

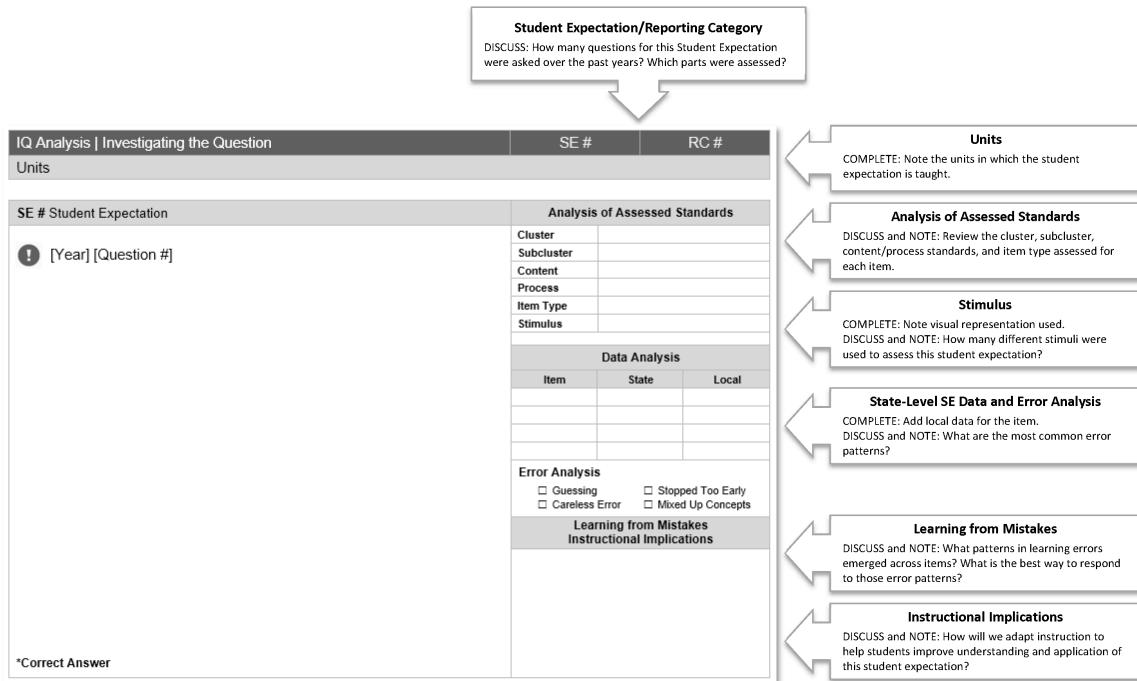
2022-2025 Released Tests

Aligned to the Standards

CONTENT BUILDER FOR THE PLC

Math

Algebra I



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

[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		Analysis of Assessed Standards	
! 2025 – Q16		Cluster	Linear Functions
An amusement park charges \$44.95 per person for admission and \$20.00 per car for parking. For purchases of at least 1 ticket, the table shows the relationship between p , the number of people in a car, and c , the total cost in dollars.		Subcluster	Describing Linear Functions
		Content	Readiness
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
<input type="radio"/> A			
<input type="radio"/> B			
<input type="radio"/> C			
<input checked="" type="radio"/> D*	48		
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications			
*Correct Answer (D)			

A.2(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	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	58	
C		
D		

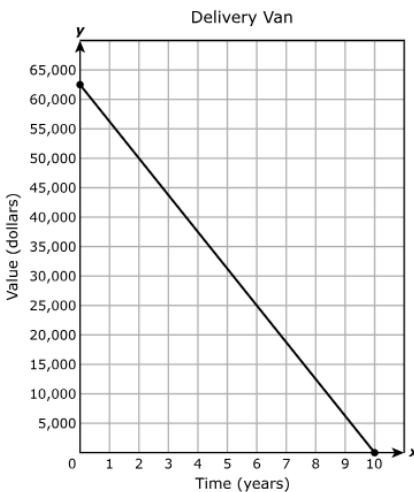
Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

2025 – Q37

The owner of a business purchased a delivery van for \$62,500. For accounting purposes the owner identified a constant depreciation on the value of the van. The graph shows the linear relationship between y , the value in dollars of the delivery van, and x , the time in years.



Which inequality best represents the domain of the function for this situation?

- (A) $0 \leq y \leq 10$
 (B) $0 \leq x \leq 10$
 (C) $0 \leq y \leq 62,500$
 (D) $0 \leq x \leq 62,500$

*Correct Answer (B)

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

Analysis of Assessed Standards

! 2024 – Q23

A swimming pool can be rented for \$110 per hour. The pool can be rented for either 1 hour or 2 hours. The cost in dollars to rent the pool is a function of the number of hours the pool is rented.

What are the domain and range of the function for this situation?

(A) Domain: {110, 220}

Range: {1, 2}

(B) Domain: {1, 2}

Range: {110, 220}

(C) Domain: all real numbers

Range: all real numbers

(D) Domain: all integers greater than or equal to zero

Range: all integers greater than or equal to zero

*Correct Answer (B)

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	46	
C		
D		

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

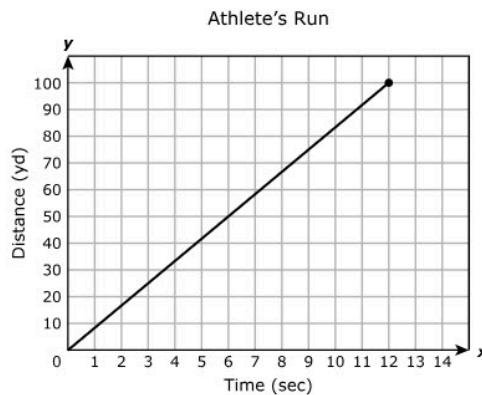
A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

2024 – Q49

An athlete ran at a constant speed for 12 seconds. The part of the linear function shown represents the distance the athlete ran in yards, y , as a function of the time in seconds, x .



What is the domain of the function for this situation?

- A $0 \leq x \leq 14$
- B $0 \leq x \leq 12$
- C $0 \leq y \leq 110$
- D $0 \leq y \leq 100$

*Correct Answer (B)

Data Analysis

Item	State	Local
A		
B*	67	
C		
D		

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

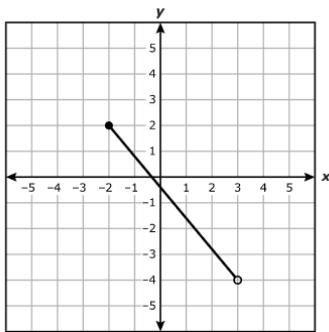
Learning from Mistakes Instructional Implications

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

2023 – Q7

A part of a linear function is shown on the grid.



What is the range of the part of the linear function shown?

Choose the correct answer from each drop-down menu to complete the sentence.

The range is the set of all real numbers and .

Cluster Linear Functions

Subcluster Describing Linear Functions

Content Readiness

Process

Item Type Inline Choice (2 pts)

Stimulus

Data Analysis

Item	State	Local
Full Credit	33	
No Credit	44	
Partial Credit	22	

Error Analysis

Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (Greater than -4, less than or equal to 2)

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	
Item Type	Multiple Choice (1 pt)

Data Analysis

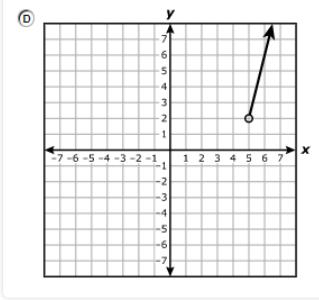
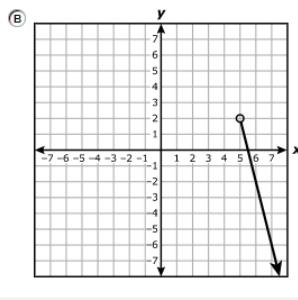
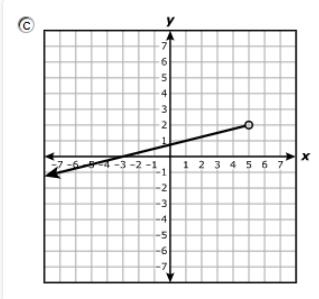
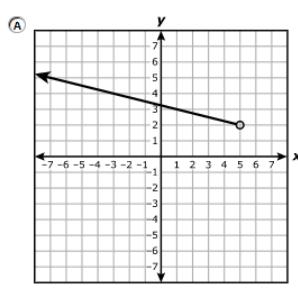
Item	State	Local
A	23	
B*	34	
C	24	
D	18	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (B)



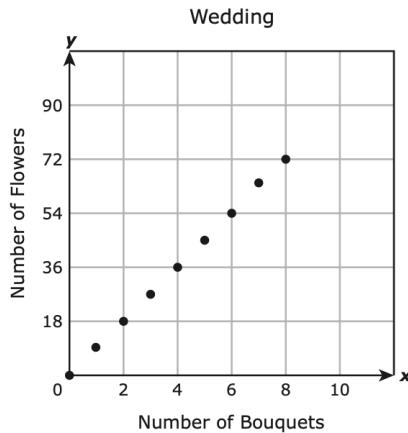
A.2(A) determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Stimulus	

! 2022 – Q18

- 18** A florist is making bouquets of flowers for a wedding. Each bouquet will have 9 flowers. The graph shows the linear relationship between y , the number of flowers used, and x , the number of bouquets.



The florist will use no more than 8 bouquets for the wedding. Which set best represents the domain of the function for this situation?

- F** $\{0, 2, 4, 6, 8, 10\}$
G $\{0, 1, 2, 3, 4, 5, 6, 7, 8\}$
H $\{0, 18, 36, 54, 72, 90\}$
J $\{0, 9, 18, 27, 36, 45, 54, 63, 72\}$

Data Analysis

Item	State	Local
F	9	
G*	64	
H	6	
J	21	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

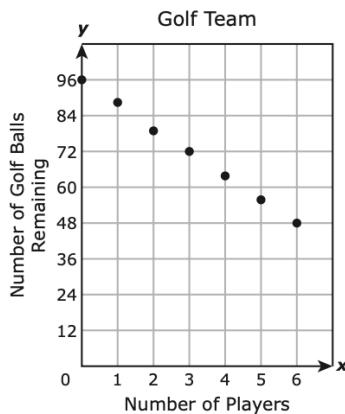
*Correct Answer (G)

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

2022 – Q53

- 53** A coach has 96 golf balls for the school's golf team. The coach will give each player on the team 8 golf balls. The graph shows the linear relationship between y , the number of golf balls remaining for the team, and x , the number of players on the team.



The coach will use no more than 6 players on the school's golf team. Which set best represents the range of the function for this situation?

- A** {96, 84, 72, 60, 48, 36, 24}
- B** {8, 9, 10, 11, 12, 13, 14}
- C** {96, 88, 80, 72, 64, 56, 48}
- D** {0, 1, 2, 3, 4, 5, 6}

Cluster Linear Functions

Subcluster Describing Linear Functions

Content Readiness

Process

Stimulus

Data Analysis

Item	State	Local
A	12	
B	7	
C*	70	
D	10	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (C)

A.2(B) write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points		Analysis of Assessed Standards	
2025 – Q8	What is the equation in slope-intercept form of the line that has a slope of $-\frac{2}{11}$ and passes through the point $(22, 5)$?	Cluster	Linear Functions
	<input type="radio"/> A $y = -\frac{2}{11}x + 9$	Subcluster	Writing Linear Equations
	<input type="radio"/> B $y = -\frac{2}{11}x + 1$	Content	Supporting
	<input type="radio"/> C $y = -\frac{2}{11}x - 9$	Process	
	<input type="radio"/> D $y = -\frac{2}{11}x - 1$	Item Type	Multiple Choice (1 pt)
		Stimulus	
		Data Analysis	
		Item	State
		A*	66
		B	
		C	
		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	

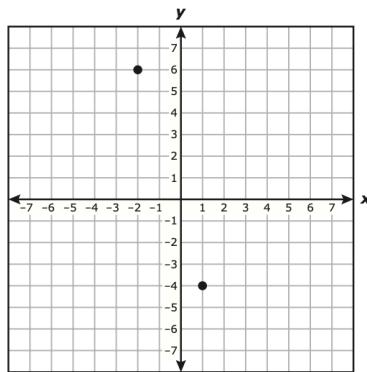
*Correct Answer (A)

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

! 2022 – Q25

25 Two points are plotted on the grid.



Which equation in slope-intercept form best represents the line that passes through these two points?

- A** $y = -\frac{2}{3}x - \frac{11}{3}$
- B** $y = -\frac{11}{3}x - \frac{2}{3}$
- C** $y = -\frac{2}{3}x - \frac{10}{3}$
- D** $y = -\frac{10}{3}x - \frac{2}{3}$

*Correct Answer (D)

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	10	
B	22	
C	14	
D*	54	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

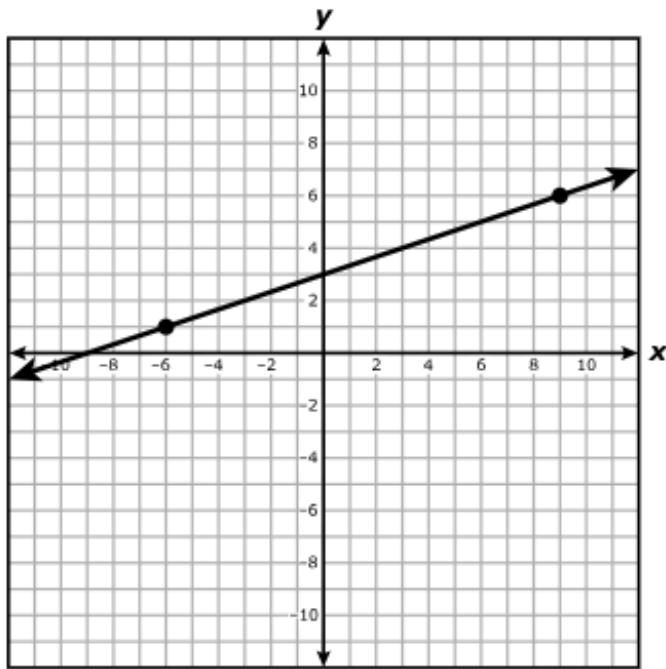
Learning from Mistakes Instructional Implications

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2025 – Q6		Cluster	Linear Functions
The table represents some points on the graph of linear function f .		Subcluster	Writing Linear Equations
		Content	Readiness
		Process	
		Item Type	Drag and Drop (2 pts)
		Stimulus	
Data Analysis			
	Item	State	Local
	Full Credit	51	
	No Credit	29	
	Partial Credit	2	
Error Analysis			
	<input type="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 (3/2; -1)			

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

2025 – Q42

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



Which equation is best represented by this graph?

(A) $y = 3(x + 1)$

(B) $y = 3(x + 3)$

(C) $y = \frac{1}{3}(x + 9)$

(D) $y = \frac{1}{3}(x + 3)$

*Correct Answer (C)

Analysis of Assessed Standards	
Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

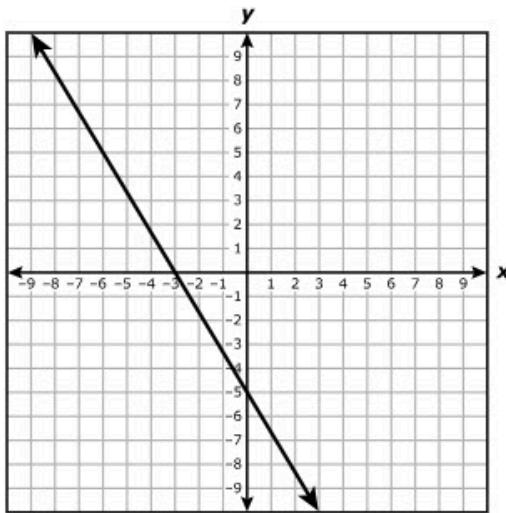
Data Analysis		
Item	State	Local
A		
B		
C*	67	
D		

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

2024 – Q14

The graph of a linear function is shown.



Which function best represents the relationship shown in the graph?

