3x - 5)$</p>	Analysis of Assessed Standards	
Cluster	Simplifying Expressions	
Subcluster	Polynomials	
Content	Readiness	
Process		
Stimulus		
Data Analysis		
Item	State	Local
A	9	
B	7	
C*	78	
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 (C)

<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</p> <p>2017 – Q28</p> <p>28 Which expression is equivalent to $m^2 - 13m - 30$?</p> <p>F $(m - 15)(m + 2)$</p> <p>G $(m - 10)(m - 3)$</p> <p>H $(m + 15)(m - 2)$</p> <p>J $(m + 10)(m + 3)$</p>	Analysis of Assessed Standards	
Cluster	Simplifying Expressions	
Subcluster	Polynomials	
Content	Readiness	
Process		
Stimulus		
Data Analysis		
Item	State	Local
F*	67	
G	13	
H	13	
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.10(E) factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two

2017 – Q41

41 Which expression is a factor of $18x^2 - 15x + 2$?

A $3x - 2$

B $9x - 1$

C $x - 2$

D $2x - 1$

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	51	
B	26	
C	12	
D	11	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error 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

2016 – Q6

6 Which expression is equivalent to $2x^2 + 7x + 4$?

F $(2x - 1)(x + 4)$

G $(2x + 1)(x - 4)$

H $(2x + 1)(x + 4)$

J None of these

Analysis of Assessed Standards

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

- Guessing Mixed Up Concepts
 Careless Error 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

IQ Analysis | Investigating the Question

A.10(F)

RC 1

<p>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</p> <p>2021 – Q40</p> <p>40 Which expression is equivalent to $9n^2 - 25$?</p> <p>F $(3n - 5)^2$</p> <p>G $(3n + 5)(3n - 5)$</p> <p>H $9(n - 4)^2$</p> <p>J $9(n + 4)(n - 4)$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Supporting
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	F	24
	G*	56
	H	11
	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)

<p>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</p> <p>2016 – Q25</p> <p>25 Which expression is a factor of $36x^2 - 49$?</p> <p>A $18x - 7$</p> <p>B $6x - 49$</p> <p>C $18x - 49$</p> <p>D $6x - 7$</p>	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
	Subcluster	Polynomials
	Content	Supporting
	Process	A.1(B), A.1(C), A.1(F)
	Stimulus	
	Data Analysis	
	Item	State
	A	16
	B	13
	C	13
	D*	58
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)

IQ Analysis | Investigating the Question

A.11(A)

RC 1

A.11(A) simplify numerical radical expressions involving square roots		Analysis of Assessed Standards	
2021 – Q1		Cluster	Simplifying Expressions
1 Which expression is equivalent to $\sqrt{184}$?		Subcluster	Radicals
A 92		Content	Supporting
B $2\sqrt{46}$		Process	
C $4\sqrt{23}$		Stimulus	
D $4\sqrt{46}$		Data Analysis	
*Correct Answer (B)		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	

A.11(A) simplify numerical radical expressions involving square roots		Analysis of Assessed Standards	
2019 – Q53		Cluster	Simplifying Expressions
Which expression is equivalent to $4\sqrt{147}$?		Subcluster	Radicals
A $196\sqrt{3}$		Content	Supporting
B $12\sqrt{7}$		Process	
C $3\sqrt{7}$		Stimulus	
D $28\sqrt{3}$		Data Analysis	
*Correct Answer (D)		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	

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		
*Correct Answer (D)	Item	State	Local
	A	4	
	B	8	
	C	7	
	D*	80	
	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		
*Correct Answer (B)	Item	State	Local
	A	5	
	B*	79	
	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		

IQ Analysis | Investigating the Question

A.11(B)

RC 1

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
		F	11
		G	16
		H	26
		J*	47
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 (J)			

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
		F	33
		G	15
		H*	39
		J	13
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.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
2021 – Q35	Subcluster	Exponents
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?	Content	Readiness
A $\frac{18}{b^{58}}$	Process	
B $\frac{45}{b^{58}}$	Stimulus	
C $\frac{18a^{16}c^{34}}{b^{27}}$	Data Analysis	
D $\frac{45a^{16}c^{34}}{b^{27}}$	Item	State
	A	7
	B	16
	C	32
	D*	45
*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(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards	
	Cluster	Simplifying Expressions
2019 – Q13	Subcluster	Exponents
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?	Content	Readiness
A $\frac{3v^8}{m^8p^6}$	Process	
B $\frac{3v^{16}}{m^4p^6}$	Stimulus	
C $\frac{30m^3}{p^4v^3}$	Data Analysis	
D $\frac{30v^3}{m^3p^4}$	Item	State
	A	25
	B*	54
	C	13
	D	8
*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	
2019 – Q24		Cluster	Simplifying Expressions
Which expression is equivalent to $(xy^{-6})^2$ for all values of x and y where the expression is defined?		Subcluster	Exponents
F xy^{36}		Content	Readiness
G xy^{36}		Process	
H x^2y^{-12}		Stimulus	
J x^2y^{12}		Data Analysis	
		Item	State
		F	14
		G	11
		H*	67
		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 (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		Cluster	Simplifying Expressions
The expression $(x^{22})(x^7)^3$ is equivalent to x^p . What is the value of p ?		Subcluster	Exponents
Record your answer and fill in the bubbles on your answer document.		Content	Readiness
		Process	
		Stimulus	
		Data Analysis	
		Item	State
		43	36*
			62
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 (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		
Subcluster	Radicals	Content	Readiness		
Process		Stimulus			
!	2018 – Q6	Data Analysis			
Item	State	Local			
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		
Subcluster	Exponents	Content	Readiness		
Process		Stimulus			
!	2018 – Q28	Data Analysis			
Item	State	Local			
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)					

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
	Cluster	Simplifying Expressions	
2018 – Q49	Subcluster	Exponents	
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?	Content	Readiness	
A $\frac{32q^7}{w}$	Process		
B $20q^{17}w^9$	Stimulus		
C $32q^7w^9$			
D $20qw$			
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			

*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		
	Cluster	Simplifying Expressions	
! 2017 – Q6	Subcluster	Exponents	
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?	Content	Readiness	
F $9x^3y^2$	Process		
G $48x^6y^4$	Stimulus		
H $9x^6y^4$			
J $60x^{12}y^{12}$			
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			

*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																					
	Subcluster	Exponents																					
	Content	Readiness																					
	Process																						
	Stimulus																						
	Data Analysis																						
<p>Item</p> <table border="1"> <tr> <td style="text-align: center;">-14</td> <td style="text-align: center;">State 46*</td> <td style="text-align: center;">Local</td> </tr> <tr> <td></td> <td style="text-align: center;">52</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	-14	State 46*	Local		52																	Item	State
-14	State 46*	Local																					
	52																						
	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 (-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																						
	Cluster	Simplifying Expressions																					
	Subcluster	Radicals																					
	Content	Readiness																					
	Process																						
	Stimulus																						
	Data Analysis																						
<p>Item</p> <table border="1"> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">State 21</td> <td style="text-align: center;">Local</td> </tr> <tr> <td style="text-align: center;">B*</td> <td style="text-align: center;">54</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">13</td> <td></td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">11</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>	A	State 21	Local	B*	54		C	13		D	11											Item	State
A	State 21	Local																					
B*	54																						
C	13																						
D	11																						
	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 (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
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
		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	
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 $12\pi x^{18}y^{10}$	Content	Readiness
B $36\pi x^{18}y^{10}$	Process	A.1(B), A.1(C), A.1(F)
C $36\pi x^{11}y^7$	Stimulus	
D $12\pi x^{11}y^7$	Data Analysis	
	Item	State
	A	23
	B*	49
	C	19
*Correct Answer (B)	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	

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

IQ Analysis | Investigating the Question

A.6(A)