(A) $y = -\frac{3}{5}x - 5$

(B) $y = -\frac{3}{5}x - 3$

(C) $y = -\frac{5}{3}x - 5$

(D) $y = -\frac{5}{3}x - 3$

*Correct Answer (C)

Analysis of Assessed Standards	
Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis		
Item	State	Local
A		
B		
C*	72	
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.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2024 – Q36	Cluster	Linear Functions	
The total cost, y , for x tickets to a concert includes a flat fee for processing and a cost per ticket. One customer purchased 4 tickets for a total cost of \$160. Another customer purchased 8 tickets for a total cost of \$300.	Subcluster	Writing Linear Equations	
Which linear equation represents the total cost in dollars, y , for x tickets?	Content	Readiness	
<p>(A) $y = 40x$</p> <p>(B) $y = 37.5x$</p> <p>(C) $y = 35x + 20$</p> <p>(D) $y = 20x + 35$</p>	Process		
<p>*Correct Answer (C)</p>	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A		
	B		
	C*	53	
	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.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards										
2023 – Q1		Cluster	Linear Functions									
	The table represents some points on the graph of a linear function.	Subcluster	Writing Linear Equations									
	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>x</th> <th>y</th> </tr> <tr> <td>-4</td> <td>10</td> </tr> <tr> <td>-2</td> <td>7</td> </tr> <tr> <td>6</td> <td>-5</td> </tr> </table>	x	y	-4	10	-2	7	6	-5	Content	Readiness	
x	y											
-4	10											
-2	7											
6	-5											
		Process										
		Item Type	Multiple Choice (1 pt)									
		Stimulus										
Data Analysis												
		Item	State	Local								
	(A) $y = -\frac{3}{2}x + 4$	A*	76									
	(B) $y = -\frac{3}{2}x - 14$	B	11									
	(C) $y = -\frac{2}{3}x - 9$	C	9									
	(D) $y = -\frac{2}{3}x - 1$	D	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 (A)

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description		Analysis of Assessed Standards		
2023 – Q34		Cluster	Linear Functions	
	Printer ink costs \$18.99 per cartridge. The company that sells the ink cartridges charges a flat rate shipping fee of \$7.95, no matter the number of cartridges purchased in a single order.	Subcluster	Writing Linear Equations	
	Which linear function models the total cost, t , for a single order of c cartridges?	Content	Readiness	
	(A) $c = 26.94t$	Process		
	(B) $c = 18.99t + 7.95$	Item Type	Multiple Choice (1 pt)	
	(C) $t = 26.94c$	Stimulus		
	(D) $t = 18.99c + 7.95$	Data Analysis		
		Item	State	Local
	(A)	10		
	(B)	22		
	(C)	13		
	(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				

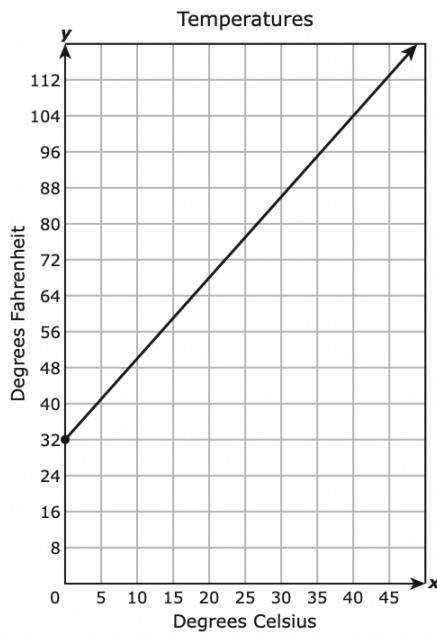
*Correct Answer (D)

A.2(C) write linear equations in two variables given a table of values, a graph, and a verbal description	Analysis of Assessed Standards																	
2022 – Q15 15 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"> <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>71</td><td></td></tr> <tr> <td>C</td><td>8</td><td></td></tr> <tr> <td>D</td><td>6</td><td></td></tr> </tbody> </table>	Item	State	Local	A	15		B*	71		C	8		D	6			Error Analysis
Item	State	Local																
A	15																	
B*	71																	
C	8																	
D	6																	
			<input type="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(C) write linear equations in two variables given a table of values, a graph, and a verbal description

2022 – Q38

- 38** The conversion of degrees Celsius to degrees Fahrenheit can be represented by a linear relationship. The graph shows the linear relationship between y , the temperature in degrees Fahrenheit, and x , the temperature in degrees Celsius from the freezing point of water.



Which equation best represents this situation?

- F** $y = \frac{5}{9}x$
- G** $y = \frac{9}{5}x$
- H** $y = \frac{5}{9}x + 32$
- J** $y = \frac{9}{5}x + 32$

*Correct Answer (J)

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

Data Analysis		
Item	State	Local
F	9	
G	12	
H	25	
J*	53	

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

Learning from Mistakes Instructional Implications	

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards					
2024 – Q3							
The value of y varies directly with x . When the value of x is 4, the value of y is -12.							
What is the constant of variation when y is a function of x , and what is the value of y when $x = -6$?							
Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.							
<input type="button" value="-18"/> <input type="button" value="-3"/> <input type="button" value="-2"/> <input type="button" value="−<math>\frac{1}{3}</math>"/> <input type="button" value="−<math>\frac{1}{3}</math>"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="18"/>							
The constant of variation is <input type="text"/>							
The value of y when $x = -6$ is <input type="text"/>							
Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early							
Learning from Mistakes Instructional Implications							
<small>*Correct Answer (-3; 18)</small>							

A.2(D) write and solve equations involving direct variation		Analysis of Assessed Standards			
2022 – Q7		Cluster	Linear Functions		
7 The value of y is directly proportional to the value of x . When $x = 512$, $y = 128$.		Subcluster	Solving Linear Equations		
What is the value of y when $x = 64$?		Content	Supporting		
A 256		Process			
B 32		Stimulus			
C 16					
D 8					
Data Analysis					
	Item	State	Local		
	A	13			
	B	17			
	C*	57			
*Correct Answer (C)	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.2(E) write the equation of a line that contains a given point and is parallel to a given line		Analysis of Assessed Standards		
2025 – Q22		Cluster Linear Functions Subcluster Writing Linear Equations Content Supporting Process Item Type Drag and Drop (2 pts) Stimulus		
The equation of line n is $y = -\frac{3}{5}x + 6$. Line p is parallel to line n and passes through the point $(15, -6)$.				
What is the equation of line p in slope-intercept form? Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.				
-31 -15 $-\frac{5}{3}$ $-\frac{3}{5}$ $\frac{3}{5}$ $\frac{5}{3}$ 3 19				
$y = \boxed{\hspace{1cm}}x + \boxed{\hspace{1cm}}$		Data Analysis		
	Item	State		
	Full Credit	45		
	No Credit	31		
	Partial Credit	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				

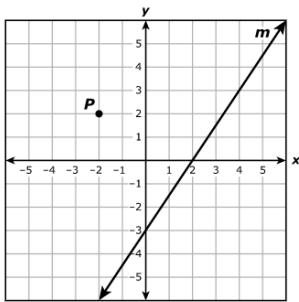
*Correct Answer (- 3/5; 3)

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																	
2024 – Q28	Cluster Linear Functions Subcluster Writing Linear Equations Content Supporting Process Item Type Multiple Choice (1 pt) Stimulus																	
<p>The graph shows point W and line p.</p>																		
<p>Which equation best represents the point-slope form of the line that passes through point W and is parallel to line p?</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></td><td></td></tr> <tr> <td>B*</td><td>50</td><td></td></tr> <tr> <td>C</td><td></td><td></td></tr> <tr> <td>D</td><td></td><td></td></tr> </tbody> </table>		Item	State	Local	A			B*	50		C			D		
Item	State	Local																
A																		
B*	50																	
C																		
D																		
<p>(A) $y - 5 = -\frac{4}{5}(x - 1)$</p> <p>(B) $y - 5 = \frac{4}{5}(x - 1)$</p> <p>(C) $y - 5 = -\frac{5}{4}(x - 1)$</p> <p>(D) $y - 5 = \frac{5}{4}(x - 1)$</p> <p>*Correct Answer (B)</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.2(E) write the equation of a line that contains a given point and is parallel to a given line

! 2023 – Q44

The graph shows point P and line m .



Which equation best represents the slope-intercept form of the line that passes through point P and is parallel to line m ?

(A) $y = \frac{3}{2}x - 5$

(B) $y = -\frac{2}{3}x + \frac{2}{3}$

(C) $y = \frac{3}{2}x + 5$

(D) $y = -\frac{2}{3}x - \frac{2}{3}$

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

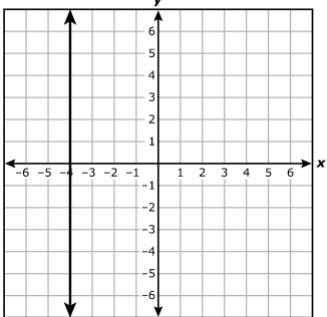
Data Analysis

Item	State	Local
A	16	
B	20	
C*	58	
D	7	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

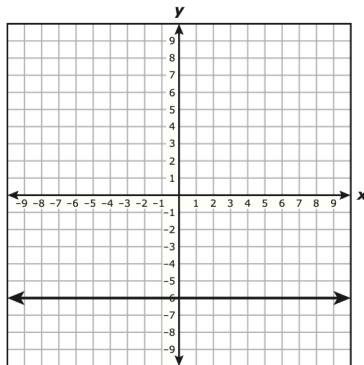
Learning from Mistakes Instructional Implications

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					
2023 – Q21 A line is graphed on a coordinate grid. 	Cluster		Linear Functions			
	Subcluster		Writing Linear Equations			
	Content		Supporting			
	Process					
	Item Type		Multiple Choice (1 pt)			
	Stimulus					
	Data Analysis					
	Item		State		Local	
	A*		72			
	B		7			
	C		10			
	D		11			
	Error Analysis					
	<input type="checkbox"/> Guessing		<input type="checkbox"/> Mixed Up Concepts			
	<input type="checkbox"/> Careless Error		<input type="checkbox"/> Stopped Too Early			
	Learning from Mistakes					
	Instructional Implications					
*Correct Answer (A)						

A.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

2022 – Q35

35 Which equation best represents the line shown on the grid?



- A** $y = 0$
- B** $y = -6$
- C** $x = 0$
- D** $x = -6$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A	5	
B*	76	
C	7	
D	12	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.3(A) determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$		Analysis of Assessed Standards	
2025 – Q27		Cluster	Linear Functions
The table shows four points on the graph of a linear function.		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
(A) $\frac{8}{3}$	A		
(B) $-\frac{8}{3}$	B*	67	
(C) $\frac{3}{8}$	C		
(D) $-\frac{3}{8}$	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			

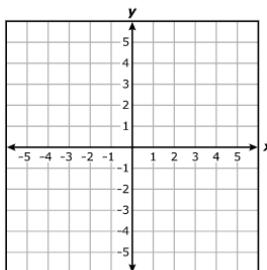
* Correct Answer (B)

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

2023 – Q28

A line contains the points $(-2, -2)$ and $(4, 2)$.



What is the slope of the line?

A $-\frac{2}{3}$

B $\frac{3}{2}$

C $\frac{2}{3}$

D $-\frac{3}{2}$

Cluster Linear Functions

Subcluster Writing Linear Equations

Content Supporting

Process

Item Type Multiple Choice (1 pt)

Stimulus

Data Analysis

Item	State	Local
A	16	
B	18	
C*	58	
D	7	

Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (C)

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		
2022 – Q48	Cluster	Linear Functions	
48 The graph of a line passes through the points $(-3, 1)$ and $(5, 8)$.	Subcluster	Writing Linear Equations	
	Content	Supporting	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
F	13		
G*	65		
H	12		
J	9		
What is the slope of the line?	Error Analysis		
F $\frac{9}{2}$	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
G $\frac{7}{8}$	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
H $-\frac{9}{2}$			
J $-\frac{7}{8}$			
*Correct Answer (G)	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			
2025 – Q13		Cluster	Linear Functions		
Which value represents the rate of change of y with respect to x for this function?		Subcluster	Writing Linear Equations		
$x + 7y = -14$		Content	Readiness		
		Process			
		Item Type	Multiple Choice (1 pt)		
		Stimulus			
Data Analysis					
	Item	State	Local		
(A) -7	A				
(B) 7	B				
(C) $-\frac{1}{7}$	C*	48			
(D) $\frac{1}{7}$	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					
*Correct Answer (C)					

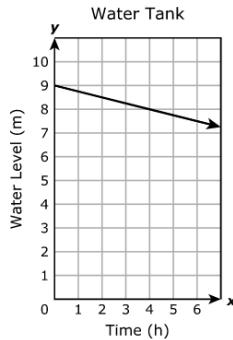
A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems	Analysis of Assessed Standards	
2025 – Q50	Cluster Linear Functions	
	Subcluster Writing Linear Equations	
	Content Readiness	
	Process	
	Item Type Multiple Choice (1 pt)	
	Stimulus	
Data Analysis		
	Item	State
	A*	64
	B	
	C	
	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		
*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		
! 2024 – Q7	Cluster	Linear Functions	
	Subcluster	Writing Linear Equations	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C*	43	
	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		

*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	Analysis of Assessed Standards										
2024 – Q30	Cluster	Linear Functions									
	Subcluster	Writing Linear Equations									
	Content	Readiness									
	Process										
	Item Type	Inline Choice (2 pts)									
	Stimulus										
<p>The altitude of an airplane is changing at a constant rate. The table shows the linear relationship between y, the altitude of the airplane in feet, and x, the time in minutes.</p> <table border="1"> <thead> <tr> <th>Time, x (minutes)</th> <th>Altitude, y (feet)</th> </tr> </thead> <tbody> <tr> <td>1.5</td> <td>25,500</td> </tr> <tr> <td>3.25</td> <td>20,250</td> </tr> <tr> <td>6</td> <td>12,000</td> </tr> </tbody> </table>				Time, x (minutes)	Altitude, y (feet)	1.5	25,500	3.25	20,250	6	12,000
Time, x (minutes)	Altitude, y (feet)										
1.5	25,500										
3.25	20,250										
6	12,000										
<p>Complete the statement that describes the rate of change of the altitude of the airplane with respect to time.</p>											
<p>Choose the correct answer from each drop-down menu to complete the sentence.</p>											
<p>The altitude of the airplane <input type="text" value="decreases"/> at a rate of <input type="text" value="3,000"/> feet per minute.</p>											
<p>*Correct Answer (decreases; 3,000)</p>											
Data Analysis											
Item	State	Local									
Full Credit	43										
No Credit	10										
Partial Credit	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											

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		
2023 – Q2	Cluster	Linear Functions	
The water level in a tank is changing at a constant rate. The graph shows the relationship between time in hours, x , and the water level in meters, y .	Subcluster	Writing Linear Equations	
	Content	Readiness	
	Process		
	Item Type	Drag and Drop (2 pts)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	Full Credit	70	
	No Credit	3	
	Partial Credit	27	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes		
*Correct Answer (Decreases, 0.25)	Instructional Implications		



Complete the statement that describes the rate of change of the water level with respect to time.

Move the correct answer to each box. Not all answers will be used.

decreases increases 0.25 1 4

The water level [] at a rate of [] m/h.

<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>2023 – Q50</p> <p>A construction worker built steps up to a home. The table shows the linear relationship between the height off the ground in inches and the number of steps.</p> <table border="1"> <thead> <tr> <th colspan="2">Step Construction</th></tr> <tr> <th>Number of Steps</th><th>Height (inches)</th></tr> </thead> <tbody> <tr> <td>3</td><td>21</td></tr> <tr> <td>5</td><td>35</td></tr> <tr> <td>7</td><td>49</td></tr> <tr> <td>9</td><td>63</td></tr> <tr> <td>11</td><td>77</td></tr> </tbody> </table> <p>What is the rate of change of height off the ground with respect to the number of steps?</p> <p> <input type="radio"/> A 14 in. per step <input checked="" type="radio"/> B $\frac{1}{7}$ in. per step <input type="radio"/> C 7 in. per step <input type="radio"/> D $\frac{1}{14}$ in. per step </p>	Step Construction		Number of Steps	Height (inches)	3	21	5	35	7	49	9	63	11	77	<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>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1"> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td>15</td><td></td></tr> <tr> <td>B</td><td>10</td><td></td></tr> <tr> <td>C*</td><td>70</td><td></td></tr> <tr> <td>D</td><td>4</td><td></td></tr> </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		Item Type	Multiple Choice (1 pt)	Stimulus		Item	State	Local	A	15		B	10		C*	70		D	4		<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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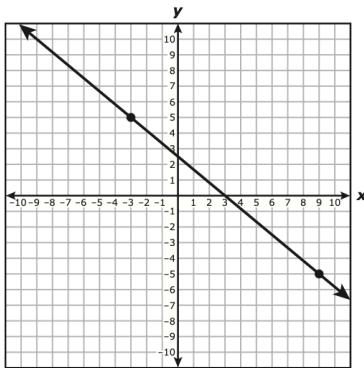
<p>A.3(B) calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems</p> <p>2022 – Q2</p> <p>2 A worker is packing items in boxes. The table shows the linear relationship between the number of items the worker has packed in boxes after different amounts of time.</p> <table border="1"> <thead> <tr> <th colspan="2">Items Packed in Boxes</th></tr> <tr> <th>Number of Minutes</th><th>Number of Items Packed</th></tr> </thead> <tbody> <tr> <td>5</td><td>20</td></tr> <tr> <td>7</td><td>28</td></tr> <tr> <td>11</td><td>44</td></tr> <tr> <td>14</td><td>56</td></tr> </tbody> </table> <p>Which statement describes the rate of change of the number of items the worker packed in boxes with respect to the number of minutes the worker has been packing items in boxes?</p> <p> F The worker packed 8 items in boxes per minute. G The worker packed 37 items in boxes per minute. H The worker packed 4 items in boxes per minute. J The worker packed 15 items in boxes per minute. </p>	Items Packed in Boxes		Number of Minutes	Number of Items Packed	5	20	7	28	11	44	14	56	<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"> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>F</td><td>6</td><td></td></tr> <tr> <td>G</td><td>4</td><td></td></tr> <tr> <td>H*</td><td>87</td><td></td></tr> <tr> <td>J</td><td>4</td><td></td></tr> </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	F	6		G	4		H*	87		J	4		<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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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																																										

*Correct Answer (H)

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

2022 – Q19

- 19** The graph of a line is shown on the grid. The coordinates of both points indicated on the graph of the line are integers.