RC 4

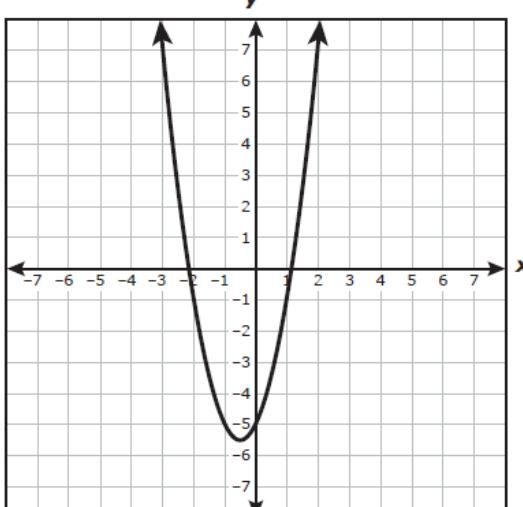
A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities									Analysis of Assessed Standards																												
2021 – Q12									Cluster	Quadratic Functions																											
<p>12 A ball is placed in a machine that throws 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.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="9" style="text-align: center;">Ball</th> </tr> <tr> <th>Time Since Thrown from Machine (seconds)</th><th>0</th><th>0.25</th><th>0.50</th><th>0.75</th><th>1.00</th><th>1.25</th><th>1.50</th><th>1.75</th> </tr> </thead> <tbody> <tr> <td>Distance from Ground (meters)</td><td>0</td><td>2.76</td><td>4.90</td><td>6.43</td><td>7.35</td><td>7.66</td><td>7.35</td><td>6.43</td></tr> </tbody> </table>									Ball									Time Since Thrown from Machine (seconds)	0	0.25	0.50	0.75	1.00	1.25	1.50	1.75	Distance from Ground (meters)	0	2.76	4.90	6.43	7.35	7.66	7.35	6.43	Subcluster	Describing Quadratic Functions
Ball																																					
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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
43 A quadratic function is graphed on the grid.	Subcluster	Describing Quadratic Functions
	Content	Readiness
	Process	
	Stimulus	
Data Analysis		
	Item	State
	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?		
<p>A Domain: $x \geq -3$ Range: $y \geq 5$</p> <p>B Domain: All real numbers Range: $y \geq 5$</p> <p>C Domain: $x \geq -3$ Range: All real numbers</p> <p>D Domain: $y \geq 5$ Range: $x \geq -3$</p>		
*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.	Cluster	Quadratic Functions															
	Subcluster	Describing Quadratic Functions															
	Content	Readiness															
	Process																
	Stimulus																
Data Analysis																	
<table border="1" data-bbox="1101 770 1509 813"> <thead> <tr> <th data-bbox="1101 770 1166 813">Item</th><th data-bbox="1166 770 1232 813">State</th><th data-bbox="1232 770 1509 813">Local</th></tr> </thead> <tbody> <tr> <td data-bbox="1101 813 1166 834">F*</td><td data-bbox="1166 813 1232 834">70</td><td data-bbox="1232 813 1509 834"></td></tr> <tr> <td data-bbox="1101 834 1166 855">G</td><td data-bbox="1166 834 1232 855">10</td><td data-bbox="1232 834 1509 855"></td></tr> <tr> <td data-bbox="1101 855 1166 876">H</td><td data-bbox="1166 855 1232 876">6</td><td data-bbox="1232 855 1509 876"></td></tr> <tr> <td data-bbox="1101 876 1166 897">J</td><td data-bbox="1166 876 1232 897">15</td><td data-bbox="1232 876 1509 897"></td></tr> </tbody> </table>			Item	State	Local	F*	70		G	10		H	6		J	15	
Item	State	Local															
F*	70																
G	10																
H	6																
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 (F)																	

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
	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
	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>	<p>Analysis of Assessed Standards</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> <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>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> </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	Describing Quadratic Functions	Content	Readiness	Process		Stimulus		Item	State	Local	F	18		G*	60		H	12		J	11		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Cluster	Quadratic Functions																													
Subcluster	Describing Quadratic Functions																													
Content	Readiness																													
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Stimulus																														
Item	State	Local																												
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G*	60																													
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J	11																													
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																													
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																													

*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
30 What is the domain of $f(x) = 9 - x^2$?	Subcluster	Describing Quadratic Functions
	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
F $f(x) \geq 9$	9	
G All real numbers	52	
H $-3 \leq x \leq 3$	23	
J $x \leq 9$	15	
* 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	

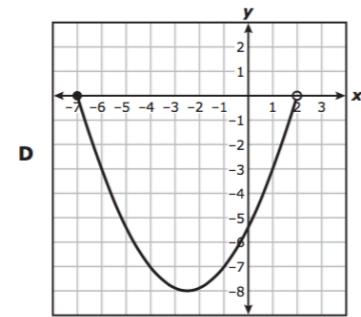
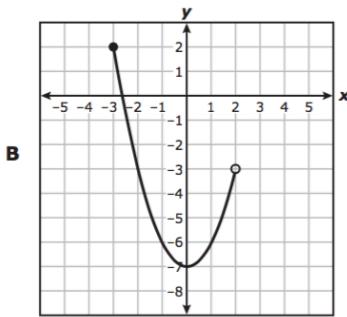
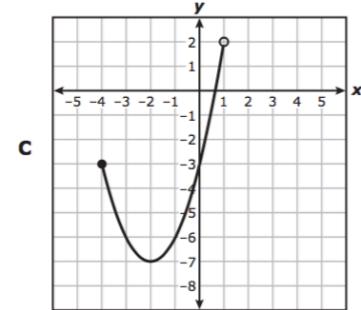
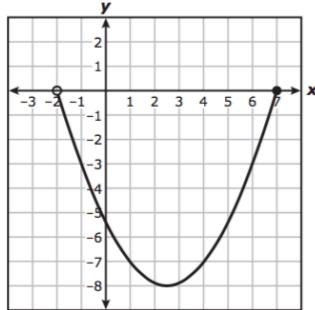
A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards												
2017 – Q53 53 Which graph best represents a function with a range of all real numbers greater than or equal to -6 ?	<table border="1"> <tr> <td data-bbox="1117 158 1215 348">Cluster</td><td data-bbox="1215 158 1509 348">Quadratic Functions</td></tr> <tr> <td data-bbox="1117 348 1215 264">Subcluster</td><td data-bbox="1215 348 1509 264">Describing Quadratic Functions</td></tr> <tr> <td data-bbox="1117 264 1215 306">Content</td><td data-bbox="1215 264 1509 306">Readiness</td></tr> <tr> <td data-bbox="1117 306 1215 348">Process</td><td data-bbox="1215 306 1509 348"></td></tr> <tr> <td data-bbox="1117 348 1215 390">Stimulus</td><td data-bbox="1215 348 1509 390"></td></tr> </table>			Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Stimulus	
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												
	<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												
<i>*Correct Answer (C)</i>													

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities		Analysis of Assessed Standards																	
!	2016 – Q12	Cluster	Quadratic Functions																
12	The table shows some ordered pairs that belong to quadratic function h .	Subcluster	Describing Quadratic Functions																
	<table border="1" data-bbox="388 318 1078 409"> <tr> <td>x</td><td>-4</td><td>-2</td><td>0</td><td>2</td><td>3</td><td>4</td><td>6</td></tr> <tr> <td>$h(x)$</td><td>41</td><td>17</td><td>1</td><td>-7</td><td>-8</td><td>-7</td><td>1</td></tr> </table>	x	-4	-2	0	2	3	4	6	$h(x)$	41	17	1	-7	-8	-7	1	Content	Readiness
x	-4	-2	0	2	3	4	6												
$h(x)$	41	17	1	-7	-8	-7	1												
		Process	A.1(B), A.1(E), A.1(F)																
		Stimulus																	
Data Analysis																			
	Item	State	Local																
	F	29																	
	G	12																	
	H*	47																	
	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.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>	Cluster	Quadratic Functions	
	Subcluster	Writing and Solving Quadratic Equations	
	Content	Supporting	
	Process		
	Stimulus		
	<p>Data Analysis</p>		
	Item	State	Local
	A	8	
	B*	62	
	C	24	
	D	5	
	<p>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</p>		
<p>*Correct Answer (B)</p>			

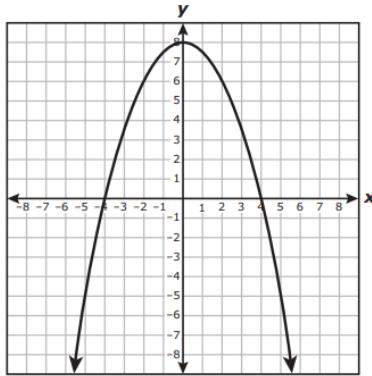
<p>A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)</p> <p>! 2018 – Q26</p> <p>26 Which function is equivalent 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>	Analysis of Assessed Standards	
Cluster	Quadratic Functions	
Subcluster	Writing and Solving Quadratic Equations	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
F*	59	
G	16	
H	14	
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)

<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>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>	Analysis of Assessed Standards	
Cluster	Quadratic Functions	
Subcluster	Writing and Solving Quadratic Equations	
Content	Supporting	
Process		
Stimulus		
Data Analysis		
Item	State	Local
A	8	
B	19	
C	18	
D*	54	
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.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	Local			
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				
Learning from Mistakes Instructional Implications					
*Correct Answer (H)					



Which function is best represented by this graph?

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

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

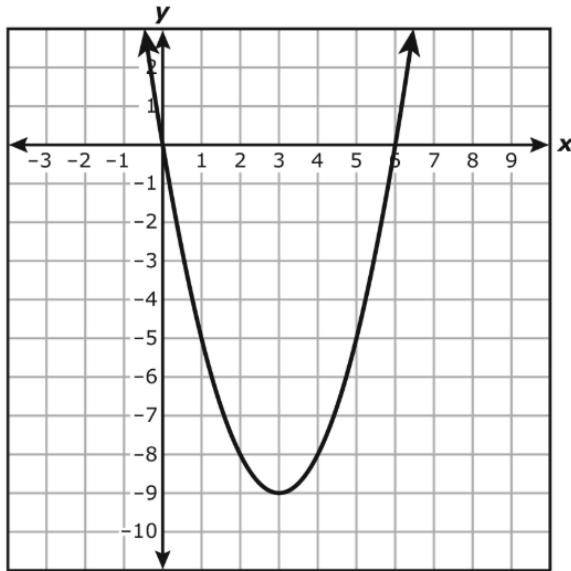
H $f(x) = -\frac{1}{2}x^2 + 8$

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

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

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

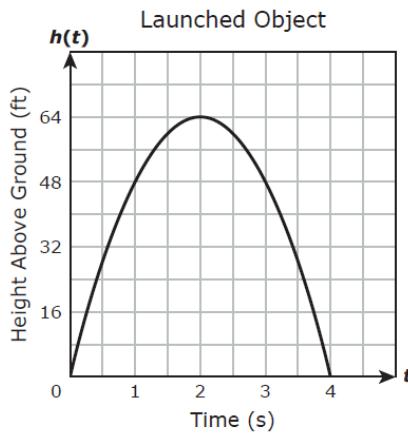
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

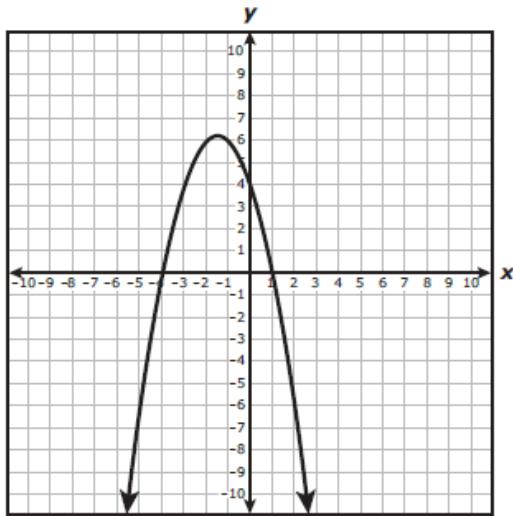
- Guessing
- Mixed Up Concepts
- Careless Error
- Stopped Too Early

Learning from Mistakes
Instructional Implications

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

! 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)

Analysis of Assessed Standards

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

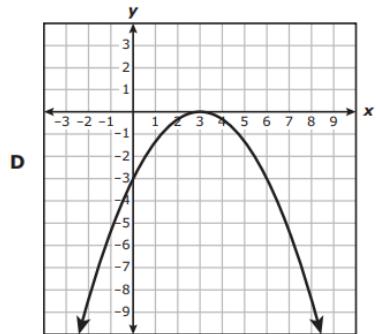
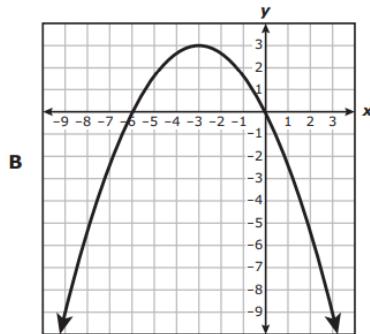
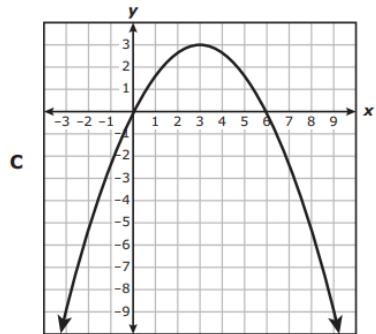
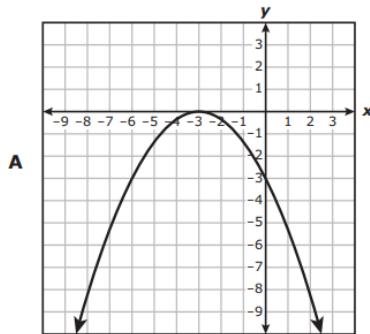
A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

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 ?



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

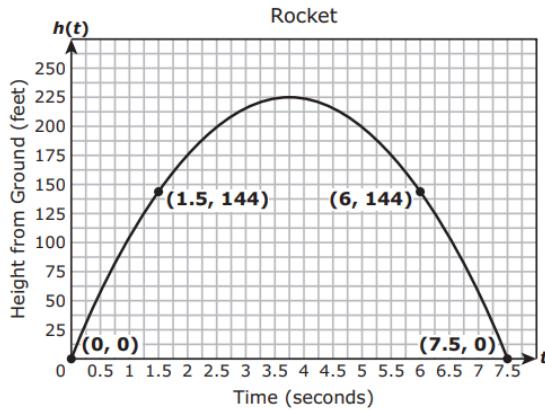
Learning from Mistakes Instructional Implications

*Correct Answer (A)

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

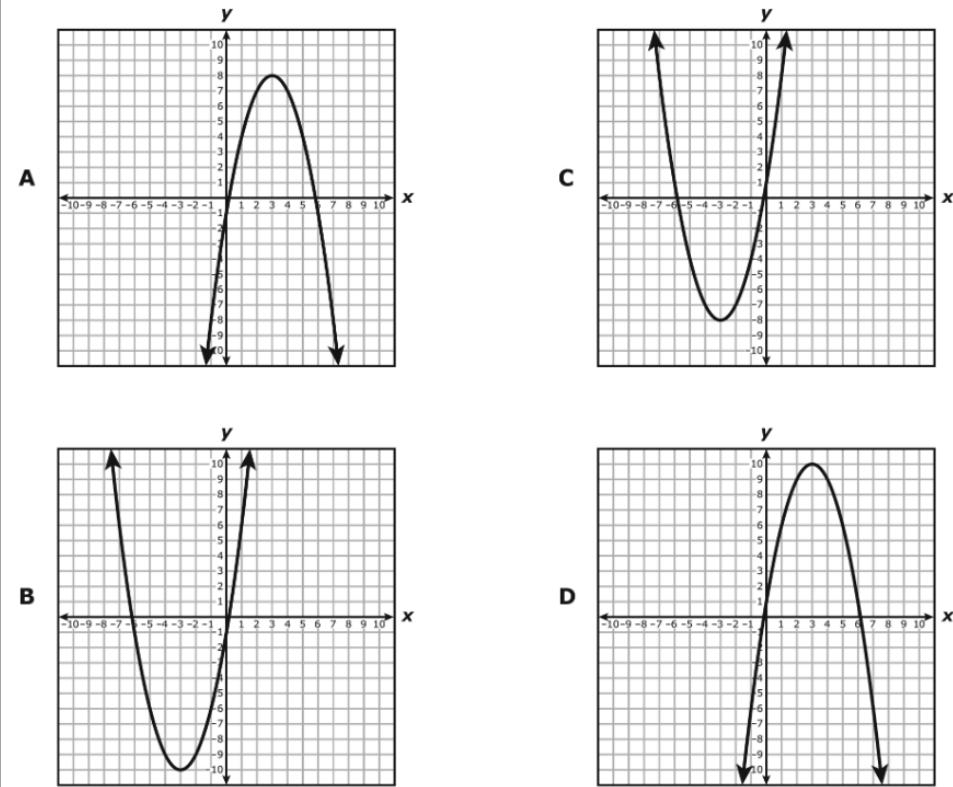
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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 $y = -x^2 + 6x - 1$?



*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

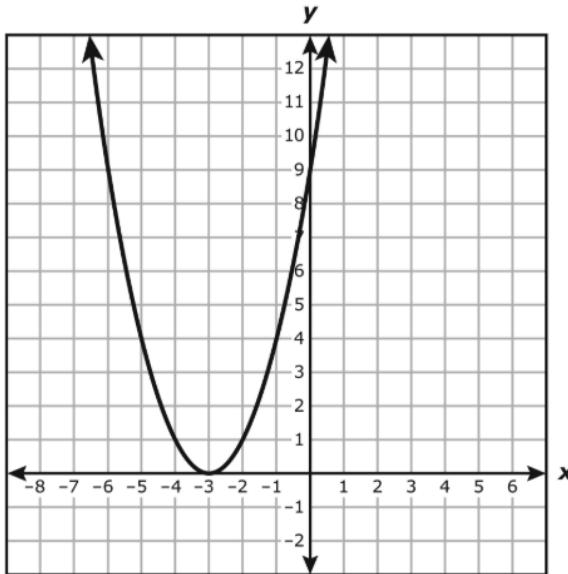
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

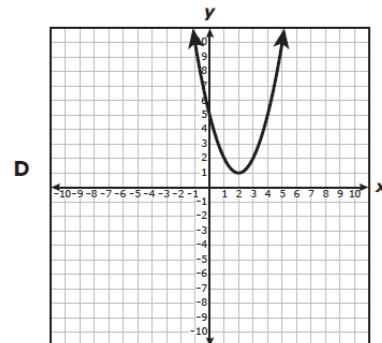
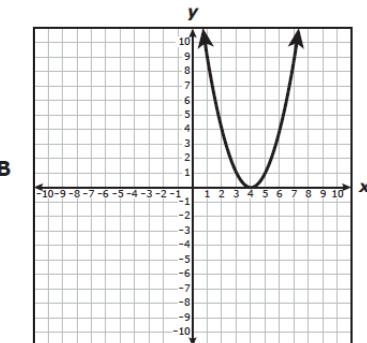
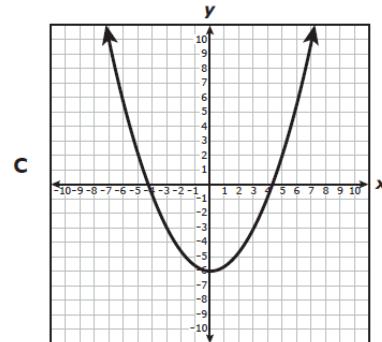
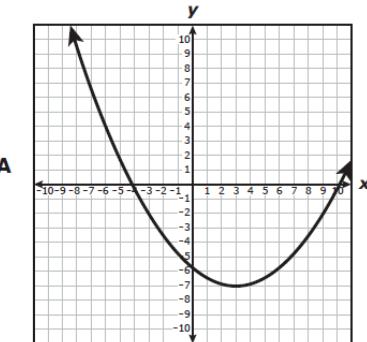
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early