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

- A** $\frac{5}{2}$
- B** $-\frac{6}{5}$
- C** $\frac{2}{3}$
- D** $-\frac{5}{6}$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	15	
B	15	
C	13	
D*	57	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

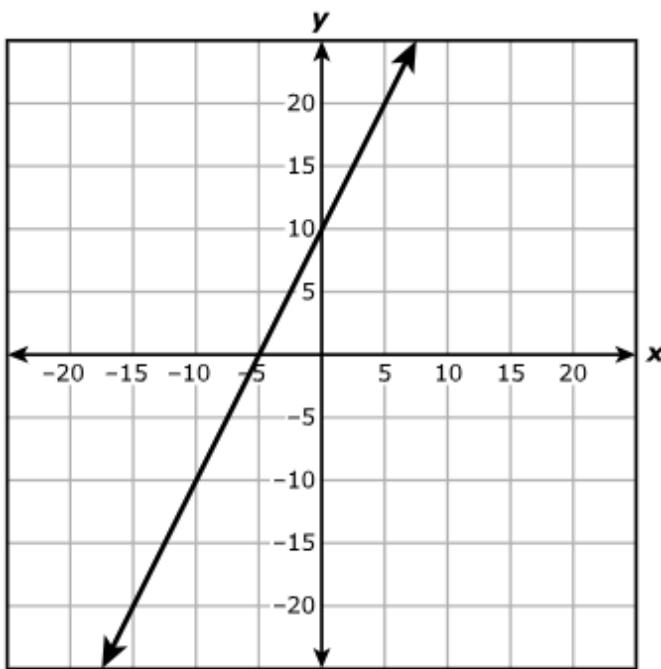
Learning from Mistakes Instructional Implications

<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>Analysis of Assessed Standards</p>												
<p>2022 – Q34</p>	<p>Cluster Linear Functions Subcluster Writing Linear Equations Content Readiness Process Stimulus</p>												
<p>34 The table shows the linear relationship between the distance in feet below sea level and the time in seconds traveled by a submarine.</p>	<p>Data Analysis</p>												
<p style="text-align: center;">Submarine</p> <table border="1"> <thead> <tr> <th>Time (seconds)</th><th>Distance Below Sea Level (feet)</th></tr> </thead> <tbody> <tr> <td>0</td><td>460</td></tr> <tr> <td>18</td><td>604</td></tr> <tr> <td>34</td><td>732</td></tr> <tr> <td>52</td><td>876</td></tr> <tr> <td>70</td><td>1,020</td></tr> </tbody> </table>	Time (seconds)	Distance Below Sea Level (feet)	0	460	18	604	34	732	52	876	70	1,020	
Time (seconds)	Distance Below Sea Level (feet)												
0	460												
18	604												
34	732												
52	876												
70	1,020												
<p>What is the rate of change of the distance in feet below sea level with respect to time that the submarine traveled?</p>	<p>Item State Local 8 49* 50</p>												
<p>Record your answer and fill in the bubbles on your answer document.</p>	<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>												
<p>*Correct Answer (8)</p>	<p>Learning from Mistakes Instructional Implications</p>												

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

2025 – Q19

A graph of a linear function is shown.



Which value best represents the zero of the function?

(A) 2

(B) 10

(C) -5

(D) -2

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C*	77	
D		

Error Analysis

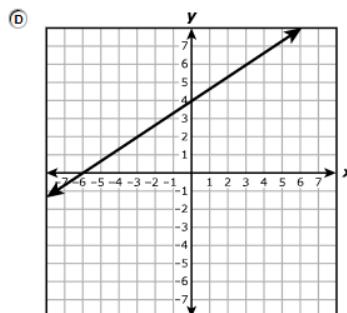
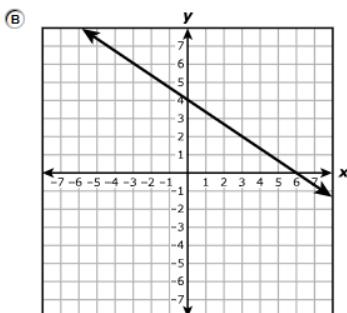
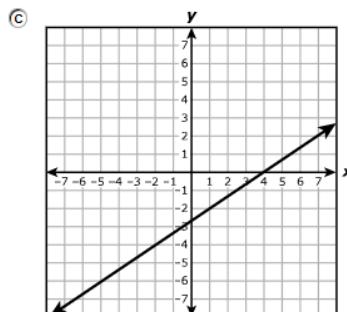
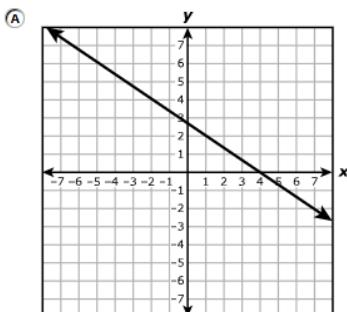
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

2025 – Q35

Which graph best represents a line that has a slope of $\frac{2}{3}$ and a y-intercept of 4?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

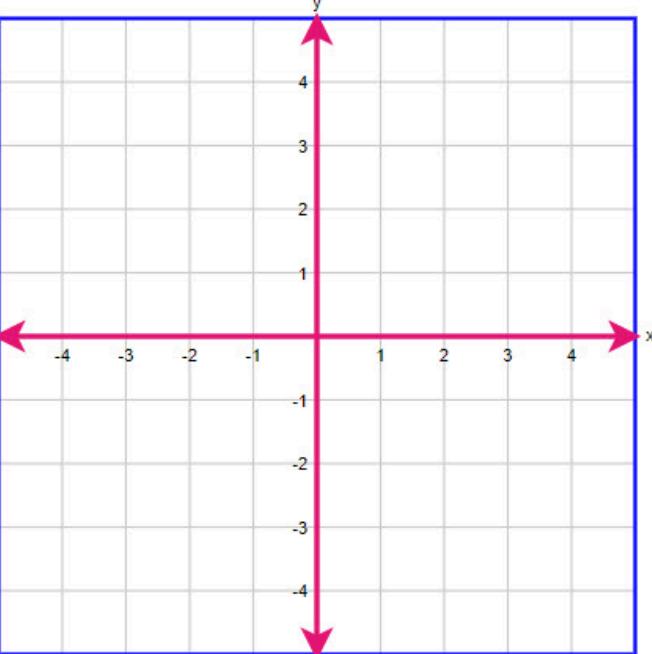
Data Analysis

Item	State	Local
A		
B		
C		
D*	61	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

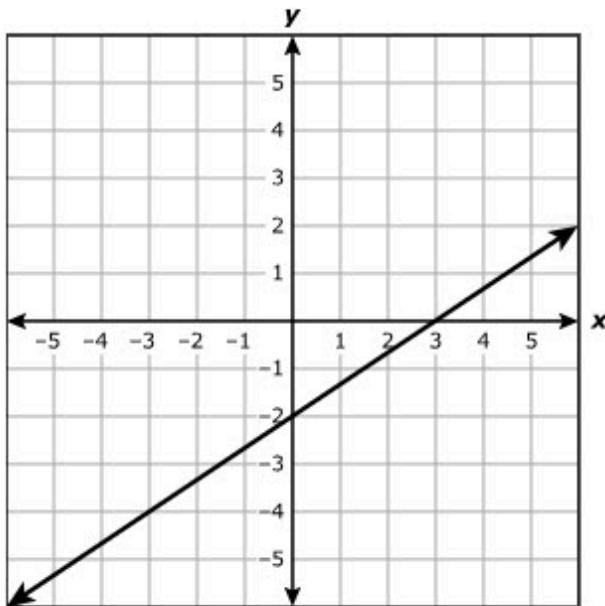
<p>A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems</p> <p>! 2024 – Q22</p> <p>Graph the line represented by the equation $2x + 3y = 6$.</p> <p>Select two points on the coordinate grid. A line will connect the points.</p> 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Analysis of Assessed Standards</th></tr> </thead> <tbody> <tr> <td style="width: 15%;">Cluster</td><td>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>Item Type</td><td>Graphing (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <th colspan="2" style="text-align: center; background-color: #cccccc;">Data Analysis</th></tr> <tr> <th style="width: 33%;">Item</th><th style="width: 33%;">State</th><th style="width: 33%;">Local</th></tr> <tr> <td>Full Credit</td><td style="text-align: center;">35</td><td></td></tr> <tr> <td>No Credit</td><td style="text-align: center;">65</td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <th colspan="3" style="text-align: center; background-color: #cccccc;">Error Analysis</th></tr> <tr> <td style="width: 50%;"><input type="checkbox"/> Guessing</td><td style="width: 50%;"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3" style="text-align: center; background-color: #cccccc;">Learning from Mistakes Instructional Implications</th></tr> <tr> <td colspan="3"></td></tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Readiness	Process		Item Type	Graphing (1 pt)	Stimulus		Data Analysis		Item	State	Local	Full Credit	35		No Credit	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																																													

* Correct Answer (A line going through (0, 2) and (3, 0))

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

2024 – Q50

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



What value best represents the y -intercept of the line?

(A) -2

(B) $-\frac{3}{2}$

(C) $\frac{2}{3}$

(D) 3

*Correct Answer (A)

Analysis of Assessed Standards

Cluster Linear Functions

Subcluster Describing Linear Functions

Content Readiness

Process

Item Type Multiple Choice (1 pt)

Stimulus

Data Analysis

Item

State

Local

A*

78

B

C

D

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

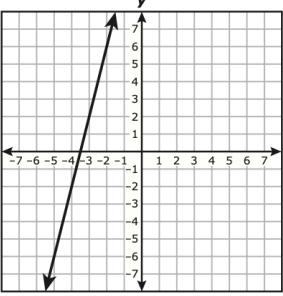
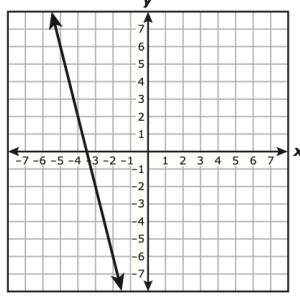
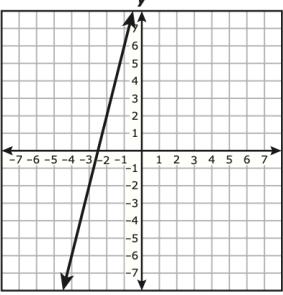
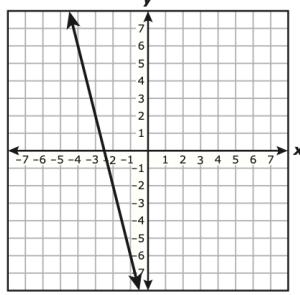
Learning from Mistakes Instructional Implications

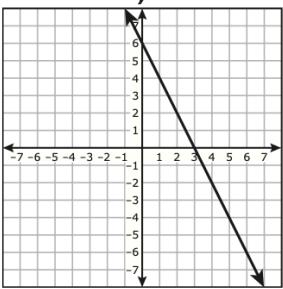
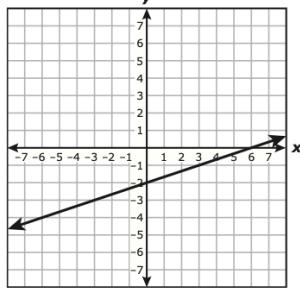
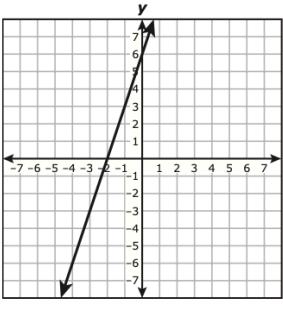
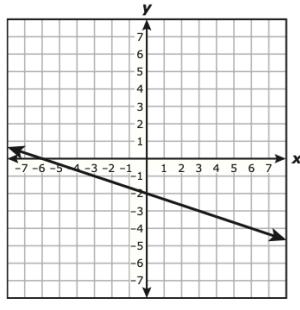
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards		
2023 – Q22	Cluster	Linear Functions	
	Subcluster	Describing Linear Functions	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A	5	
	B	6	
	C*	74	
	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 (C)

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		
2023 – Q48	Cluster Linear Functions		
	Subcluster Describing Linear Functions		
	Content Readiness		
	Process		
	Item Type Multiple Choice (1 pt)		
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	11	
	B	7	
	C*	78	
	D	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 (C)

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		
2022 – Q32	Cluster	Linear Functions	
32 Which graph best represents $y = -4(x + 3) - 2$?	Subcluster	Describing Linear Functions	
F  H  G  J 	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
F	11		
G	8		
H*	69		
J	12		
*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		

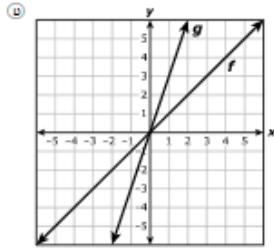
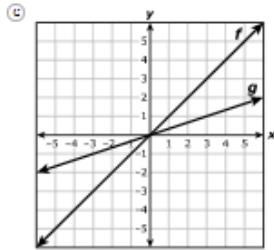
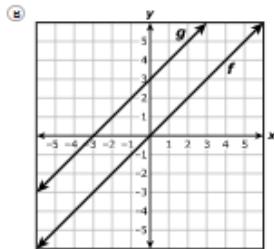
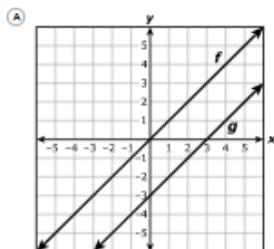
A.3(C) graph linear functions on the coordinate plane and identify key features, including x-intercept, y-intercept, zeros, and slope, in mathematical and real-world problems	Analysis of Assessed Standards				
2022 – Q54	Cluster	Linear Functions			
54 Linear function k has a zero of -2 and a y -intercept of 6 . Which graph best represents k ?	Subcluster	Describing Linear Functions			
F 	Content	Readiness			
H 	Process				
G 	Stimulus				
J 	Data Analysis				
	Item	State	Local		
F	10				
G*	75				
H	9				
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			
Learning from Mistakes Instructional Implications					
*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		
2024 – Q38				
The graph of $f(x) = x$ is transformed to create the graph of $g(x) = \frac{1}{2}f(x) + 3$. Complete the statement to compare the graphs of f and g.		Cluster	Linear Functions	
Choose the correct answer from each drop-down menu to complete the sentence.		Subcluster	Describing Linear Functions	
The graph of g is <input type="text"/> the graph of f and has a y -intercept that is <input type="text"/> that of f .		Content	Supporting	
		Process		
		Item Type	Inline Choice (2 pts)	
		Stimulus		
Data Analysis				
	Item	State	Local	
	Full Credit	44		
	No Credit	18		
	Partial Credit	38		
Error Analysis				
<input type="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 (less steep than; greater than)				

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

! 2023 – Q15

The graph of the function $f(x) = x$ is transformed to form function $g(x)$ such that $g(x) = 3f(x)$. Which graph represents f and g ?