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

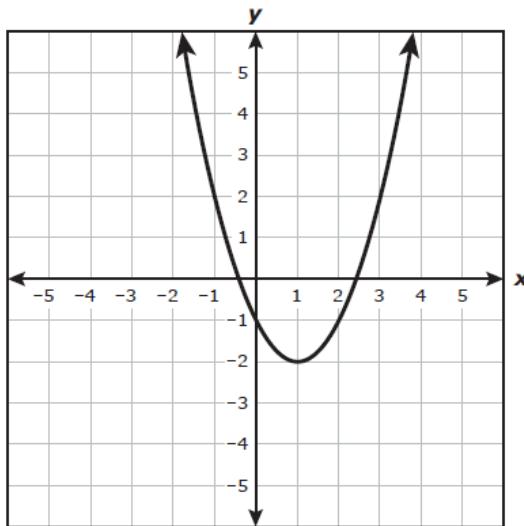
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

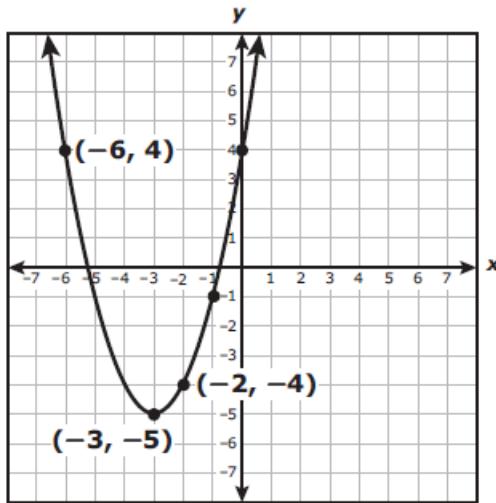
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

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.

*Correct Answer (4)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
4	77*	
	22	

Error Analysis

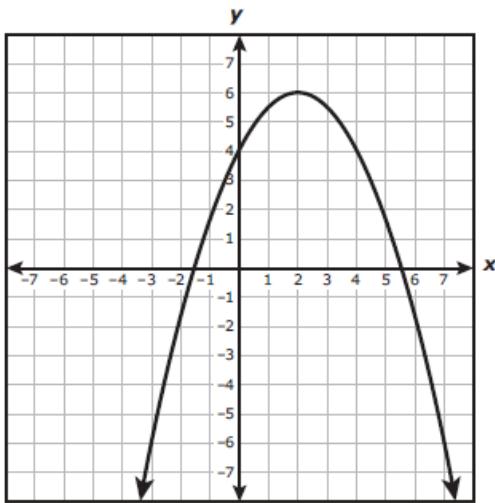
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

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

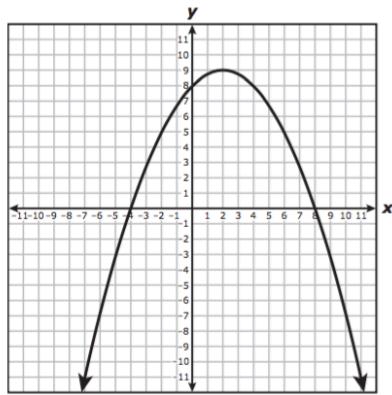
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

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 – Q34

- 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.



What is the maximum value of g ?

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

*Correct Answer (9)

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
9	75*	
	24	

Error Analysis

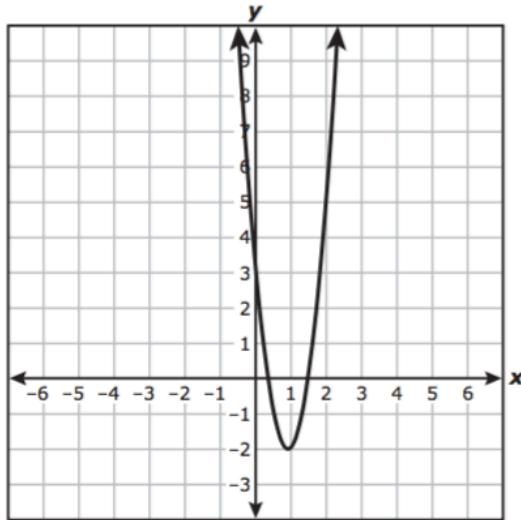
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

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
	4 Given $g(x) = x^2 - 6x - 16$, which statement is true?	Subcluster	Writing and Solving Quadratic Equations
	F The zeros are -8 and 2 , because the factors of g are $(x + 8)$ and $(x - 2)$.	Content	Supporting
	G The zeros are -8 and -2 , because the factors of g are $(x + 8)$ and $(x + 2)$.	Process	
	H The zeros are -2 and 8 , because the factors of g are $(x + 2)$ and $(x - 8)$.	Stimulus	
	J The zeros are 2 and 8 , because the factors of g are $(x - 2)$ and $(x - 8)$.	Data Analysis	
*Correct Answer (H)		Item	State
		F	13
		G	12
		H*	64
		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	

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
		F	11
		G	11
		H*	63
		J	14
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
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		Learning from Mistakes Instructional Implications	
*Correct Answer (H)			

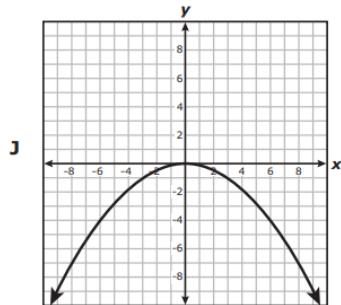
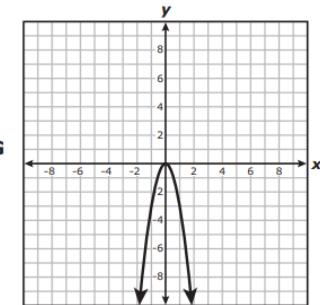
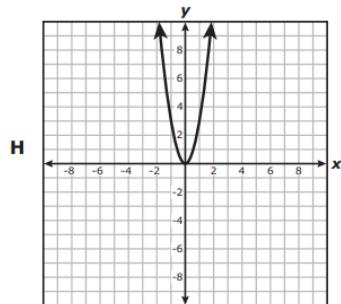
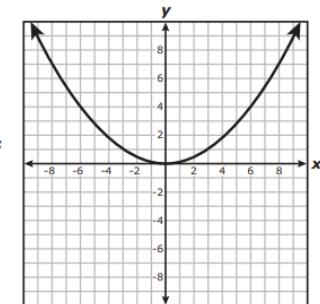
A.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions		Analysis of Assessed Standards	
2016 – Q16		Cluster	Quadratic Functions
		Subcluster	Writing and Solving Quadratic Equations
		Content	Supporting
		Process	A.1(B), A.1(G)
		Stimulus	
		Data Analysis	
		Item	State
		F	14
		G*	61
		H	14
		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.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 37 Which statement about $f(x) = 2x^2 - 3x - 5$ is true? A The zeros are $-\frac{5}{2}$ and -1 , because $f(x) = (x + 1)(2x + 5)$. B The zeros are $-\frac{5}{2}$ and 1 , because $f(x) = (x - 1)(2x + 5)$. C The zeros are -1 and $\frac{5}{2}$, because $f(x) = (x + 1)(2x - 5)$. D The zeros are 1 and $\frac{5}{2}$, because $f(x) = (x - 1)(2x - 5)$.		Cluster Quadratic Functions Subcluster Writing and Solving Quadratic Equations Content Supporting Process A.1(B), A.1(G) Stimulus															
	Data Analysis <table border="1" data-bbox="1101 432 1509 644"> <thead> <tr> <th data-bbox="1101 432 1199 475">Item</th> <th data-bbox="1199 432 1313 475">State</th> <th data-bbox="1313 432 1509 475">Local</th> </tr> </thead> <tbody> <tr> <td data-bbox="1101 475 1199 517">A</td><td data-bbox="1199 475 1313 517">10</td><td data-bbox="1313 475 1509 517"></td></tr> <tr> <td data-bbox="1101 517 1199 559">B</td><td data-bbox="1199 517 1313 559">14</td><td data-bbox="1313 517 1509 559"></td></tr> <tr> <td data-bbox="1101 559 1199 601">C*</td><td data-bbox="1199 559 1313 601">67</td><td data-bbox="1313 559 1509 601"></td></tr> <tr> <td data-bbox="1101 601 1199 644">D</td><td data-bbox="1199 601 1313 644">9</td><td data-bbox="1313 601 1509 644"></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	A	10		B	14		C*	67		D	9	
Item	State	Local															
A	10																
B	14																
C*	67																
D	9																
*Correct Answer (C)		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

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 – Q52

- 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 ?

F $g(x) = (x - 4.5)^2$

G $g(x) = (x + 4.5)^2$

H $g(x) = x^2 - 4.5$

J $g(x) = x^2 + 4.5$

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	19	
G*	47	
H	22	
J	12	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

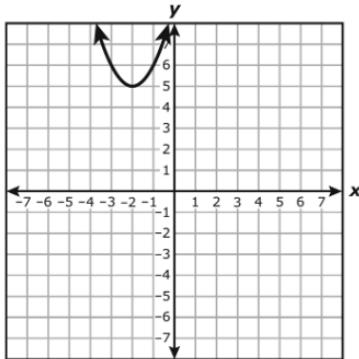
*Correct Answer (G)

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

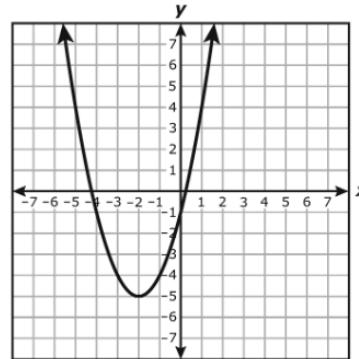
2019 – Q12

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 ?

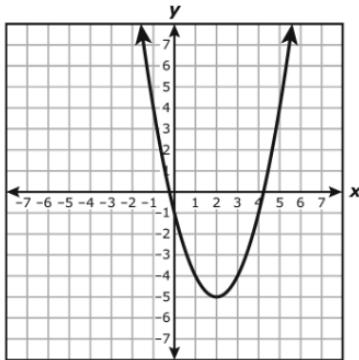
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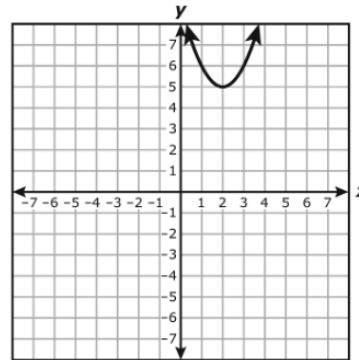
H



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

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	11	
B	14	
C	12	
D*	63	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

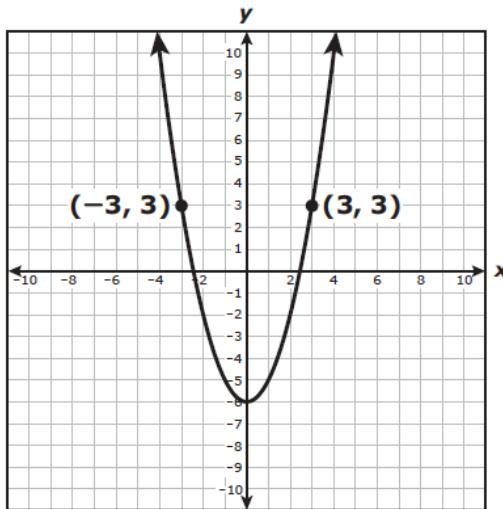
Learning from Mistakes Instructional Implications

*Correct Answer (D)

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

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.

*Correct Answer (-6)

Analysis of Assessed Standards

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

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

! 2018 – Q48

- 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 ?

- F** A reflection over the x -axis and a horizontal stretch
- G** A reflection over the y -axis and a horizontal stretch
- H** A reflection over the x -axis and a vertical stretch
- J** A reflection over the y -axis and a vertical stretch

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F*	55	
G	16	
H	20	
J	9	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (F)

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 – Q4

- 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?

- F** A horizontal shift to the right 7.5 units
- G** A horizontal shift to the left 7.5 units
- H** A vertical shift down 56.25 units
- J** A vertical shift up 56.25 units

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F*	70	
G	15	
H	9	
J	6	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

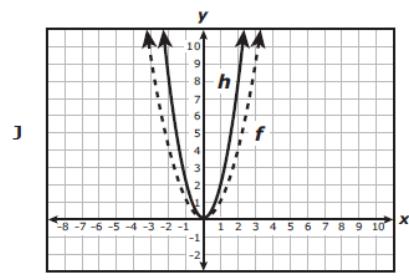
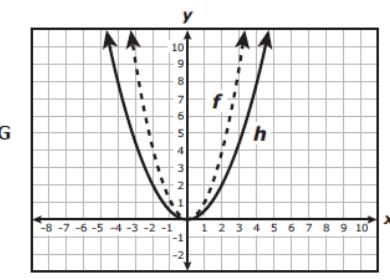
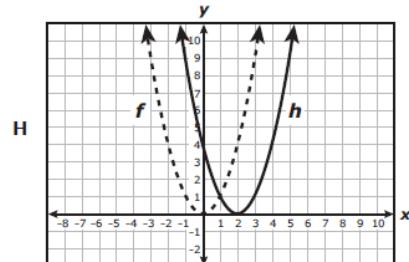
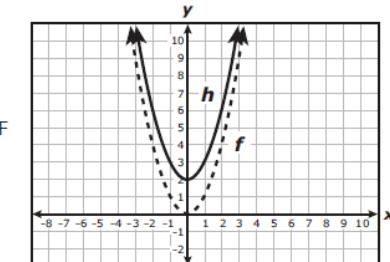
Learning from Mistakes Instructional Implications

*Correct Answer (F)

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

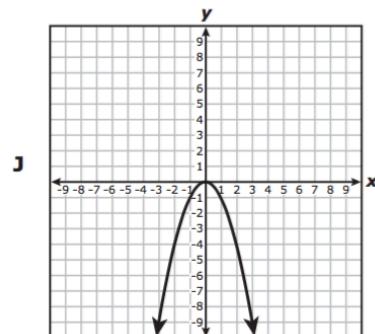
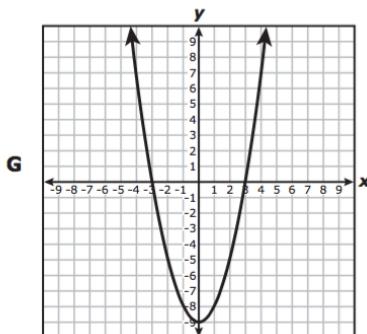
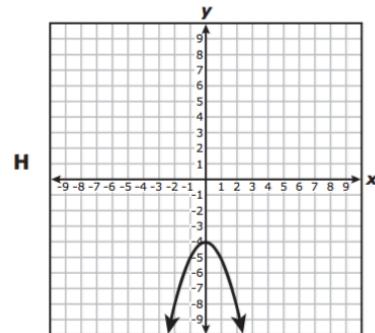
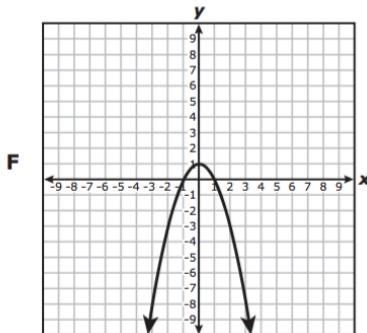
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

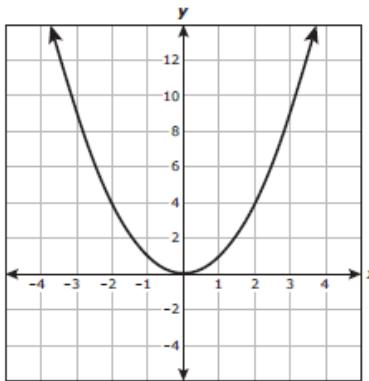
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

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)

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

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 – Q41

- 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 ?

- A** $q(x) = 18x^2$ and $w(x) = x^2$
- B** $q(x) = x^2 + 18$ and $w(x) = x^2$
- C** $q(x) = -18x^2$ and $w(x) = x^2$
- D** $q(x) = x^2 - 18$ and $w(x) = x^2$

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
A	10	
B	13	
C	19	
D*	57	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (D)

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		
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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 – 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
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
F -74 and 88	Content	Readiness
G -2 and 16	Process	
H -88 and 74	Stimulus	
J -16 and 2	Data Analysis	
	Item	State
	F	8
	G	19
	H	10
	J*	63
	Error Analysis	
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	<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 $w^2 + 6w - 112 = 0$.	Subcluster	Writing and Solving Quadratic Equations
What is the width of the trampoline in feet?	Content	Readiness
A 7 ft	Process	
B 16 ft	Stimulus	
C 8 ft		
D 14 ft		
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?	Subcluster	Writing and Solving Quadratic Equations
A 32	Content	Readiness
B 13	Process	
C 20	Stimulus	
D 16		
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> <tr><td></td><td></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</p> <p>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</p> <p>G 39</p> <p>H 26</p> <p>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)																					
	Stimulus																						
	Data Analysis																						
<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</p> <p>Instructional Implications</p>	F	7		G	13		H	13		J*	67											Item	State
F	7																						
G	13																						
H	13																						
J*	67																						
Local																							