*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	23	
B	20	
C	12	
D*	44	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error 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		Analysis of Assessed Standards													
2025 – Q7		Cluster	Linear Functions												
A student used a checking account to pay for living expenses during the first two years of college. The table shows the amount the student had in the account after different numbers of months had passed.		Subcluster	Describing Linear Functions												
<p style="text-align: center;">Checking Account Balance</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Number of Months</th> <th style="text-align: center;">Remaining Balance (dollars)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">7,592</td> </tr> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">5,931</td> </tr> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">5,683</td> </tr> <tr> <td style="text-align: center;">17</td> <td style="text-align: center;">4,428</td> </tr> <tr> <td style="text-align: center;">23</td> <td style="text-align: center;">2,854</td> </tr> </tbody> </table>		Number of Months	Remaining Balance (dollars)	2	7,592	8	5,931	12	5,683	17	4,428	23	2,854	Content	Supporting
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12	5,683														
17	4,428														
23	2,854														
		Process													
		Item Type	Multiple Choice (1 pt)												
		Stimulus													
Data Analysis															
		Item	State												
		A													
		B													
		C*	48												
		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															

*Correct Answer (C)

<p>A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association</p> <p>2024 – Q10</p> <p>A counselor asked college students who had jobs how many hours they worked each week. The counselor then compared the number of hours each student worked and the student's overall grade average. The table shows the data.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Weekly Hours and Grade Average</th> </tr> <tr> <th>Hours Worked</th> <th>Overall Grade Average</th> </tr> </thead> <tbody> <tr> <td>15</td> <td>86</td> </tr> <tr> <td>30</td> <td>72</td> </tr> <tr> <td>27</td> <td>77</td> </tr> <tr> <td>25</td> <td>83</td> </tr> <tr> <td>16</td> <td>87</td> </tr> <tr> <td>20</td> <td>90</td> </tr> <tr> <td>12</td> <td>94</td> </tr> </tbody> </table> <p>Based on the correlation coefficient for the data, what type of linear association exists between hours worked and overall grade average?</p> <ul style="list-style-type: none"> <input type="radio"/> A Strong negative <input type="radio"/> B Weak negative <input type="radio"/> C Weak positive <input checked="" type="radio"/> D Strong positive <p>*Correct Answer (A)</p>	Weekly Hours and Grade Average		Hours Worked	Overall Grade Average	15	86	30	72	27	77	25	83	16	87	20	90	12	94	<p>Analysis of Assessed Standards</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Cluster</td><td>Linear Functions</td></tr> <tr> <td>Subcluster</td><td>Describing Linear Functions</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <td colspan="2" style="text-align: center;">Data Analysis</td></tr> <tr> <td style="width: 33%;">Item</td><td style="width: 33%;">State</td><td style="width: 33%;">Local</td></tr> <tr> <td>A*</td><td>34</td><td></td></tr> <tr> <td>B</td><td></td><td></td></tr> <tr> <td>C</td><td></td><td></td></tr> <tr> <td>D</td><td></td><td></td></tr> <tr> <td colspan="3" style="text-align: center;">Error Analysis</td></tr> <tr> <td colspan="3"> <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early </td></tr> <tr> <td colspan="3" style="text-align: center;">Learning from Mistakes Instructional Implications</td></tr> </table>	Cluster	Linear Functions	Subcluster	Describing Linear Functions	Content	Supporting	Process		Item Type	Multiple Choice (1 pt)	Stimulus		Data Analysis		Item	State	Local	A*	34		B			C			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		
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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	Analysis of Assessed Standards																
! 2023 – Q6																	
<p>The table shows the number of species added to the United States endangered species list each year for several years. A linear function can be used to model the data.</p>																	
<p style="text-align: center;">Endangered Species</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>Number of Species Added</th> </tr> </thead> <tbody> <tr> <td>2011</td> <td>19</td> </tr> <tr> <td>2012</td> <td>51</td> </tr> <tr> <td>2013</td> <td>89</td> </tr> <tr> <td>2014</td> <td>66</td> </tr> <tr> <td>2015</td> <td>31</td> </tr> <tr> <td>2016</td> <td>74</td> </tr> <tr> <td>2017</td> <td>11</td> </tr> </tbody> </table>	Year	Number of Species Added	2011	19	2012	51	2013	89	2014	66	2015	31	2016	74	2017	11	
Year	Number of Species Added																
2011	19																
2012	51																
2013	89																
2014	66																
2015	31																
2016	74																
2017	11																
<p>Which correlation best describes the strength of the linear association between the number of species added to the United States endangered species list and the year?</p>																	
<input type="radio"/> A Weak negative correlation, because $r \approx -0.91$																	
<input type="radio"/> B Weak negative correlation, because $r \approx -0.09$																	
<input type="radio"/> C Strong negative correlation, because $r \approx -0.91$																	
<input type="radio"/> D Strong negative correlation, because $r \approx -0.09$																	
Correct Answer (B)	Cluster Linear Functions Subcluster Describing Linear Functions Content Supporting Process Item Type Multiple Choice (1 pt) 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;">20</td> <td></td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">40</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">28</td> <td></td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">12</td> <td></td> </tr> </tbody> </table> Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early Learning from Mistakes Instructional Implications	Item	State	Local	A	20		B*	40		C	28		D	12		
Item	State	Local															
A	20																
B*	40																
C	28																
D	12																

A.4(B) compare and contrast association and causation in real-world problems		Analysis of Assessed Standards	
2024 – Q20		Cluster	Linear Functions
Which situation best represents association but NOT causation?		Subcluster	Describing Linear Functions
		Content	Supporting
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
	A*	58	
	B		
	C		
	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			

*Correct Answer (A)

A.4(B) compare and contrast association and causation in real-world problems		Analysis of Assessed Standards	
2022 – Q11		Cluster	Linear Functions
		Subcluster	Describing Linear Functions
		Content	Supporting
		Process	
		Stimulus	
Data Analysis			
	Item	State	Local
	A	5	
	B*	74	
	C	17	
	D	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 (B)			

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	
2025 – Q25		Cluster	Linear Functions
A restaurant owner experimented with different prices for the lunch special. The table shows the linear relationship between the price of the lunch special in dollars and the number of lunch specials sold on six different days.		Subcluster	Writing Linear Equations
		Content	Supporting
		Process	
		Item Type	Multiselect (2 pts)
		Stimulus	
		Data Analysis	
		Item	State
		Full Credit	35
		No Credit	21
		Partial Credit	44
		Error Analysis	
		<input type="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, E)			

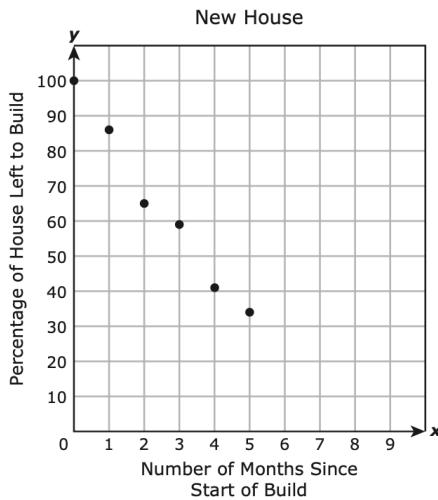
A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems	Analysis of Assessed Standards		
2023 – Q26	Cluster Linear Functions		
The table shows the number of customers each hour for an online sale.	Subcluster Writing Linear Equations		
	Content Supporting		
	Process		
	Item Type Multiple Choice (1 pt)		
Stimulus			
	Data Analysis		
	Item	State	Local
	A	18	
	B*	61	
	C	13	
	D	8	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

*Correct Answer (B)

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

2022 – Q29

- 29** A construction manager is monitoring the progress of the build of a new house. The scatterplot and table show the number of months since the start of the build and the percentage of the house still left to build. A linear function can be used to model this relationship.



Which function best models the data?

- A** $y = -13.5x + 97.8$
- B** $y = -13.5x + 7.3$
- C** $y = 97.8x - 13.5$
- D** $y = 7.3x - 97.8$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Writing Linear Equations
Content	Supporting
Process	
Stimulus	

Data Analysis

Item	State	Local
A*	62	
B	17	
C	13	
D	8	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.5(A) solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides</p>	<p>Analysis of Assessed Standards</p>		
<p>! 2025 – Q29</p>	Cluster	Linear Functions	
<p>What value of z makes the equation $\frac{4}{3}z + 6 = -4\left(\frac{1}{6}z + 9\right)$ true?</p>	Subcluster	Solving Linear Equations	
<p>(A) $\frac{3}{2}$</p>	Content	Readiness	
<p>(B) -21</p>	Process		
<p>(C) $\frac{9}{2}$</p>	Item Type	Multiple Choice (1 pt)	
<p>(D) -45</p>	Stimulus		
	<p>Data Analysis</p>		
	Item	State	Local
	A		
	B*	58	
	C		
	D		
<p>*Correct Answer (B)</p>	<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>		

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

! 2025 – Q46

Cluster	Linear Functions
Subcluster	Solving Linear Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Which value of v makes this equation true?

$$\frac{v - 6}{5} = \frac{v + 10}{2}$$

(A) $-\frac{62}{3}$

(B) $-\frac{16}{3}$

(C) $\frac{38}{7}$

(D) $\frac{11}{7}$

Data Analysis

Item	State	Local
A*	42	
B		
C		
D		

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

*Correct Answer (A)

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	
2024 – Q24	Cluster	Linear Functions
What value of m makes the equation $\frac{2}{3}(m - 9) = \frac{1}{3}(m - 27)$ true?	Subcluster	Solving Linear Equations
(A) -9	Content	Readiness
(B) -3	Process	
(C) -1	Item Type	Multiple Choice (1 pt)
(D) -6	Stimulus	
Data Analysis		
	Item	State
	A*	61
	B	
	C	
	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		

*Correct Answer (A)

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	
! 2024 – Q46	Cluster	Linear Functions
What is the solution to the equation $7w - 2(w - 9) = 4 - 8(w + 2)$?	Subcluster	Solving Linear Equations
(A) $w = -\frac{26}{9}$	Content	Readiness
(B) $w = -\frac{10}{9}$	Process	
(C) $w = \frac{15}{13}$	Item Type	Multiple Choice (1 pt)
(D) $w = -\frac{30}{13}$	Stimulus	
Data Analysis		
	Item	State
	A	
	B	
	C	
	D*	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		

*Correct Answer (D)

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	
2023 – Q4	Cluster	Linear Functions
A rectangle has a length of $(5 + 2x)$ inches and a width of 10 inches. A triangle has a base of 30 inches and a height of $(4x - 10)$ inches. The area in square inches of the rectangle is equal to the area in square inches of the triangle.	Subcluster	Solving Linear Equations
What is the value of x ?	Content	Readiness
<p><input type="radio"/> A 2.5</p> <p><input type="radio"/> B 3</p> <p><input type="radio"/> C 7.5</p> <p><input checked="" type="radio"/> D 5</p>	Process	
	Item Type	Multiple Choice (1 pt)
	Stimulus	
	Data Analysis	
	Item	State
	A	27
	B	21
	C	30
	D*	22
*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	
2023 – Q29	Cluster	Linear Functions
What is the solution to the equation $5(2w + 4) = 4(2w + 9)$?	Subcluster	Solving Linear Equations
<input type="radio"/> A $w = \frac{5}{2}$	Content	Readiness
<input type="radio"/> B $w = 8$	Process	
<input type="radio"/> C $w = \frac{28}{9}$	Item Type	Multiple Choice (1 pt)
<input type="radio"/> D $w = 5$	Stimulus	
	Data Analysis	
	Item	State
	A	16
	B*	63
	C	14
	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.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	
2022 – Q42	Cluster	Linear Functions
42 What is the solution to $4(q + 56.5) = 30q - 112$?	Subcluster	Solving Linear Equations
Record your answer and fill in the bubbles on your answer document.	Content	Readiness
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	13	42*
		57
	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 (13)	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		
2022 – Q51	Cluster	Linear Functions	
51 What is the solution to this equation? $2(40 - 5y) = 10y + 5(1 - y)$	Subcluster	Solving Linear Equations	
A 7.5	Content	Readiness	
B 15	Process		
C 5	Stimulus		
D Not here	Data Analysis		
	Item	State	Local
	A	11	
	B	15	
	C*	52	
	D	22	
*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		

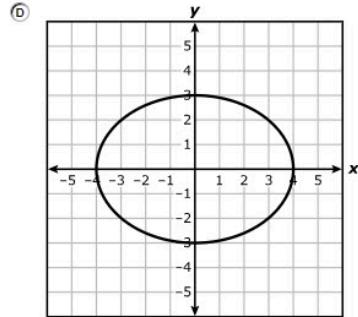
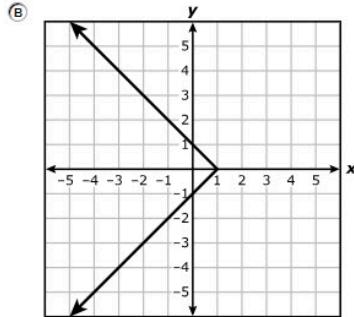
A.12(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function

2024 – Q44

Which relation best represents y as a function of x ?

(A)	x	y
-2	-4	
1	-2	
-2	4	
2	0	

(C)	x	y
-4	-3	
-1	0	
2	-5	
6	7	



*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Linear Functions
Subcluster	Describing Linear Functions
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C*	62	
D		

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			
2023 – Q47		Cluster	Linear Functions		
		Subcluster	Describing Linear Functions		
		Content	Supporting		
		Process			
		Item Type	Multiple Choice (1 pt)		
		Stimulus			
Data Analysis					
Item	State	Local			
A	13				
B*	63				
C	12				
D	11				
Error Analysis					
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts				
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early				
Learning from Mistakes Instructional Implications					
*Correct Answer (B)					

<p>A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains</p> <p>2022 – Q31</p> <p>31 A function is shown.</p> $f(x) = 7 - 4x$ <p>What is the value of $f(-5)$?</p> <p>A 27 B -13 C -15 D 140</p>	Analysis of Assessed Standards																
	Cluster	Linear Functions															
	Subcluster	Describing Linear Functions															
	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;">A*</td><td style="text-align: center;">58</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">20</td><td></td></tr> <tr> <td style="text-align: center;">C</td><td style="text-align: center;">18</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">4</td><td></td></tr> </tbody> </table>			Item	State	Local	A*	58		B	20		C	18		D	4	
Item	State	Local															
A*	58																
B	20																
C	18																
D	4																
<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>																	
Learning from Mistakes Instructional Implications																	

*Correct Answer (A)

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	
! 2023 – Q31		Cluster	Linear Functions
A sequence is defined by $f(1) = 27$ and $f(n) = \frac{1}{3}f(n - 1)$ for each whole number n , where $n > 1$. What are the first four terms of the sequence?		Subcluster	Writing Linear Equations
<p>(A) 27, 9, 3, 1</p> <p>(B) 27, 81, 243, 729</p> <p>(C) $\frac{1}{3}, \frac{28}{3}, \frac{55}{3}, \frac{82}{3}$</p> <p>(D) $\frac{1}{3}, \frac{1}{81}, \frac{1}{2,187}, \frac{1}{59,049}$</p>		Content	Supporting
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
	A*	41	
	B	30	
	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			

*Correct Answer (A)

<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>! 2024 – Q8</p>	Cluster	Linear Functions	
	Subcluster	Writing Linear Functions	
	Content	Supporting	
	Process		
	Item Type	Drag and Drop (2 pts)	
	Stimulus		
<p>The first five terms of a sequence are $a_1 = 47$, $a_2 = 33$, $a_3 = 19$, $a_4 = 5$, and $a_5 = -9$.</p>			
<p>Based on this information, create an equation that can be used to find the nth term of the sequence, a_n.</p>			
<p>Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.</p>			
<p>-61 -47 -14 14 47 61</p>			
$a_n = \boxed{} n + \boxed{}$			
<p>*Correct Answer (-14; 61)</p>			
Data Analysis			
Item	State	Local	
Full Credit	13		
No Credit	64		
Partial Credit	23		
Error Analysis			
<input type="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		
2025 – Q31		Cluster	Linear Functions	
		Subcluster	Solving Linear Equations	
		Content	Supporting	
		Process		
		Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
Item	State	Local		
A				
B				
C				
D*	47			
Error Analysis				
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts			
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes				
Instructional Implications				

*Correct Answer (D)

A.12(E) solve mathematic and scientific formulas, and other literal equations, for a specified variable	Analysis of Assessed Standards				
! 2023 – Q45	Cluster	Linear Functions			
Which equation is equivalent to $S = Ph + 2B$ when solved for B ?	Subcluster	Solving Linear Equations			
(A) $B = \frac{S - Ph}{2}$	Content	Supporting			
(B) $B = \frac{2S}{Ph}$	Process				
(C) $B = \frac{SPh}{2}$	Item Type	Multiple Choice (1 pt)			
(D) $B = \frac{S - 2}{Ph}$	Stimulus				
Data Analysis					
	Item	State	Local		
	A*	46			
	B	17			
	C	24			
	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 (A)					

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	
2025 – Q14		Cluster	Systems of Equations and Inequalities
A baker wants to order apples and blueberries to make pies. Apples cost \$2.50 per pound, and blueberries cost \$3.00 per pound. The baker does not want to spend more than \$75.00.		Subcluster	Inequalities
Which inequality represents all possible combinations of x , the number of pounds of apples, and y , the number of pounds of blueberries, that the baker can order?		Content	Supporting
<p>(A) $5.5x + 5.5y \geq 75$</p> <p>(B) $2.5x + 3y \leq 75$</p> <p>(C) $3x + 2.5y \leq 75$</p> <p>(D) $2.5x + 3y \geq 75$</p>		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
	A		
	B*	59	
	C		
	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			

*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																																		
2023 – Q12 A customer is ordering hats and T-shirts from an online store. Each hat costs \$7, and each T-shirt costs \$10. The customer receives free shipping if the amount of the order is over \$100. Write an inequality that represents all possible combinations of hats, x , and T-shirts, y , in an order that qualifies for free shipping. Move the correct answer to each box. Not all answers will be used.	<table border="1"> <tr> <td>Cluster</td><td>Systems of Equations and Inequalities</td></tr> <tr> <td>Subcluster</td><td>Inequalities</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Drag and Drop (2 pts)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Systems of Equations and Inequalities	Subcluster	Inequalities	Content	Supporting	Process		Item Type	Drag and Drop (2 pts)	Stimulus																							
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Subcluster	Inequalities																																		
Content	Supporting																																		
Process																																			
Item Type	Drag and Drop (2 pts)																																		
Stimulus																																			
100 7 10 17 < > = <input type="text"/> x + <input type="text"/> y <input type="text"/> <input type="text"/>	<table border="1"> <tr> <td colspan="3" style="text-align: center;">Data Analysis</td></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>Full Credit</td><td>38</td><td></td></tr> <tr> <td>No Credit</td><td>16</td><td></td></tr> <tr> <td>Partial Credit</td><td>46</td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td colspan="3">Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td colspan="3" style="text-align: center;">Learning from Mistakes Instructional Implications</td></tr> <tr> <td colspan="3"></td></tr> </table>	Data Analysis			Item	State	Local	Full Credit	38		No Credit	16		Partial Credit	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					
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*Correct Answer (7, 10, >, 100)

A.2(H) write linear inequalities in two variables given a table of values, a graph, and a verbal description	Analysis of Assessed Standards																																		
2022 – Q28 28 A university will spend at most \$4,500 to buy monitors and keyboards for a computer lab. Each monitor will cost \$250, and each keyboard will cost \$50. Which inequality represents all possible combinations of x , the number of monitors, and y , the number of keyboards, the university can buy for the computer lab?	<table border="1"> <tr> <td>Cluster</td><td>Systems of Equations and Inequalities</td></tr> <tr> <td>Subcluster</td><td>Inequalities</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Systems of Equations and Inequalities	Subcluster	Inequalities	Content	Supporting	Process		Stimulus																									
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Subcluster	Inequalities																																		
Content	Supporting																																		
Process																																			
Stimulus																																			
F $250x + 50y < 4,500$ G $250x + 50y \leq 4,500$ H $50x + 250y < 4,500$ J $50x + 250y \leq 4,500$	<table border="1"> <tr> <td colspan="3" style="text-align: center;">Data Analysis</td></tr> <tr> <th>Item</th><th>State</th><th>Local</th></tr> <tr> <td>F</td><td>15</td><td></td></tr> <tr> <td>G*</td><td>71</td><td></td></tr> <tr> <td>H</td><td>8</td><td></td></tr> <tr> <td>J</td><td>6</td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td colspan="3">Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td colspan="3" style="text-align: center;">Learning from Mistakes Instructional Implications</td></tr> <tr> <td colspan="3"></td></tr> </table>	Data Analysis			Item	State	Local	F	15		G*	71		H	8		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					
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Learning from Mistakes Instructional Implications																																			
*Correct Answer (G)																																			

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description		Analysis of Assessed Standards	
2025 – Q4		Cluster	Systems of Equations and Inequalities
		Subcluster	Systems of Equations
		Content	Readiness
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
(A) $y = x + 2$ $y = -4x + 17$	A*	66	
(B) $y = x + 2$ $y = -4x + 15$	B		
(C) $x + y = 2$ $4x + y = 17$	C		
(D) $x + y = 2$ $4x + y = 15$	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			
<small>*Correct Answer (A)</small>			

A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description**!** 2025 – Q34

The perimeter of a rectangular garden is 48 meters. The length of the garden, y , is 6 meters more than twice the width, x .

Which system of equations can be used to find the length and width of the garden in meters?

(A) $2x + 2y = 48$
 $y = 6x + 2$

(B) $x + y = 48$
 $y = 2x + 6$

(C) $2x + 2y = 48$
 $y = 2x + 6$

(D) $x + y = 48$
 $y = 6x + 2$

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C*	34	
D		

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications*****Correct Answer (C)**

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

2024 – Q26

Hot dogs and bags of popcorn were sold at a concession stand. One family paid \$8.00 for 2 hot dogs and 3 bags of popcorn. Another family paid \$16.50 for 5 hot dogs and 4 bags of popcorn.

Which system of equations can be used to determine the price in dollars of a hot dog, x , and the price in dollars of a bag of popcorn, y ?

(A) $5x + 4y = 8$
 $2x + 3y = 16.5$

(B) $2x + 3y = 8$
 $5x + 4y = 16.5$

(C) $2x + 5y = 8$
 $3x + 4y = 16.5$

(D) $3x + 2y = 8$
 $4x + 5y = 16.5$

*Correct Answer (B)

Analysis of Assessed Standards	
Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	73	
C		
D		

Error Analysis

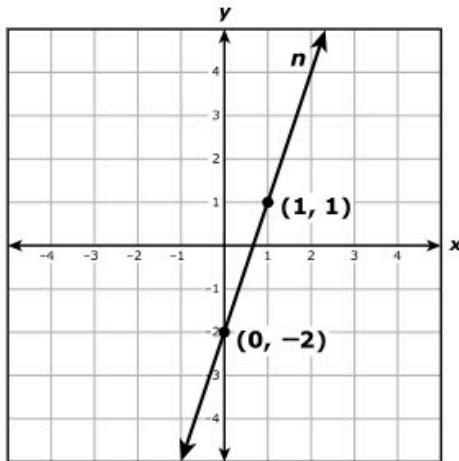
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

**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

! 2024 – Q39

Line n is shown on the coordinate grid. The table of ordered pairs represents some points on line p .



Line p

x	y
-1	6
0	4
1	2
2	0

Which system of equations represents line n and line p ?

(A) $3x - y = 2$
 $2x + y = 4$

(B) $3x + y = -2$
 $2x + y = 4$

(C) $3x - y = 2$
 $x + 2y = 4$

(D) $3x + y = -2$
 $x + 2y = 4$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	32	
B		
C		
D		

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error 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

! 2023 – Q37

The tables of ordered pairs represent some points on the graphs of two different lines.

Line a

x	-11	-6	-1	4
y	81	51	21	-9

Line b

x	-9	-4	1	6
y	18	3	-12	-27

Which system of equations represents the graph of these two lines?

(A) $x - 6y = -90$
 $x - 3y = 27$

(B) $x + 6y = 90$
 $x + 3y = -27$

(C) $6x - y = -15$
 $3x - y = 9$

(D) $6x + y = 15$
 $3x + y = -9$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	16	
B	21	
C	24	
D*	39	

Error Analysis

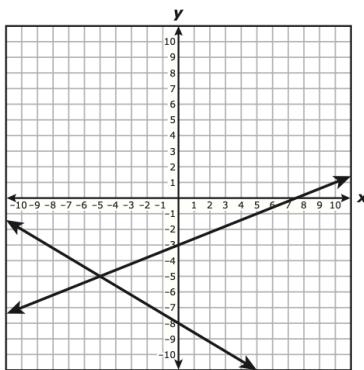
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

2022 – Q3

- 3** A system of equations is graphed on the grid.



Which system of equations is best represented by the graph?

A $y = \frac{2}{5}x - 8$
 $y = -\frac{3}{5}x - 3$

B $y = \frac{2}{5}x - 3$
 $y = -\frac{3}{5}x - 8$

C $y = \frac{5}{2}x - 8$
 $y = -\frac{5}{3}x - 3$

D $y = \frac{5}{2}x - 3$
 $y = -\frac{5}{3}x - 8$

*Correct Answer (B)

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
A	8	
B*	76	
C	9	
D	6	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

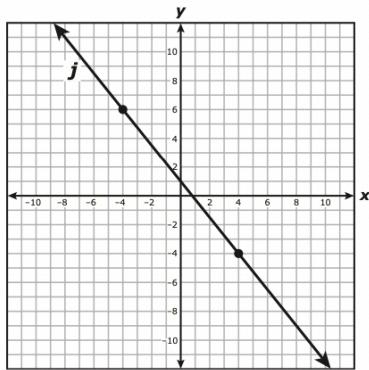
A.2(I) write systems of two linear equations given a table of values, a graph, and a verbal description

2022 – Q12

- 12** A system of linear equations is represented by line h and line j .
A table representing some points on line h and the graph of line j are shown.

Line h

x	-16	-8	-4	12
y	7	1	-2	-14



Which system of equations is best represented by lines h and j ?

F $y = \frac{4}{3}x - 5$

$y = \frac{4}{5}x + 1$

G $y = \frac{3}{4}x - 5$

$y = \frac{5}{4}x + 1$

H $y = -\frac{4}{3}x - 5$

$y = -\frac{4}{5}x + 1$

J $y = -\frac{3}{4}x - 5$

$y = -\frac{5}{4}x + 1$

*Correct Answer (J)

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
F	8	
G	12	
H	21	
J*	59	

Error Analysis

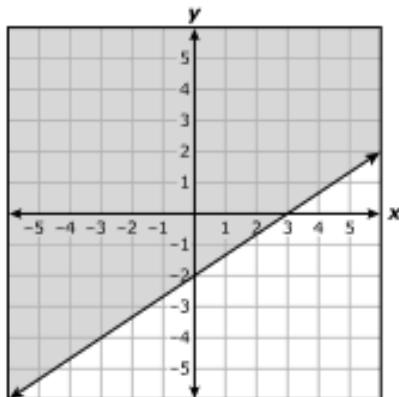
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

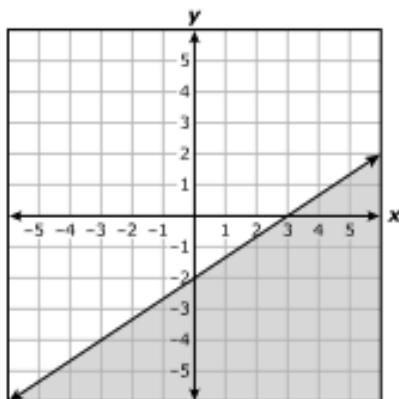
A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane	Analysis of Assessed Standards	
2025 – Q10	Cluster	Systems of Equations and Inequalities
	Subcluster	Inequalities

Which graph best represents the solution set of $3y - 2x \leq -6$?

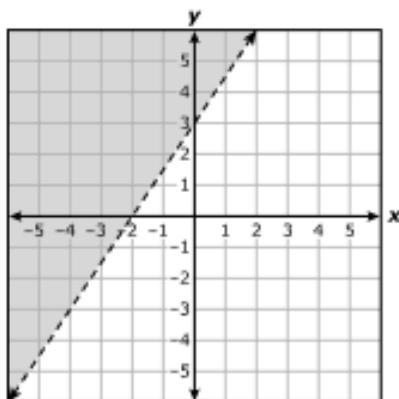
(A)



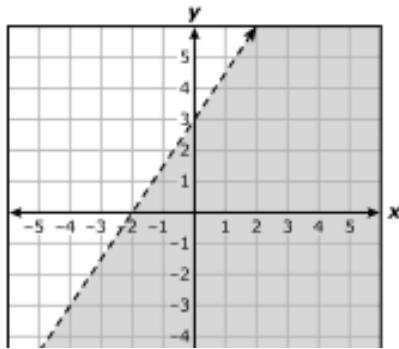
(B)



(C)



(D)



Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	49	
C		
D		

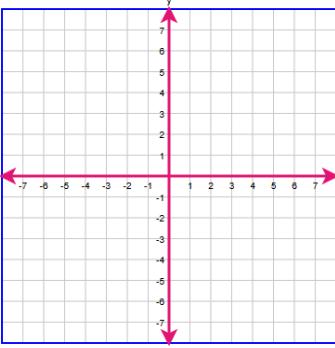
Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

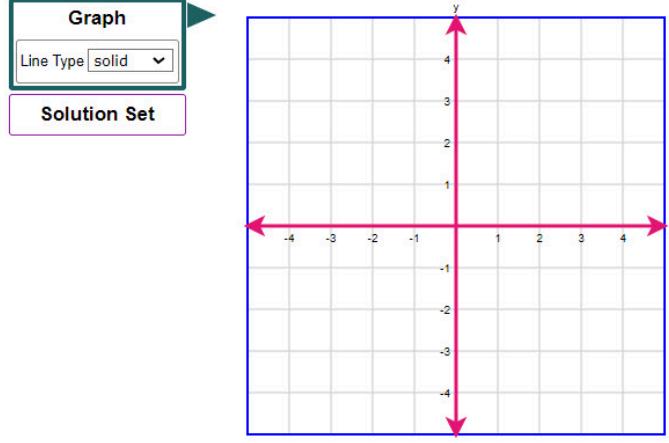
Learning from Mistakes Instructional Implications



* Correct Answer (B)

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards	
! 2025 – Q30		Cluster	Systems of Equations and Inequalities
What is the solution set for the inequality $y > 5x - 3$?		Subcluster	Inequalities
Graph the solution set of the linear inequality in the coordinate plane.		Content	Readiness
<ul style="list-style-type: none"> First, select the Graph button to graph the line and choose the line style. To graph a line, select two points in the coordinate plane. A line will connect the points. Then select the Solution Set button to select the desired region. 		Process	
<div style="display: flex; align-items: center;"> Graph Line Type: solid Solution Set </div> 		Item Type	Graphing (2 pts)
		Stimulus	
Data Analysis			
Item	State	Local	
Full Credit	24		
No Credit	68		
Partial Credit	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			

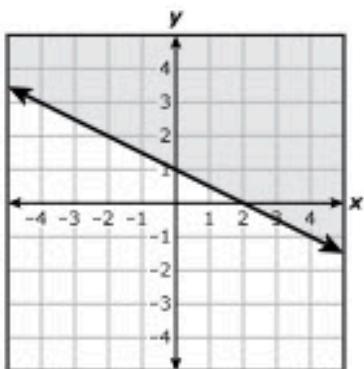
* Correct Answer (Dashed line going through (0, -3) and (1, 2); shading the area that includes the point (0, 0))

<p>A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane</p> <p>2024 – Q12</p> <p>What is the solution set that best represents the inequality $y \geq \frac{1}{2}x - 2$?</p> <p>Graph the solution set of the linear inequality in the coordinate plane.</p> <ul style="list-style-type: none"> First, select the Graph button to graph the line and choose the line style. To graph a line, select two points in the coordinate plane. A line will connect the points. Then select the Solution Set button to select the desired region.  <p>*Correct Answer (Solid line going through (0, -2) and (2, -1); shading the area that includes the point (0, 0))</p>	<table border="1"> <thead> <tr> <th colspan="2">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td>Cluster</td><td>Systems of Equations and Inequalities</td></tr> <tr> <td>Subcluster</td><td>Inequalities</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Graphing (2 pts)</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>Full Credit</td><td>34</td><td></td></tr> <tr> <td>No Credit</td><td>51</td><td></td></tr> <tr> <td>Partial Credit</td><td>15</td><td></td></tr> <tr> <th colspan="3">Error Analysis</th></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <th colspan="3">Learning from Mistakes Instructional Implications</th></tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Systems of Equations and Inequalities	Subcluster	Inequalities	Content	Readiness	Process		Item Type	Graphing (2 pts)	Stimulus		Data Analysis		Item	State	Local	Full Credit	34		No Credit	51		Partial Credit	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		
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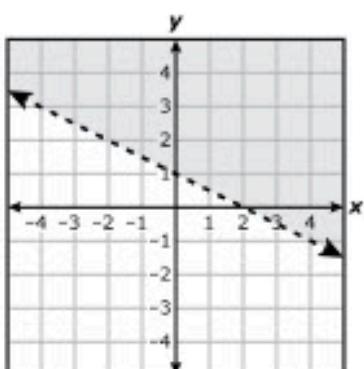
A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane	Analysis of Assessed Standards	
2024 – Q41	Cluster	Systems of Equations and Inequalities
	Subcluster	Inequalities

Which graph best represents the solution set of $x + 2y \geq 2$?

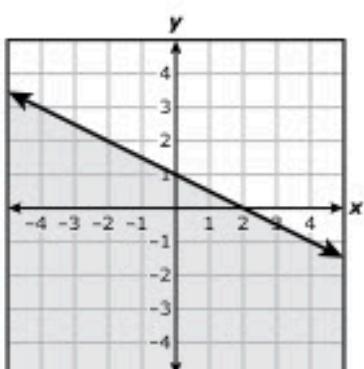
(A)



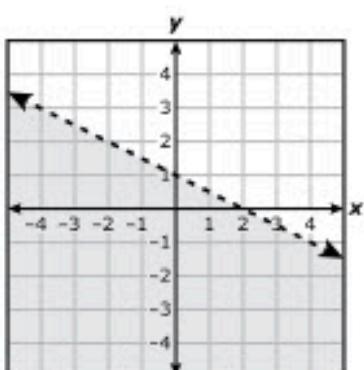
(B)



(C)

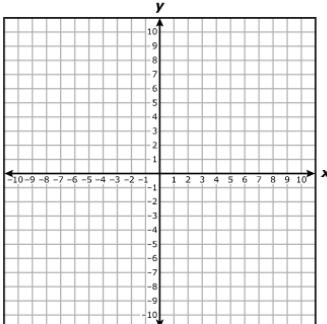


(D)

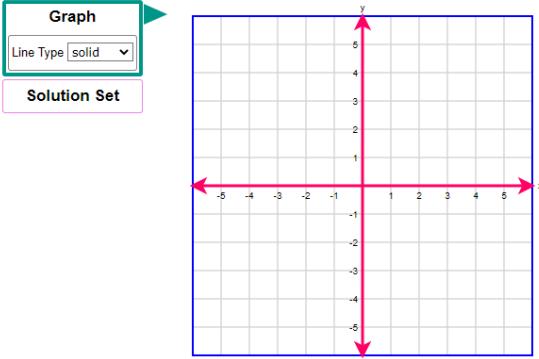


Content	Readiness	
Process		
Item Type	Multiple Choice (1 pt)	
Stimulus		
Data Analysis		
Item	State	Local
A*	58	
B		
C		
D		
Error Analysis		
<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications		

*Correct Answer (A)

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards		
2023 – Q17	Which ordered pair is in the solution set of $y \leq \frac{3}{5}x - 6$?	Cluster	Systems of Equations and Inequalities	
		Subcluster	Inequalities	
		Content	Readiness	
		Process		
		Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
Item	State	Local		
A*	54			
B	20			
C	14			
D	12			
Error Analysis				
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early			
Learning from Mistakes Instructional Implications				

*Correct Answer (A)

A.3(D) graph the solution set of linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards	
2023 – Q43		Cluster	Systems of Equations and Inequalities
What is the solution set for the linear inequality $y \geq -x + 2$?		Subcluster	Inequalities
Graph the solution set of the linear inequality in the coordinate plane.		Content	Readiness
<ul style="list-style-type: none"> First, select the Graph button to graph the line and choose the line style. To graph a line, select two points in the coordinate plane. A line will automatically connect the points. Then, select the Solution Set button and select the desired region to be shaded. 		Process	
		Item Type	Graphing (2 pts)
		Stimulus	
Data Analysis			
	Item	State	Local
	Full Credit	30	
	No Credit	57	
	Partial Credit	12	
Error Analysis			
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Learning from Mistakes Instructional Implications			

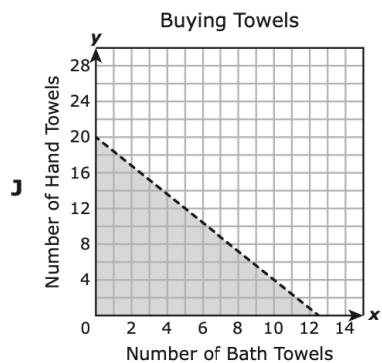
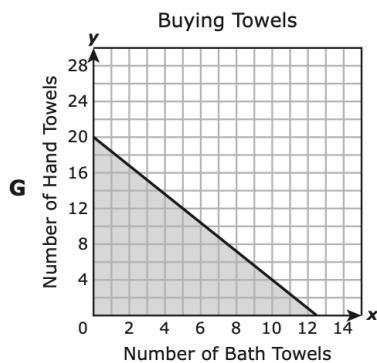
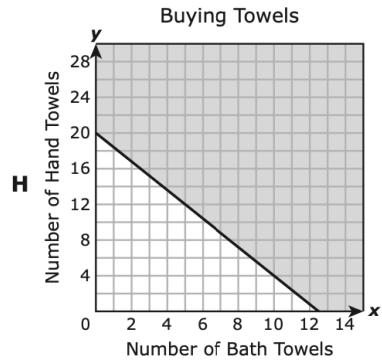
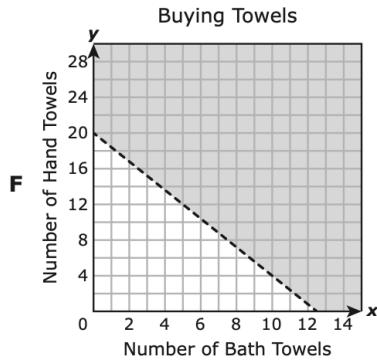
*Correct Answer (Solid line going through (0, 2) and (1, 1); shading is the area that does not include the point (0, 0))

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

2022 – Q8

- 8 A customer is buying bath towels and hand towels and can spend no more than \$100. Each bath towel costs \$8, and each hand towel costs \$5. The inequality $8x + 5y \leq 100$ represents all possible combinations of x , the number of bath towels, and y , the number of hand towels the customer can buy.