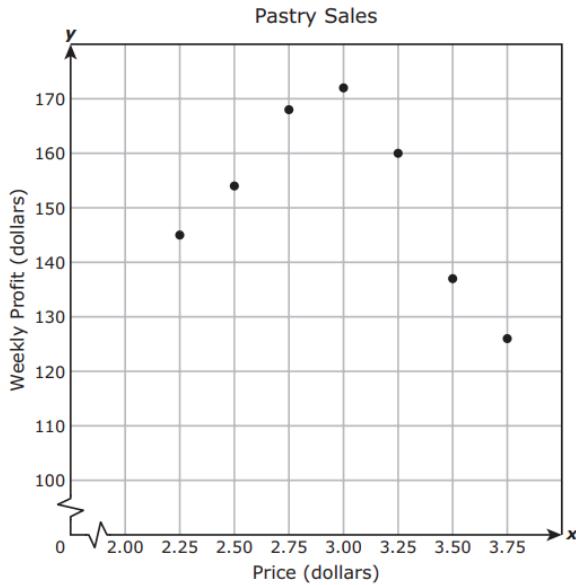
*Correct Answer (J)

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
	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
*Correct Answer (C)	Learning from Mistakes Instructional Implications	

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="360 375 861 804"> <thead> <tr> <th data-bbox="360 375 616 460">Number of Months since October 2011, t</th><th data-bbox="616 375 861 460">Number of Text Messages, $n(t)$ (billions)</th></tr> </thead> <tbody> <tr><td data-bbox="360 470 616 508">5</td><td data-bbox="616 470 861 508">3</td></tr> <tr><td data-bbox="360 519 616 557">10</td><td data-bbox="616 519 861 557">10</td></tr> <tr><td data-bbox="360 568 616 606">15</td><td data-bbox="616 568 861 606">17</td></tr> <tr><td data-bbox="360 616 616 654">20</td><td data-bbox="616 616 861 654">27</td></tr> <tr><td data-bbox="360 665 616 703">25</td><td data-bbox="616 665 861 703">44</td></tr> <tr><td data-bbox="360 713 616 751">30</td><td data-bbox="616 713 861 751">64</td></tr> <tr><td data-bbox="360 762 616 800">35</td><td data-bbox="616 762 861 800">86</td></tr> <tr><td data-bbox="360 811 616 849">40</td><td data-bbox="616 811 861 849">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="1111 149 1509 361"> <tr><td data-bbox="1111 149 1237 185">Cluster</td><td data-bbox="1237 149 1509 185">Quadratic Functions</td></tr> <tr><td data-bbox="1111 196 1237 232">Subcluster</td><td data-bbox="1237 196 1509 232">Writing and Solving Quadratic Equations</td></tr> <tr><td data-bbox="1111 242 1237 278">Content</td><td data-bbox="1237 242 1509 278">Supporting</td></tr> <tr><td data-bbox="1111 289 1237 325">Process</td><td data-bbox="1237 289 1509 325"></td></tr> <tr><td data-bbox="1111 335 1237 371">Stimulus</td><td data-bbox="1237 335 1509 371"></td></tr> </table> <p>Data Analysis</p> <table border="1" data-bbox="1111 424 1509 635"> <tr><td data-bbox="1111 424 1237 460">Item</td><td data-bbox="1237 424 1346 460">State</td><td data-bbox="1346 424 1509 460">Local</td></tr> <tr><td data-bbox="1111 470 1237 508">A</td><td data-bbox="1237 470 1346 508">13</td><td data-bbox="1346 470 1509 508"></td></tr> <tr><td data-bbox="1111 519 1237 557">B*</td><td data-bbox="1237 519 1346 557">58</td><td data-bbox="1346 519 1509 557"></td></tr> <tr><td data-bbox="1111 568 1237 606">C</td><td data-bbox="1237 568 1346 606">13</td><td data-bbox="1346 568 1509 606"></td></tr> <tr><td data-bbox="1111 616 1237 654">D</td><td data-bbox="1237 616 1346 654">16</td><td data-bbox="1346 616 1509 654"></td></tr> </table> <p>Error Analysis</p> <table border="1" data-bbox="1111 667 1509 741"> <tr><td data-bbox="1111 667 1237 703"><input type="checkbox"/> Guessing</td><td data-bbox="1237 667 1509 703"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr><td data-bbox="1111 713 1237 741"><input type="checkbox"/> Careless Error</td><td data-bbox="1237 713 1509 741"><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
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25	44																																															
30	64																																															
35	86																																															
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Subcluster	Writing and Solving Quadratic Equations																																															
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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																																															

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		Analysis of Assessed Standards			
!	2017 – Q39	Cluster	Quadratic Functions		
		Subcluster	Writing and Solving Quadratic Equations		
		Content	Supporting		
		Process			
		Stimulus			
Data Analysis					
	Item	State	Local		
	A	11			
	B*	54			
	C	19			
	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)					

IQ Analysis | Investigating the Question

A.12(B)

RC 1

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	Local
	-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			
*			
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	Local
	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			
*			

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	Local
	F	12	
	G*	71	
	H	9	
	J	8	
Error Analysis			
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> 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	
2018 – Q20		Cluster	Quadratic Functions
		Subcluster	Describing Quadratic Functions
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	48	56*	
		43	
Error Analysis			
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	<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
		Subcluster	Describing Quadratic Functions
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	A	6	
	B	8	
	C	18	
	D*	67	
Error Analysis			
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	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

*Correct Answer (D)

Exponential Functions

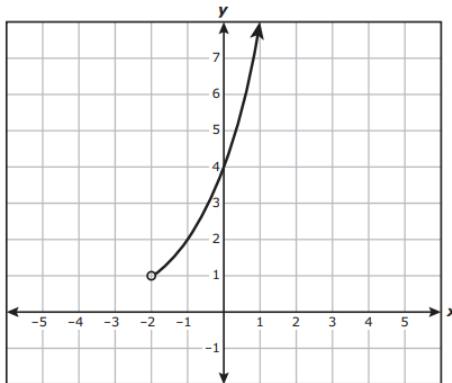
A.9 Exponential functions and equations. The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness 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

2021 – Q49

- 49** A part of exponential function f is graphed on the grid.



Which inequality best represents the domain of the part shown?

- A** $x > 1$
- B** $y > 1$
- C** $x > -2$
- D** $y > -2$

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	9	
B	17	
C*	64	
D	10	

Error Analysis

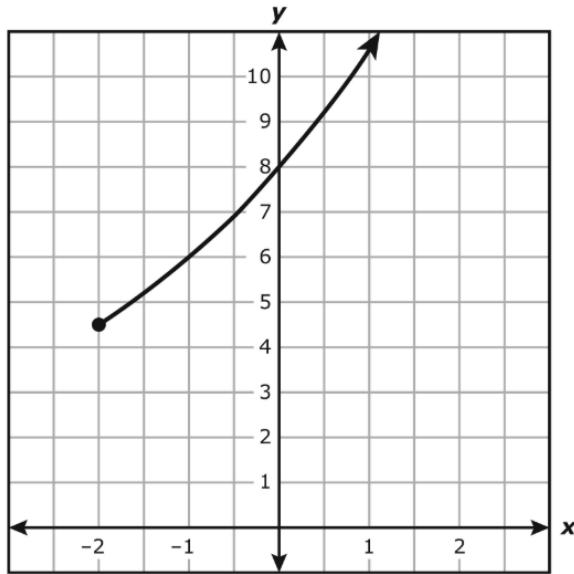
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

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

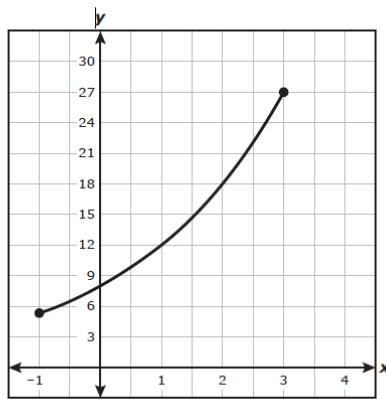
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

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

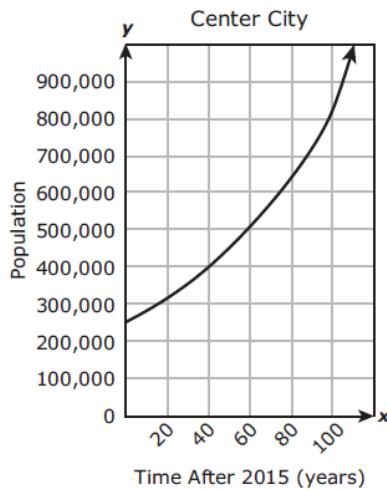
A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	
Stimulus	

! 2017 – Q21

- 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.



Which inequality best represents the range of f in this situation?

- A $x \geq 0$
- B $y \geq 250,000$
- C $0 \leq x \leq 110$
- D $250,000 \leq y \leq 1,000,000$

Data Analysis

Item	State	Local
A	4	
B*	63	
C	8	
D	25	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

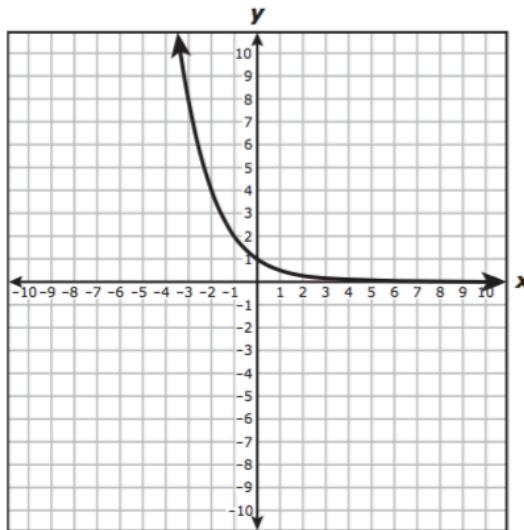
Learning from Mistakes Instructional Implications

*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

! 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)

Analysis of Assessed Standards

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	

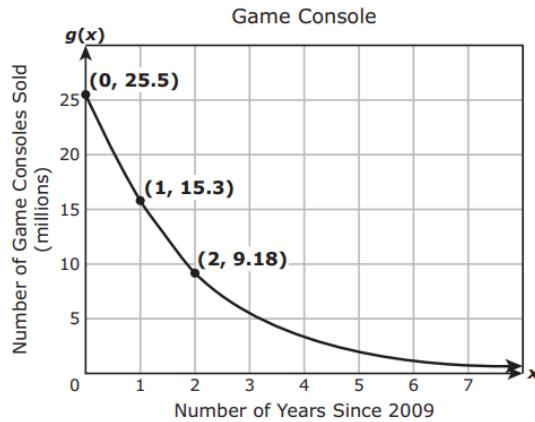
A.9(B) interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems	Analysis of Assessed Standards		
! 2018 – Q46	Cluster	Exponential Functions	
46 Scientists are studying a bacteria sample. The function $f(x) = 245(1.12)^x$ gives the number 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			
* Correct Answer (D)			
Data Analysis			
	Item	State	Local
	A	9	
	B	17	
	C	9	
	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			

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

2021 – Q11

- 11 The graph shows the number of game consoles sold in millions since 2009.



Based on this information, which function best models the number of game consoles sold in millions x years since 2009?

- 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 $g(x) = 25.5(6.12)^x$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	13	
B*	61	
C	15	
D	12	

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

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F*	50	
G	18	
H	19	
J	13	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

2021 – Q38

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

x	f(x)
2	36
3	54
4	81
5	121.5
6	182.25

Which function represents this relationship?

F $f(x) = 16\left(\frac{3}{2}\right)^x$

G $f(x) = 16\left(\frac{2}{3}\right)^x$

H $f(x) = 36\left(\frac{3}{2}\right)^x$

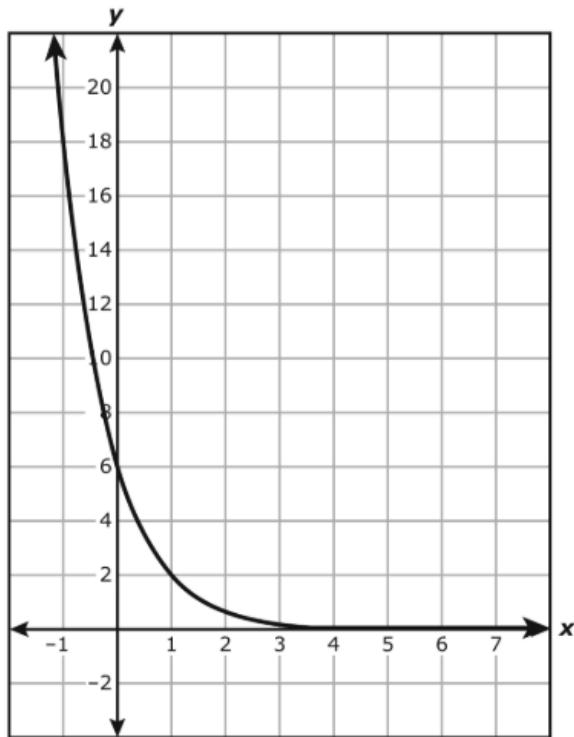
J $f(x) = 36\left(\frac{2}{3}\right)^x$

*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

2018 – Q17

- 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?

- 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** $f(x) = 1,024(0.05)^x$

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	9	
B*	77	
C	6	
D	7	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (B)

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

2018 – Q33

- 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.

Which function models the total number of metric tons of copper produced in the year that is x years since 1900?

- A** $c(x) = 495,000(1.0325)^x$
- B** $c(x) = 495,000(0.9675)^x$
- C** $c(x) = 495,000x^{1.0325}$
- D** $c(x) = 495,000x^{0.9675}$

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	68	
B	15	
C	11	
D	5	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (A)

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

2017 – Q15

- 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?

A $n = 4\left(\frac{1}{2}\right)^h$

B $n = 4(2)^h$

C $n = 4 + (2)^h$

D $n = 4 + \left(\frac{1}{2}\right)^h$

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	7	
B*	69	
C	19	
D	5	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (B)

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

! 2017 – Q35

- 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.

Which function models the amount of fertilizer in cubic yards left after w weeks?

A $f(w) = 0.97(78,000)^w$

B $f(w) = 1.03(78,000)^w$

C $f(w) = 78,000(0.97)^w$

D $f(w) = 78,000(1.03)^w$

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	9	
B	14	
C*	44	
D	33	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

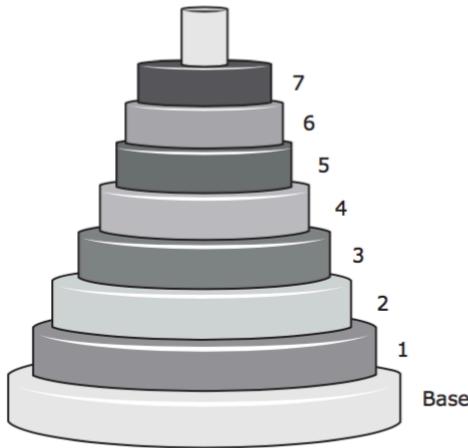
Learning from Mistakes Instructional Implications

*Correct Answer (C)

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

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

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

*Correct Answer (H)

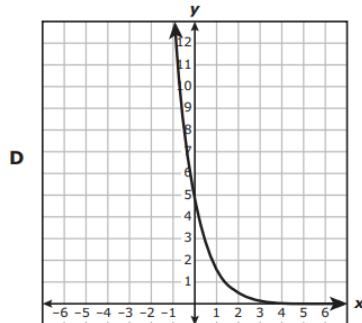
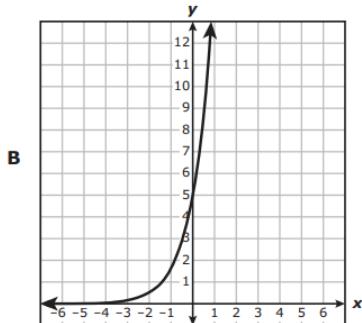
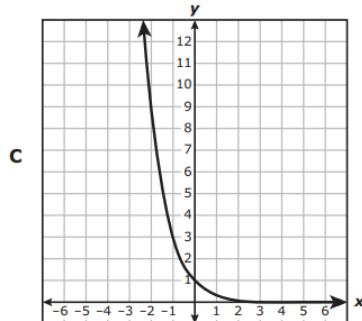
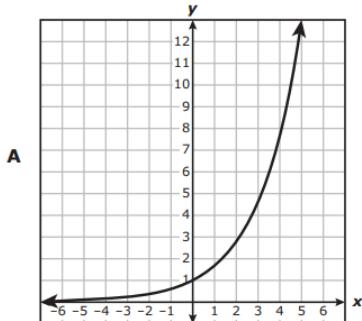
A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems		Analysis of Assessed Standards	
2021 – Q27		Cluster	Exponential Functions
27 What is the value of the y-intercept of the graph of $g(x) = 73\left(\frac{4}{5}\right)^x$?		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
		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			

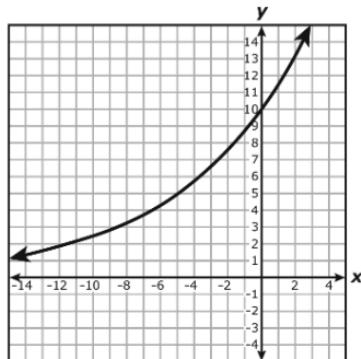
*Correct Answer (29)