Which graph best represents the solution set for this inequality?



*Correct Answer (G)

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
F	12	
G*	53	
H	22	
J	14	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

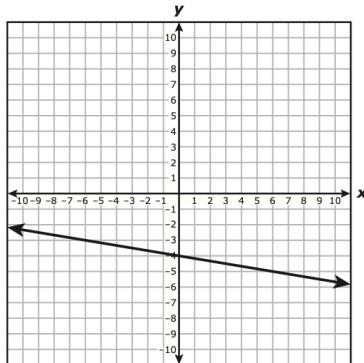
Learning from Mistakes
Instructional Implications

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

Analysis of Assessed Standards

! 2022 – Q37

- 37 The graph of $y = -\frac{1}{6}x - 4$ is shown on the grid.



Which ordered pair is in the solution set of $y > -\frac{1}{6}x - 4$?

- A (-8, 8)
- B (6, -5)
- C (4, -6)
- D (-2, -7)

* Correct Answer (A)

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

Data Analysis

Item	State	Local
A*	29	
B	43	
C	22	
D	6	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

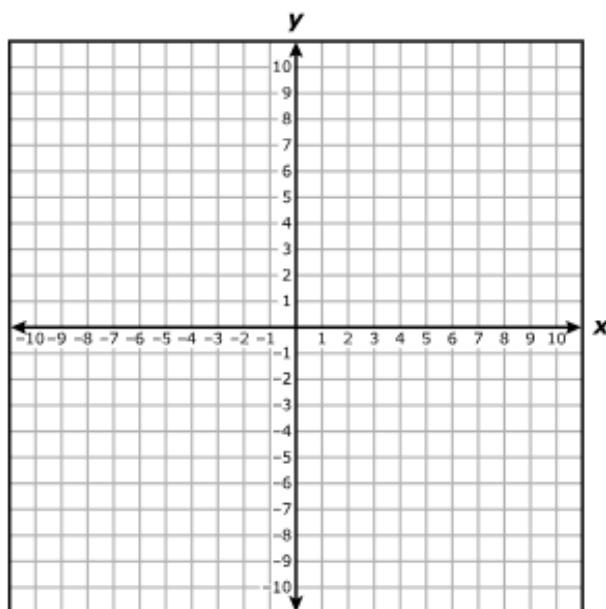
A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist

2025 – Q45

A system of equations is shown.

$$x + y = -8$$

$$2x + 2y = 10$$



Which statement is true about this system of equations?

(A) There are infinitely many solutions.

(B) The only solution is $(-8, 5)$.

(C) The only solution is $(5, -8)$.

(D) There is no solution.

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Systems of Equations and Inequalities
Subcluster	Systems of Equations
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C		
D*	46	

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		
2024 – Q45	Cluster	Systems of Equations and Inequalities	
	Subcluster	Systems of Equations	
	Content	Supporting	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B*	50	
	C		
	D		
	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)			

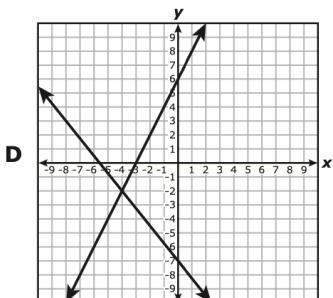
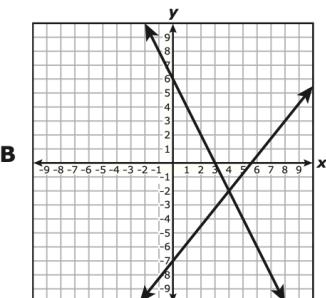
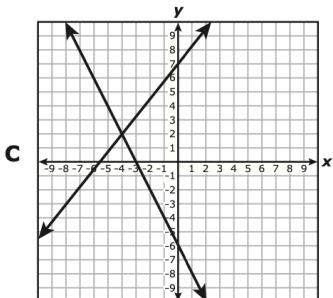
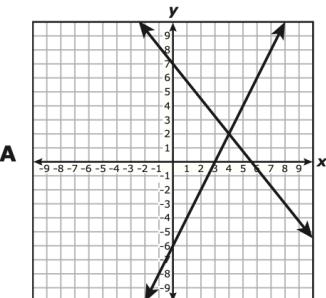
A.3(F) graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist

! 2022 – Q45

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

$$2x = 6 - y$$

$$5x - 4y = 28$$



*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	20	
B*	47	
C	18	
D	15	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

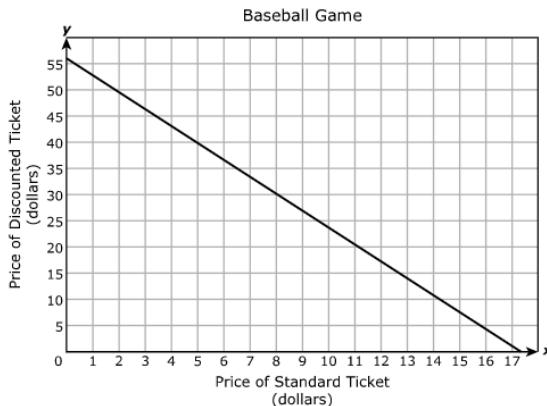
		Analysis of Assessed Standards					
2024 – Q15		Cluster	Systems of Equations and Inequalities				
Two hikers begin hiking at the same time from different locations on a trail. The system of equations graphed on the grid represents this situation.		Subcluster	Systems of Equations				
		Content	Supporting				
		Process					
		Item Type	Multiple Choice (1 pt)				
		Stimulus					
Data Analysis							
		Item	State	Local			
<input type="radio"/> A							
<input checked="" type="radio"/> B*		61					
<input type="radio"/> C							
<input type="radio"/> 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							
*Correct Answer (B)							

A.3(G) estimate graphically the solutions to systems of two linear equations with two variables in real-world problems	Analysis of Assessed Standards		
! 2023 – Q30	Cluster	Systems of Equations and Inequalities	
	Subcluster	Systems of Equations	
	Content	Supporting	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A	21	
	B	24	
	C	34	
	D*	21	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			

The two types of tickets sold at a baseball game are standard tickets and discounted tickets. The price of a discounted ticket was 80% of the price of a standard ticket.

- There were 153 standard tickets sold at the baseball game.
- There were 47 discounted tickets sold at the baseball game.
- The total amount of ticket sales from the standard and discounted tickets was \$2,649.34.

The line graphed on the grid represents the first equation in a system of linear equations for this situation.

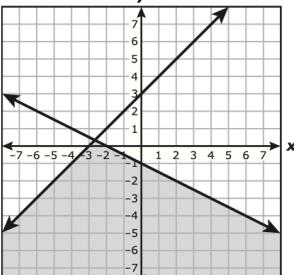
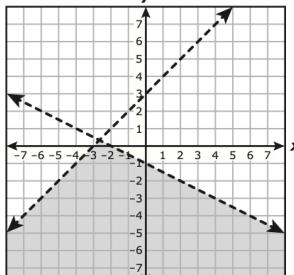
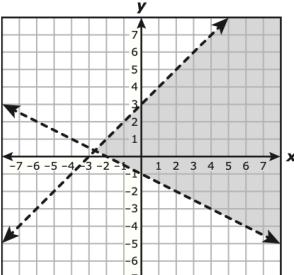
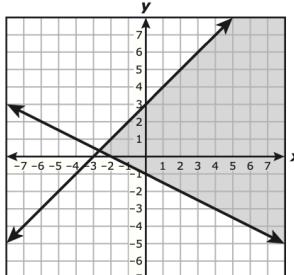


If the second equation in the system is $y = 0.80x$, what is the best estimate of the price of a discounted ticket?

- A \$13.95
 B \$14.55
 C \$13.25
 D \$11.15

*Correct Answer (D)

A.3(H) graph the solution set of systems of two linear inequalities in two variables on the coordinate plane		Analysis of Assessed Standards		
2025 – Q38		Cluster	Systems of Equations and Inequalities	
		Subcluster	Inequalities	
		Content	Supporting	
		Process		
		Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
	Item	State	Local	
(A)	A*	63		
(B)	B			
(C)	C			
(D)	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				
*Correct Answer (A)				

A.3(H) graph the solution set of systems of two linear inequalities in two variables on the coordinate plane	Analysis of Assessed Standards			
2022 – Q39	Cluster Systems of Equations and Inequalities Subcluster Inequalities Content Supporting Process Stimulus			
39 Which graph best represents the solution set for this system of inequalities? $x + 2y < -2$ $y - x < 3$				
				
A				
				
C				
				
B				
				
D				
*Correct Answer (C)				
Data Analysis				
Item	State			
A	15			
B	22			
C*	50			
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.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems		Analysis of Assessed Standards			
2025 – Q11		Cluster	Systems of Equations and Inequalities		
		Subcluster	Systems of Equations		
		Content	Readiness		
		Process			
		Item Type	Multiple Choice (1 pt)		
		Stimulus			
Data Analysis					
	Item	State	Local		
	A				
	B				
	C*	52			
	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					

*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		
2025 – Q24	Cluster	Systems of Equations and Inequalities	
	Subcluster	Systems of Equations	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C		
	D*	32	
	Error Analysis		
	<input type="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.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards		
2024 – Q13	Cluster	Systems of Equations and Inequalities	
Two customers purchased coffee and doughnuts at a coffee shop. Each cup of coffee costs the same amount, and each doughnut costs the same amount.	Subcluster	Systems of Equations	
<ul style="list-style-type: none"> The first customer paid \$4.90 for 1 cup of coffee and 2 doughnuts. The second customer paid \$8.60 for 2 cups of coffee and 3 doughnuts. <p>What is the cost of 1 cup of coffee?</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>(A) \$2.50</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>(B) \$1.20</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>(C) \$4.90</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p>(D) \$3.70</p> </div>	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A*	60	
	B		
	C		
	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			

*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		
! 2024 – Q42	Cluster	Systems of Equations and Inequalities	
A system of linear equations is shown.	Subcluster	Systems of Equations	
$\begin{aligned} 6x - 2y &= 10 \\ y &= 3x - 5 \end{aligned}$	Content	Readiness	
Which statement about the system is true?	Process		
A The system has one solution, $(-1, -8)$.	Item Type	Multiple Choice (1 pt)	
B The system has one solution, $(3, 4)$.	Stimulus		
C The system has no solutions.	Data Analysis		
D The system has infinitely many solutions.	Item	State	Local
	A		
	B		
	C		
Correct Answer (D)	D	38	
	Error Analysis		
	<input type="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		
2023 – Q23	Cluster	Systems of Equations and Inequalities	
What is the solution to this system of equations? $-3x + 5y = 21$ $6x - y = -15$	Subcluster	Systems of Equations	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	12	
	B*	68	
	C	11	
	D	9	
Error Analysis			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications			

*Correct Answer (B)

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards												
! 2023 – Q40	Cluster Systems of Equations and Inequalities Subcluster Systems of Equations Content Readiness Process Item Type Multiple Choice (1 pt) Stimulus												
A company advertises on two websites. Each website charges a different amount based on the number of clicks on the advertisement. The table shows the number of clicks on each website and the total cost for each of two days.													
Cost of Website Advertisements													
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Day</th><th style="text-align: center;">Number of Clicks on Website 1</th><th style="text-align: center;">Number of Clicks on Website 2</th><th style="text-align: center;">Total Cost (dollars)</th></tr> </thead> <tbody> <tr> <td>Monday</td><td style="text-align: center;">15</td><td style="text-align: center;">29</td><td style="text-align: center;">94.15</td></tr> <tr> <td>Tuesday</td><td style="text-align: center;">25</td><td style="text-align: center;">29</td><td style="text-align: center;">121.15</td></tr> </tbody> </table>	Day	Number of Clicks on Website 1	Number of Clicks on Website 2	Total Cost (dollars)	Monday	15	29	94.15	Tuesday	25	29	121.15	
Day	Number of Clicks on Website 1	Number of Clicks on Website 2	Total Cost (dollars)										
Monday	15	29	94.15										
Tuesday	25	29	121.15										
What is the cost per click on Website 1?													
<p>(A) \$1.85</p> <p>(B) \$5.38</p> <p>(C) \$2.20</p> <p>(D) \$2.70</p>													
*Correct Answer (D)													

A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems	Analysis of Assessed Standards
2022 – Q5	Cluster Systems of Equations and Inequalities Subcluster Systems of Equations Content Readiness Process Stimulus
5 What is the solution to this system of equations?	
$2x + y = 40$ $x - 2y = -20$	
<p>A (12, 16)</p> <p>B (15, 17.5)</p> <p>C There is no solution.</p> <p>D There are an infinite number of solutions.</p>	
*Correct Answer (A)	

<p>A.5(C) solve systems of two linear equations with two variables for mathematical and real-world problems</p> <p>! 2022 – Q49</p> <p>49 A mail carrier delivers mail on one of two different routes: a morning route or an afternoon route. Each workday the mail carrier is assigned one of these two routes.</p> <ul style="list-style-type: none"> Last month the mail carrier delivered mail on the morning route 16 times and on the afternoon route 12 times, for a total distance traveled of 141 miles. This month the mail carrier delivered mail on the morning route 10 times and on the afternoon route 15 times, for a total distance traveled of 123.75 miles. <p>What is the distance of the morning route in miles?</p> <p>A 5.25 mi B 6.00 mi C 4.75 mi D 5.00 mi</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Analysis of Assessed Standards</th> </tr> </thead> <tbody> <tr> <td style="width: 15%;">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> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Data Analysis</th> </tr> <tr> <th style="width: 33%;">Item</th><th style="width: 33%;">State</th><th style="width: 33%;">Local</th></tr> </thead> <tbody> <tr> <td>A*</td><td>39</td><td></td></tr> <tr> <td>B</td><td>21</td><td></td></tr> <tr> <td>C</td><td>27</td><td></td></tr> <tr> <td>D</td><td>13</td><td></td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Error Analysis</th> </tr> </thead> <tbody> <tr> <td style="width: 50%;"><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> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Learning from Mistakes Instructional Implications</th> </tr> </thead> <tbody> <tr> <td colspan="2"></td> </tr> </tbody> </table>	Analysis of Assessed Standards		Cluster	Systems of Equations and Inequalities	Subcluster	Systems of Equations	Content	Readiness	Process		Stimulus		Data Analysis			Item	State	Local	A*	39		B	21		C	27		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			
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Learning from Mistakes Instructional Implications																																									
<p>*Correct Answer (A)</p>																																									

Simplifying Expressions

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

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

A.10(A) add and subtract polynomials of degree one and degree two		Analysis of Assessed Standards	
! 2024 – Q35		Cluster	Simplifying Expressions
A triangle has sides whose lengths in units are represented by polynomials as shown, where x is a positive integer.		Subcluster	Polynomials
		Content	Supporting
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
Item	State	Local	
A			
B			
C*	47		
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			
*Correct Answer (C)			

A.10(A) add and subtract polynomials of degree one and degree two		Analysis of Assessed Standards	
2022 – Q23		Cluster	Simplifying Expressions
23 Which expression is equivalent to $(5rt - 3rw - 8tw) + (6rt - 4rw + 2tw)$?		Subcluster	Polynomials
A $11rt + rw - 10tw$		Content	Supporting
B $11rt - 7rw - 6tw$		Process	
C $11rt + rw - 6tw$		Stimulus	
D $11rt - 7rw - 10tw$		Data Analysis	
*Correct Answer (B)		Item	State
		A	8
		B*	63
		C	15
		D	14
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

A.10(B) multiply polynomials of degree one and degree two		Analysis of Assessed Standards		
2025 – Q23		Cluster	Simplifying Expressions	
		Subcluster	Polynomials	
		Content	Supporting	
		Process		
		Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
Item	State	Local		
A				
B				
C*	50			
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				

*Correct Answer (C)

A.10(B) multiply polynomials of degree one and degree two		Analysis of Assessed Standards		
2023 – Q33		Cluster	Simplifying Expressions	
		Subcluster	Polynomials	
		Content	Supporting	
		Process		
		Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
	Item	State	Local	
	A	8		
	B	24		
	C*	61		
	D	7		
Error Analysis				
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications				
*Correct Answer (C)				

A.10(B) multiply polynomials of degree one and degree two		Analysis of Assessed Standards		
2022 – Q10		Cluster	Simplifying Expressions	
		Subcluster	Polynomials	
		Content	Supporting	
		Process		
		Stimulus		
Data Analysis				
	Item	State	Local	
	F	12		
	G	12		
	H	14		
	J*	62		
Error Analysis				
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts		
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early		
Learning from Mistakes Instructional Implications				
*Correct Answer (J)				

<p>A.10(C) determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend</p>	<p>Analysis of Assessed Standards</p>																		
<p>! 2023 – Q16</p>	<table border="1"> <tr> <td>Cluster</td><td>Simplifying Expressions</td></tr> <tr> <td>Subcluster</td><td>Polynomials</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Simplifying Expressions	Subcluster	Polynomials	Content	Supporting	Process		Item Type	Multiple Choice (1 pt)	Stimulus							
Cluster	Simplifying Expressions																		
Subcluster	Polynomials																		
Content	Supporting																		
Process																			
Item Type	Multiple Choice (1 pt)																		
Stimulus																			
<p>What is the quotient represented by the expression $\frac{8w^2 - 20w - 12}{2w + 1}$ for all values of w where the expression is defined?</p>																			
<p>(A) $4w + 12$ (B) $4w - 12$ (C) $w - 3$ (D) $w + 3$</p>	<table border="1"> <tr> <td>Data Analysis</td><td></td><td></td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td>19</td><td></td></tr> <tr> <td>B*</td><td>59</td><td></td></tr> <tr> <td>C</td><td>11</td><td></td></tr> <tr> <td>D</td><td>10</td><td></td></tr> </table>	Data Analysis			Item	State	Local	A	19		B*	59		C	11		D	10	
Data Analysis																			
Item	State	Local																	
A	19																		
B*	59																		
C	11																		
D	10																		
<p>*Correct Answer (B)</p>	<table border="1"> <tr> <td>Error Analysis</td><td></td></tr> <tr> <td><input type="checkbox"/> Guessing</td><td><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> <tr> <td align="center" colspan="2">Learning from Mistakes</td></tr> <tr> <td align="center" colspan="2">Instructional Implications</td></tr> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes		Instructional Implications									
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<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																		
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																		
Learning from Mistakes																			
Instructional Implications																			

A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property		Analysis of Assessed Standards	
! 2025 – Q1		Cluster	Simplifying Expressions
Which expression is equivalent to $1.5(4j - 10k) - 2.5(8j + 6k)$?		Subcluster	Polynomials
(A) $-12j + 4k$		Content	Supporting
(B) $-26j$		Process	
(C) $-14j - 30k$		Item Type	Multiple Choice (1 pt)
(D) $-14j$		Stimulus	
Data Analysis			
	Item	State	Local
A			
B			
C*	61		
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			

*Correct Answer (C)

A.10(D) rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property	Analysis of Assessed Standards				
! 2023 – Q39	Cluster	Simplifying Expressions			
Which expression is equivalent to $24gh - 12g^2 + 18g$?	Subcluster	Polynomials			
<p>(A) $6g(4h - 12g + 18)$</p> <p>(B) $12g(2h - 12g + 18)$</p> <p>(C) $6g(4h - 2g + 3)$</p> <p>(D) $12g(2h - g + 3)$</p>	Content	Supporting			
	Process				
	Item Type	Multiple Choice (1 pt)			
	Stimulus				
Data Analysis					
	Item	State	Local		
	A	12			
	B	24			
	C*	55			
	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(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		
2025 – Q20	Cluster	Simplifying Expressions	
	Subcluster	Polynomials	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C		
	D*	41	
*Correct Answer (D)	Error Analysis <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
	Learning from Mistakes Instructional Implications		

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

Analysis of Assessed Standards

2025 – Q44

Which expressions are equivalent to $6x^2 + 3x - 9$?

Select **TWO** correct answers.

$-3(2x^2 + x + 3)$

$3(2x^2 + x - 3)$

$3(2x - 3)(x + 1)$

$3(2x + 3)(x - 1)$

$-3(2x - 3)(x - 1)$

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Item Type	Multiselect (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	58	
No Credit	11	
Partial Credit	31	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

*Correct Answer (B, D)

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

2024 – Q16

Which function is equivalent to $f(x) = 6x^2 - 23x + 21$?

(A) $f(x) = (3x - 7)(2x - 3)$

(B) $f(x) = 3(x - 1)(2x - 7)$

(C) $f(x) = (6x - 7)(x - 3)$

(D) $f(x) = 3(x - 7)(2x - 1)$

*Correct Answer (A)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	68	
B		
C		
D		

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

2024 – Q37

Which expression is a factor of $x^2 + 7x - 30$?

(A) $x + 15$

(B) $x - 10$

(C) $x + 5$

(D) $x - 3$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Polynomials
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C		
D*	40	

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	Analysis of Assessed Standards															
2023 – Q5	Cluster Simplifying Expressions Subcluster Polynomials Content Readiness Process Item Type Multiple Choice (1 pt) Stimulus															
<p>Which expression is a factor of $30x^2 - 4x - 16$?</p> <p>(A) $5x + 4$ (B) $3x - 2$ (C) $5x - 4$ (D) $3x - 4$</p>																
<p>Data Analysis</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; background-color: #f2f2f2;">Item</th> <th style="text-align: center; background-color: #f2f2f2;">State</th> <th style="text-align: center; background-color: #f2f2f2;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td><td style="text-align: center;">21</td><td></td></tr> <tr> <td style="text-align: center;">B</td><td style="text-align: center;">17</td><td></td></tr> <tr> <td style="text-align: center;">C*</td><td style="text-align: center;">52</td><td></td></tr> <tr> <td style="text-align: center;">D</td><td style="text-align: center;">10</td><td></td></tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	Item	State	Local	A	21		B	17		C*	52		D	10		
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D	10															

*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																				
2023 – Q24	<p>Which expressions are equivalent to $12x^2 - 48x + 48$? Select TWO correct answers.</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><input type="checkbox"/> $12(x - 2)^2$</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><input type="checkbox"/> $-12(x^2 + 4x + 4)$</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><input type="checkbox"/> $12(x - 4)(x - 1)$</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><input type="checkbox"/> $-12(x + 2)^2$</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><input type="checkbox"/> $12(x^2 - 4x + 4)$</div>	Cluster Simplifying Expressions Subcluster Polynomials Content Readiness Process Item Type Multiselect (2 pts) 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;">Full Credit</td> <td style="text-align: center;">50</td> <td></td> </tr> <tr> <td style="text-align: center;">No Credit</td> <td style="text-align: center;">13</td> <td></td> </tr> <tr> <td style="text-align: center;">Partial Credit</td> <td style="text-align: center;">36</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> Learning from Mistakes Instructional Implications	Item	State	Local	Full Credit	50		No Credit	13		Partial Credit	36							
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*Correct Answer (A, E)																					

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																	
2022 – Q14	<p>14 The expression $d^2 - d - 6$ can be written in factored form as $(d + 2)(d + k)$, where k represents a number. What is the value of k? Record your answer and fill in the bubbles on your answer document.</p>	Cluster Simplifying Expressions Subcluster Polynomials 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;">-3</td> <td style="text-align: center;">26*</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">73</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> Error Analysis <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> Learning from Mistakes Instructional Implications	Item	State	Local	-3	26*			73							
Item	State	Local																
-3	26*																	
	73																	
*Correct Answer (-3)																		

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		
! 2022 – Q33	Cluster	Simplifying Expressions	
33 Which expression is a factor of $10x^2 - 19x + 6$?	Subcluster	Polynomials	
A $10x - 3$	Content	Readiness	
B $10x - 1$	Process		
C $5x - 3$	Stimulus		
D $5x - 2$	Data Analysis		
	Item	State	Local
	A	25	
	B	15	
	C	27	
Correct Answer (D)	D	34	
	Error Analysis		
	<input type="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		
2022 – Q46	Cluster	Simplifying Expressions	
46 Which function is equivalent to $k(x) = x^2 + 2x - 15$?	Subcluster	Polynomials	
F $k(x) = (x + 15)(x - 1)$	Content	Readiness	
G $k(x) = (x + 1)(x - 15)$	Process		
H $k(x) = (x + 5)(x - 3)$	Stimulus		
J $k(x) = (x + 3)(x - 5)$	Data Analysis		
	Item	State	Local
	F	7	
	G	14	
	H*	66	
	J	12	
*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.10(F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial		Analysis of Assessed Standards	
2024 – Q47		Cluster	Simplifying Expressions
Choose two factors to create an expression equivalent to $4x^2 - 81$.		Subcluster	Polynomials
Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.		Content	Supporting
		Process	
		Item Type	Drag and Drop (2 pts)
		Stimulus	
Data Analysis			
Item	State	Local	
Full Credit	40		
No Credit	23		
Partial Credit	37		
Error Analysis			
<input type="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 (2x + 9; 2x - 9)

A.10(F) decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial	Analysis of Assessed Standards		
!	2022 – Q43	Cluster	Simplifying Expressions
43 Which expression is equivalent to $36m^2 - 100$?	Subcluster	Polynomials	
A $(9m - 20)(4m + 5)$	Content	Supporting	
B $4(3m - 5)(3m + 5)$	Process		
C $2(2m - 5)(9m + 10)$	Stimulus		
D $4(3m - 5)^2$	Data Analysis		
*Correct Answer (B)	Item	State	Local
	A	20	
	B*	55	
	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		

A.11(A) simplify numerical radical expressions involving square roots		Analysis of Assessed Standards		
2025 – Q3	Which expression is equivalent to $\sqrt{50}$?	Cluster	Simplifying Expressions	
	<input checked="" type="radio"/> A $2\sqrt{5}$	Subcluster	Radicals	
	<input type="radio"/> B $5\sqrt{2}$	Content	Supporting	
	<input type="radio"/> C 12.5	Process		
	<input type="radio"/> D 25	Item Type	Multiple Choice (1 pt)	
		Stimulus		
Data Analysis				
Item	State	Local		
A				
B*	81			
C				
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				

*Correct Answer (B)

A.11(A) simplify numerical radical expressions involving square roots

2024 – Q1

Which expression is equivalent to $7\sqrt{45}$?

(A) $12\sqrt{3}$

(B) $35\sqrt{3}$

(C) $10\sqrt{5}$

(D) $21\sqrt{5}$

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Simplifying Expressions
Subcluster	Radicals
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C		
D*	80	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes
Instructional Implications

A.11(A) simplify numerical radical expressions involving square roots	Analysis of Assessed Standards		
2023 – Q20	Cluster	Simplifying Expressions	
Which expression is equivalent to $\sqrt{600}$?	Subcluster	Radicals	
<input type="radio"/> A $6\sqrt{10}$	Content	Supporting	
<input type="radio"/> B $10\sqrt{6}$	Process		
<input type="radio"/> C $24\sqrt{25}$	Item Type	Multiple Choice (1 pt)	
<input type="radio"/> D $25\sqrt{24}$	Stimulus		
	Data Analysis		
	Item	State	Local
	A	9	
	B*	73	
	C	12	
	D	6	
*Correct Answer (B)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents		Analysis of Assessed Standards	
2025 – Q28		Cluster	Simplifying Expressions
In the expression shown, x is a positive real number.		Subcluster	Exponents
$\frac{2x^{12}}{6x^{-3}}$		Content	Readiness
What is an equivalent form of this expression? Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.		Process	
-15 -9 -4 $\frac{1}{3}$ $\frac{1}{4}$ 3 4 9 15 <input type="text"/> x <input type="text"/>		Item Type	Drag and Drop (2 pts)
		Stimulus	
		Data Analysis	
		Item	State
		Full Credit	24
		No Credit	45
		Partial Credit	31
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 (1/3; 15)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
! 2025 – Q48	Cluster	Simplifying Expressions	
Which expression is equivalent to $\frac{(6y^3)^{-2}}{y}$ for all values of y where the expression is defined?	Subcluster	Exponents	
(A) $\frac{1}{36y^7}$	Content	Readiness	
(B) $\frac{1}{36y^6}$	Process		
(C) $\frac{1}{12y^7}$	Item Type	Multiple Choice (1 pt)	
(D) $\frac{1}{12y^6}$	Stimulus		
Data Analysis			
	Item	State	Local
	A*	30	
	B		
	C		
	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			

*Correct Answer (A)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
! 2024 – Q6	Cluster	Simplifying Expressions	
Which expression is equivalent to $\frac{1}{3}(6x^2y)^2(2x^3y^4)$ for all values of x and y where the expression is defined?	Subcluster	Exponents	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B*	39	
	C		
	D		
*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	
2024 – Q33	Cluster	Simplifying Expressions
Which expression is equivalent to $\frac{16k^9m^7}{4k^3m^{14}}$ for all values of k and m where the expression is defined?	Subcluster	Exponents
	Content	Readiness
	Process	
	Item Type	Multiple Choice (1 pt)
	Stimulus	
	Data Analysis	
	Item	State
(A) $\frac{12k^6}{m^7}$	A	
(B) $\frac{4k^6}{m^7}$	B*	52
(C) $\frac{12k^3}{m^2}$	C	
(D) $\frac{4k^3}{m^2}$	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	

*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		
2023 – Q10	Cluster	Simplifying Expressions	
Which expression is equivalent to $(x^{\frac{3}{7}})^2$?	Subcluster	Exponents	
<input type="radio"/> A $x^{\frac{6}{14}}$	Content	Readiness	
<input type="radio"/> B $x^{\frac{17}{7}}$	Process		
<input type="radio"/> C $x^{\frac{6}{7}}$	Item Type	Multiple Choice (1 pt)	
<input type="radio"/> D $x^{\frac{5}{7}}$	Stimulus		
	Data Analysis		
	Item	State	Local
	A	43	
	B	11	
	C*	38	
	D	7	
	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

*Correct Answer (C)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards		
! 2023 – Q35	Cluster	Simplifying Expressions	
The expression $x^6y^3 \div \left(\frac{x^2}{y}\right)$ can be written as a product of two exponential terms with bases x and y for all values of x and y where the expression is defined. Choose the correct value of the exponent for each term.	Subcluster	Exponents	
Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.	Content	Readiness	
<input type="radio"/> -3 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 8	Process		
x^{\square} y^{\square}	Item Type	Drag and Drop (2 pts)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	Full Credit	4	
	No Credit	58	
	Partial Credit	38	
	Error Analysis		
	<input type="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 (4, 4)

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards																					
2022 – Q16	Cluster Subcluster Content Process Stimulus	Simplifying Expressions Exponents Readiness Readiness Readiness																				
16 Which expression is equivalent to $\frac{c^8(d^6)^3}{c^2}$ for all values of c for which the expression is defined?																						
F c^4d^9 G c^4d^{18} H c^6d^9 J c^6d^{18}																						
<p>*Correct Answer (J)</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>14</td> <td></td> </tr> <tr> <td>G</td> <td>25</td> <td></td> </tr> <tr> <td>H</td> <td>15</td> <td></td> </tr> <tr> <td>J*</td> <td>46</td> <td></td> </tr> </tbody> </table> 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			Item	State	Local	F	14		G	25		H	15		J*	46		<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	14																					
G	25																					
H	15																					
J*	46																					
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																					
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																					

A.11(B) simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents	Analysis of Assessed Standards																					
2022 – Q21	Cluster Subcluster Content Process Stimulus	Simplifying Expressions Exponents Readiness Readiness Readiness																				
21 Which expression is equivalent to $\frac{8.8 \times 10^9}{2.2 \times 10^{-3}}$?																						
A 4×10^{12} B 4×10^6 C 4×10^{-3} D 4×10^{-6}																						
<p>*Correct Answer (A)</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>50</td> <td></td> </tr> <tr> <td>B</td> <td>27</td> <td></td> </tr> <tr> <td>C</td> <td>17</td> <td></td> </tr> <tr> <td>D</td> <td>6</td> <td></td> </tr> </tbody> </table> 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			Item	State	Local	A*	50		B	27		C	17		D	6		<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*	50																					
B	27																					
C	17																					
D	6																					
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																					
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																					

Quadratic Functions

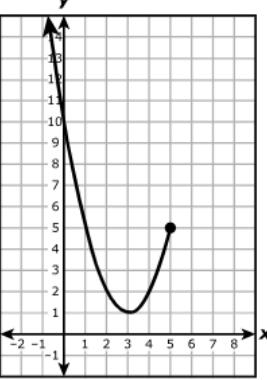
A.6 Quadratic functions and equations. The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations.