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

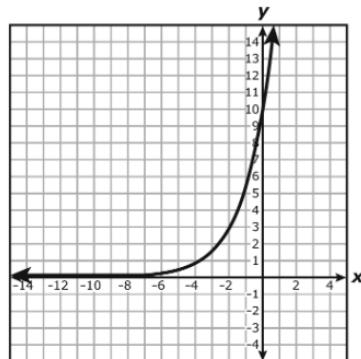
2019 – Q38

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

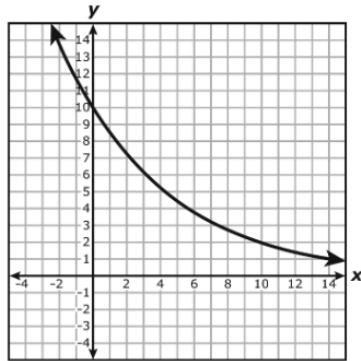
F



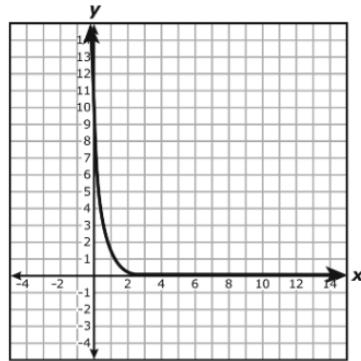
H



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

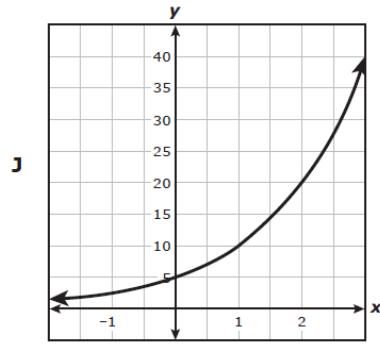
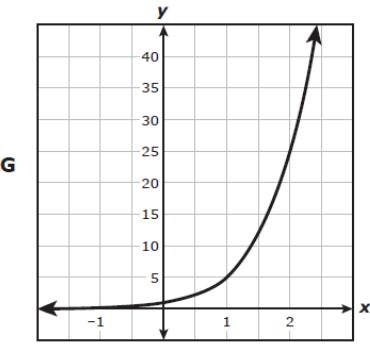
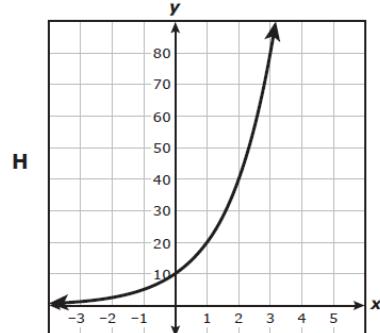
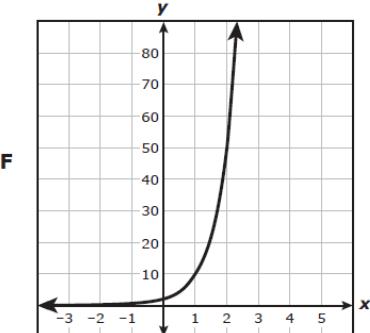
Learning from Mistakes Instructional Implications

<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>2018 – Q4</p> <p>4 Which statement about the graph of $y = 8(0.25)^x$ is true?</p> <ul style="list-style-type: none"> 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 $(2, 1)$. <p>*Correct Answer (G)</p>	Analysis of Assessed Standards	
Cluster	Exponential Functions	
Subcluster	Describing Exponential Functions	
Content	Readiness	
Process		
Stimulus		
Data Analysis		
Item	State	Local
F	8	
G*	64	
H	21	
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		

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

! 2018 – Q40

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



* Correct Answer (F)

Analysis of Assessed Standards

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

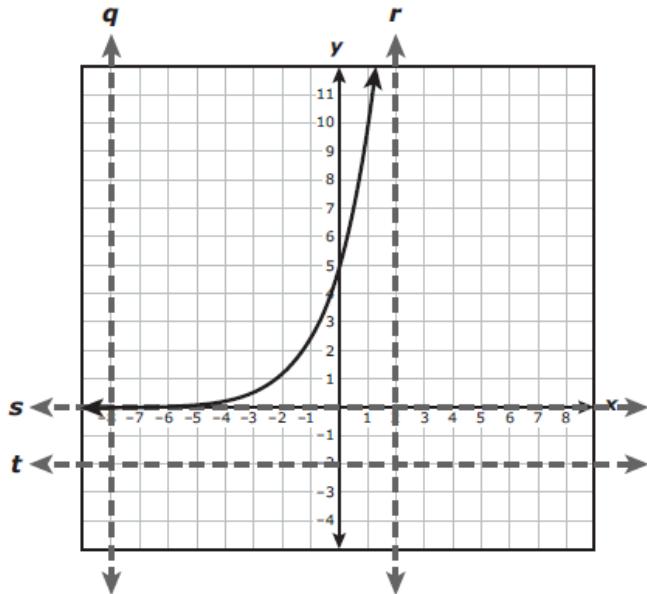
- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

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

2017 – Q8

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



Which dashed line is an asymptote for the graph?

- F Line q
- G Line r
- H Line s
- J Line t

*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
F	9	
G	15	
H*	69	
J	7	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

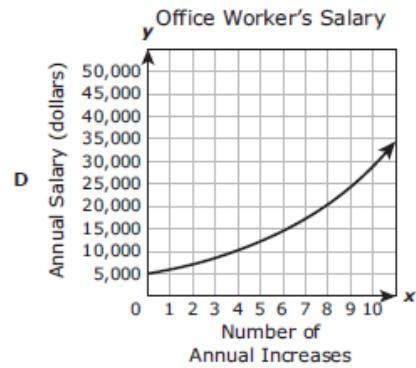
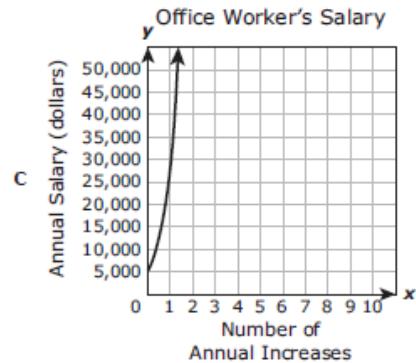
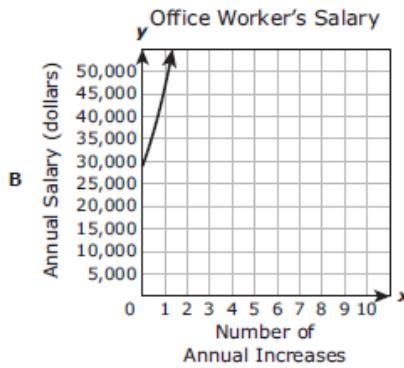
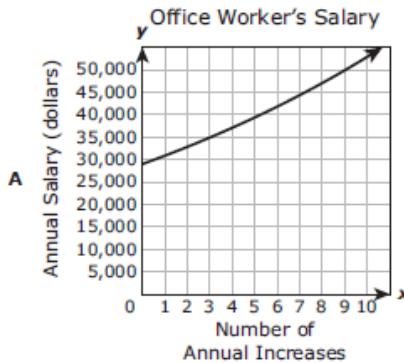
Learning from Mistakes Instructional Implications

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															
! 2017 – Q49 49 Which statement about the graph of $y = \frac{1}{3} \left(\frac{2}{3}\right)^x$ is true?	Cluster Exponential Functions Subcluster Describing Exponential Functions Content Readiness Process Stimulus															
<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" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Item</th> <th style="background-color: #cccccc;">State</th> <th style="background-color: #cccccc;">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 <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early	Item	State	Local	A	13		B	13		C	24		D*	49	
Item	State	Local														
A	13															
B	13															
C	24															
D*	49															
	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

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?



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

*Correct Answer (A)

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															
! 2016 – Q50	Cluster Exponential Functions Subcluster Describing Exponential Functions Content Readiness 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> <p style="text-align: center;">Coffee Stores</p>	Data Analysis <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Item</th> <th style="background-color: #cccccc;">State</th> <th style="background-color: #cccccc;">Local</th> </tr> </thead> <tbody> <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> </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	F	10		G	18		H	13		J*	59	
Item	State	Local														
F	10															
G	18															
H	13															
J*	59															
<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>	Learning from Mistakes Instructional Implications															

*Correct Answer (J)

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															
<p>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.</p> <p style="text-align: center;">Sea Turtles</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of Years Since 2001, x</th><th>Number of Nesting Sites, $n(x)$</th></tr> </thead> <tbody> <tr><td>1</td><td>46,125</td></tr> <tr><td>2</td><td>37,994</td></tr> <tr><td>3</td><td>40,513</td></tr> <tr><td>4</td><td>29,368</td></tr> <tr><td>5</td><td>34,082</td></tr> <tr><td>6</td><td>31,746</td></tr> <tr><td>7</td><td>27,691</td></tr> </tbody> </table>		Number of Years Since 2001, x	Number of Nesting Sites, $n(x)$	1	46,125	2	37,994	3	40,513	4	29,368	5	34,082	6	31,746	7	27,691	Writing Exponential Functions
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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																		
*Correct Answer (B)																		

<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>! 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> <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> <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>	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	<p>Analysis of Assessed Standards</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> <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>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> </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	Writing Exponential Functions	Content	Supporting	Process	A.1(A), A.1(B), A.1(C), A.1(E), A.1(F)	Stimulus		Item	State	Local	A	13		B	6		C	27		D*	53		<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(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function

! 2017 – Q38

38 Which table does NOT show y as a function of x ?

F	x	$\frac{1}{10}$	$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{1}{2}$
	y	9	11	9	14	7

G	x	14	15	16	17	18
	y	100	80	110	100	90

H	x	-0.2	0.6	-1.3	1.0	-0.2
	y	5.8	-3.7	4.4	-0.9	8.1

J	x	-24	21	24	-27	29
	y	2.7	2.8	2.7	2.5	2.5

*Correct Answer (H)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Describing Exponential Functions
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
F	11	
G	12	
H*	64	
J	13	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question

A.12(C)

RC 1

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

***Correct Answer (F)**

IQ Analysis Investigating the Question		SE	RC																																										
Units																																													
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