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

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

Connected Knowledge and Skills A.12

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards		
! 2025 – Q5	Cluster	Quadratic Functions	
	Subcluster	Describing Quadratic Functions	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A		
	B*	42	
	C		
	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			
*Correct Answer (B)			

<p>A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities</p> <p>2025 – Q32</p> <p>Part of a quadratic function is shown on the grid.</p>  <p>Which statement best represents the domain of the part of the function shown?</p> <p>(A) All real numbers less than or equal to 5 (B) All real numbers greater than or equal to 3 (C) All real numbers greater than or equal to 1 (D) All real numbers</p> <p>*Correct Answer (A)</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>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> <tr> <td colspan="2">Data Analysis</td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A*</td><td>60</td><td></td></tr> <tr> <td>B</td><td></td><td></td></tr> <tr> <td>C</td><td></td><td></td></tr> <tr> <td>D</td><td></td><td></td></tr> <tr> <td colspan="3">Error Analysis</td></tr> <tr> <td colspan="3"> <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early </td></tr> <tr> <td colspan="3">Learning from Mistakes Instructional Implications</td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Describing Quadratic Functions	Content	Readiness	Process		Item Type	Multiple Choice (1 pt)	Stimulus		Data Analysis		Item	State	Local	A*	60		B			C			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		
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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

! 2024 – Q9

What is the range of the function $f(x) = -x^2 + 60x$?

(A) All real numbers that are greater than or equal to 0 and less than or equal to 30

(B) All real numbers that are greater than or equal to 0 and less than or equal to 60

(C) All real numbers that are greater than or equal to 900

(D) All real numbers that are less than or equal to 900

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C		
D*	34	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

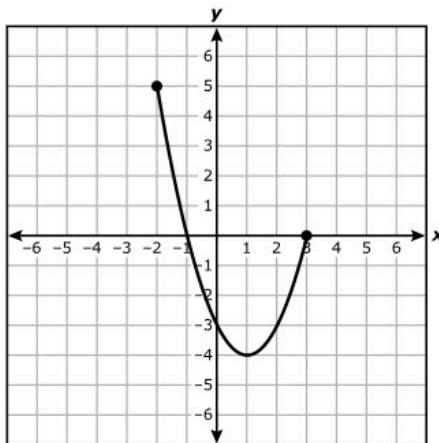
Learning from Mistakes
Instructional Implications

*Correct Answer (D)

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

! 2024 – Q32

A part of quadratic function g is graphed on the grid.



What is the domain of the part of the function shown?

- (A) All real numbers greater than or equal to -4 and less than or equal to 5
- (B) All real numbers greater than or equal to -1 and less than or equal to 3
- (C) All real numbers greater than or equal to -6 and less than or equal to 6
- (D) All real numbers greater than or equal to -2 and less than or equal to 3

*Correct Answer (D)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C		
D*	45	

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards																								
! 2023 – Q11	Cluster Quadratic Functions																								
	Subcluster Describing Quadratic Functions																								
	Content Readiness																								
	Process																								
	Item Type Multiple Choice (1 pt)																								
	Stimulus																								
<p>Which statement about the function $r(x) = 5x^2 - 20x + 12$ is true?</p> <p> <input type="radio"/> A The domain of the function is $x \geq 2$. <input type="radio"/> B The range of the function is $r(x) \geq -8$. <input type="radio"/> C The domain of the function is $x \geq 0$. <input type="radio"/> D The range of the function is $r(x) \leq 12$. </p> <p>*Correct Answer (B)</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Data Analysis</th> </tr> <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;">17</td> <td></td> </tr> <tr> <td style="text-align: center;">B*</td> <td style="text-align: center;">47</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">11</td> <td></td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">25</td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <p> <input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early </p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Learning from Mistakes</th> </tr> <tr> <th colspan="2" style="text-align: center;">Instructional Implications</th> </tr> </thead> <tbody> <tr> <td colspan="2"></td> </tr> </tbody> </table>	Data Analysis			Item	State	Local	A	17		B*	47		C	11		D	25		Learning from Mistakes		Instructional Implications			
Data Analysis																									
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A	17																								
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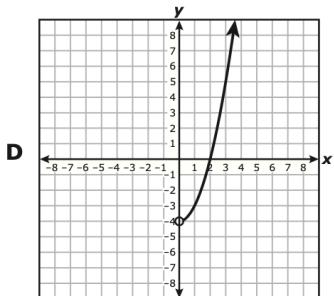
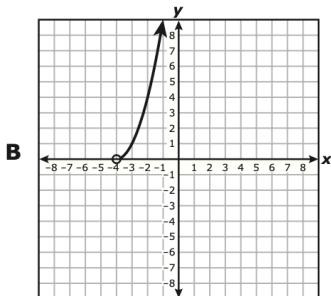
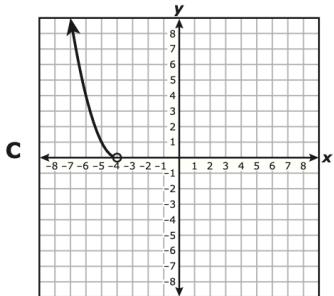
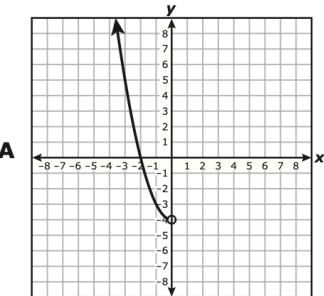
A.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards															
2023 – Q32	Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process Item Type Multiple Choice (1 pt) Stimulus															
<p>The table represents some points on the graph of quadratic function g.</p> <table border="1"> <tr> <td>x</td><td>$\frac{1}{2}$</td><td>1</td><td>$\frac{3}{2}$</td><td>2</td><td>$\frac{5}{2}$</td><td>3</td></tr> <tr> <td>$g(x)$</td><td>$\frac{7}{4}$</td><td>4</td><td>$\frac{19}{4}$</td><td>4</td><td>$\frac{7}{4}$</td><td>-2</td></tr> </table>	x	$\frac{1}{2}$	1	$\frac{3}{2}$	2	$\frac{5}{2}$	3	$g(x)$	$\frac{7}{4}$	4	$\frac{19}{4}$	4	$\frac{7}{4}$	-2		
x	$\frac{1}{2}$	1	$\frac{3}{2}$	2	$\frac{5}{2}$	3										
$g(x)$	$\frac{7}{4}$	4	$\frac{19}{4}$	4	$\frac{7}{4}$	-2										
<p>What is the range of g?</p> <ul style="list-style-type: none"> <li><input type="radio"/> A All real numbers less than or equal to $\frac{3}{2}$ <li><input type="radio"/> B All real numbers less than or equal to $\frac{19}{4}$ <li><input type="radio"/> C All real numbers greater than or equal to $\frac{3}{2}$ <li><input type="radio"/> D All real numbers greater than or equal to $\frac{19}{4}$ 	Data Analysis															
	<table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A</td><td>19</td><td></td></tr> <tr> <td>B*</td><td>44</td><td></td></tr> <tr> <td>C</td><td>25</td><td></td></tr> <tr> <td>D</td><td>12</td><td></td></tr> </tbody> </table>	Item	State	Local	A	19		B*	44		C	25		D	12	
Item	State	Local														
A	19															
B*	44															
C	25															
D	12															
<p>*Correct Answer (B)</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.6(A) determine the domain and range of quadratic functions and represent the domain and range using inequalities	Analysis of Assessed Standards															
2022 – Q6 6 Which graph best represents a quadratic function with a range of all real numbers greater than or equal to 3?	Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process Stimulus															
<p>F</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>4</td> <td></td> </tr> <tr> <td>G</td> <td>13</td> <td></td> </tr> <tr> <td>H</td> <td>17</td> <td></td> </tr> <tr> <td>J*</td> <td>66</td> <td></td> </tr> </tbody> </table>	Item	State	Local	F	4		G	13		H	17		J*	66	
Item	State	Local														
F	4															
G	13															
H	17															
J*	66															
<p>G</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															
*Correct Answer (J)																

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

! 2022 – Q47

- 47 Which graph best represents part of a quadratic function with a domain of all real numbers less than -4 ?



*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

Item	State	Local
A	17	
B	15	
C*	56	
D	11	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

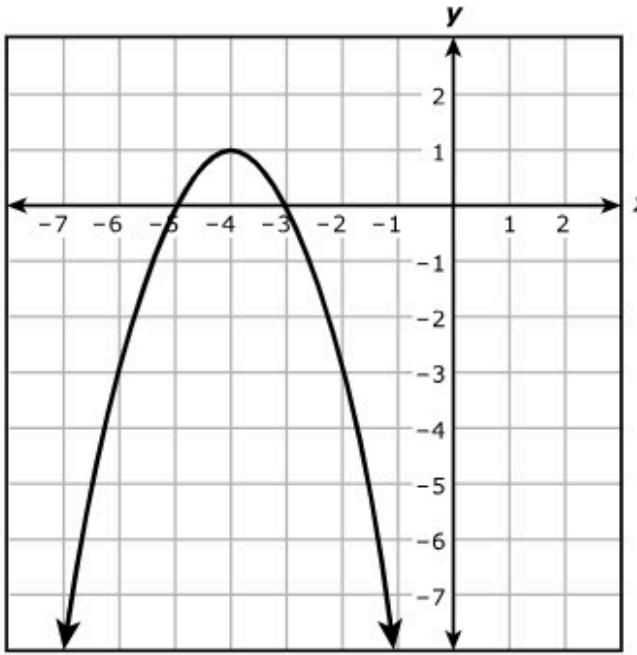
Learning from Mistakes Instructional Implications

<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>2025 – Q41</p>	<p>Cluster Quadratic Functions</p>																			
<p>Quadratic function f has vertex $(5, -1)$ and passes through $(3, -17)$. What is the equation for f in standard form?</p>	<p>Subcluster Writing and Solving Quadratic Equations</p>																			
<p>(A) $f(x) = -4x^2 + 40x - 101$</p>	<p>Content Supporting</p>																			
<p>(B) $f(x) = 4x^2 - 40x + 99$</p>	<p>Process</p>																			
<p>(C) $f(x) = -4x^2 - 101$</p>	<p>Item Type Multiple Choice (1 pt)</p>																			
<p>(D) $f(x) = 4x^2 + 99$</p>	<p>Stimulus</p>																			
<p>*Correct Answer (A)</p>	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A*</td> <td>56</td> <td></td> </tr> <tr> <td>B</td> <td></td> <td></td> </tr> <tr> <td>C</td> <td></td> <td></td> </tr> <tr> <td>D</td> <td></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>	Item	State	Local	A*	56		B			C			D			<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*	56																			
B																				
C																				
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<p>A.6(B) write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$)</p>	<p>Analysis of Assessed Standards</p>																
<p>2024 – Q40</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Item Type	Multiple Choice (1 pt)	Stimulus					
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Subcluster	Writing and Solving Quadratic Equations																
Content	Supporting																
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Item Type	Multiple Choice (1 pt)																
Stimulus																	
<p>Which function is equivalent to $f(x) = 4(x - 3)^2 + 5$?</p>	<table border="1"> <tr> <td>Data Analysis</td></tr> <tr> <td>Item</td><td>State</td><td>Local</td></tr> <tr> <td>A</td><td></td><td></td></tr> <tr> <td>B</td><td></td><td></td></tr> <tr> <td>C*</td><td>64</td><td></td></tr> <tr> <td>D</td><td></td><td></td></tr> </table>	Data Analysis	Item	State	Local	A			B			C*	64		D		
Data Analysis																	
Item	State	Local															
A																	
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<p>(A) $f(x) = 16x^2 - 96x + 149$</p>	<table border="1"> <tr> <td>Error Analysis</td></tr> <tr> <td><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</td></tr> </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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<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early																	
<p>(B) $f(x) = 4x^2 + 41$</p>	<table border="1"> <tr> <td>Learning from Mistakes</td></tr> <tr> <td>Instructional Implications</td></tr> </table>	Learning from Mistakes	Instructional Implications														
Learning from Mistakes																	
Instructional Implications																	
<p>(C) $f(x) = 4x^2 - 24x + 41$</p>																	
<p>(D) $f(x) = 16x^2 - 96x + 29$</p>																	

*Correct Answer (C)

<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>! 2023 – Q25</p> <p>Which quadratic function in vertex form can be represented by the graph that has a vertex at (1, 46) and passes through the point (3, 10)?</p>	<table border="1"> <tr> <td>Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Item Type</td><td>Multiple Choice (1 pt)</td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Item Type	Multiple Choice (1 pt)	Stimulus				
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Subcluster	Writing and Solving Quadratic Equations															
Content	Supporting															
Process																
Item Type	Multiple Choice (1 pt)															
Stimulus																
<p>(A) $y = 9(x - 3)^2 + 10$</p> <p>(B) $y = 9(x - 1)^2 + 46$</p> <p>(C) $y = -9(x - 3)^2 + 10$</p> <p>(D) $y = -9(x - 1)^2 + 46$</p>	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th><th>State</th><th>Local</th></tr> </thead> <tbody> <tr> <td>A</td><td>23</td><td></td></tr> <tr> <td>B</td><td>20</td><td></td></tr> <tr> <td>C</td><td>17</td><td></td></tr> <tr> <td>D*</td><td>40</td><td></td></tr> </tbody> </table>	Item	State	Local	A	23		B	20		C	17		D*	40	
Item	State	Local														
A	23															
B	20															
C	17															
D*	40															
<p>*Correct Answer (D)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>															

A.6(C) write quadratic functions when given real solutions and graphs of their related equations		Analysis of Assessed Standards							
2024 – Q2									
The graph of quadratic function h is shown on the grid.									
									
Which function is best represented by the graph of h ?									
(A) $h(x) = -x^2 - 8x - 15$									
(B) $h(x) = -x^2 + 8x - 15$									
(C) $h(x) = x^2 + 8x + 15$									
(D) $h(x) = x^2 - 8x + 15$									
*Correct Answer (A)									
Data Analysis									
Item	State	Local							
A*	77								
B									
C									
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.6(C) write quadratic functions when given real solutions and graphs of their related equations</p> <p>2023 – Q3</p> <p>The graph of quadratic function h is shown.</p> <p>Which function best represents h?</p> <p>(A) $h(x) = x^2 + 2x - 3$</p> <p>(B) $h(x) = x^2 - 2x - 3$</p> <p>(C) $h(x) = x^2 + 4x + 3$</p> <p>(D) $h(x) = x^2 - 4x + 3$</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: center;">Analysis of Assessed Standards</th> </tr> <tr> <td style="padding: 5px;">Cluster</td><td colspan="2" style="padding: 5px;">Quadratic Functions</td></tr> <tr> <td style="padding: 5px;">Subcluster</td><td colspan="2" style="padding: 5px;">Writing and Solving Quadratic Equations</td></tr> <tr> <td style="padding: 5px;">Content</td><td colspan="2" style="padding: 5px;">Supporting</td></tr> <tr> <td style="padding: 5px;">Process</td><td colspan="2" style="padding: 5px;"></td></tr> <tr> <td style="padding: 5px;">Item Type</td><td colspan="2" style="padding: 5px;">Multiple Choice (1 pt)</td></tr> <tr> <td style="padding: 5px;">Stimulus</td><td colspan="2" style="padding: 5px;"></td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: center;">Data Analysis</th> </tr> <tr> <th style="padding: 5px;">Item</th><th style="padding: 5px;">State</th><th style="padding: 5px;">Local</th></tr> <tr> <td style="padding: 5px;">A*</td><td style="padding: 5px;">74</td><td style="padding: 5px;"></td></tr> <tr> <td style="padding: 5px;">B</td><td style="padding: 5px;">9</td><td style="padding: 5px;"></td></tr> <tr> <td style="padding: 5px;">C</td><td style="padding: 5px;">6</td><td style="padding: 5px;"></td></tr> <tr> <td style="padding: 5px;">D</td><td style="padding: 5px;">10</td><td style="padding: 5px;"></td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: center;">Error Analysis</th> </tr> <tr> <td style="padding: 5px;"><input type="checkbox"/> Guessing</td><td style="padding: 5px;"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td style="padding: 5px;"><input type="checkbox"/> Careless Error</td><td style="padding: 5px;"><input type="checkbox"/> Stopped Too Early</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: center;">Learning from Mistakes</th> </tr> <tr> <th colspan="3" style="text-align: center;">Instructional Implications</th> </tr> <tr> <td colspan="3" style="height: 40px;"></td> </tr> </table>	Analysis of Assessed Standards			Cluster	Quadratic Functions		Subcluster	Writing and Solving Quadratic Equations		Content	Supporting		Process			Item Type	Multiple Choice (1 pt)		Stimulus			Data Analysis			Item	State	Local	A*	74		B	9		C	6		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					
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*Correct Answer (A)

A.6(C) write quadratic functions when given real solutions and graphs of their related equations		Analysis of Assessed Standards	
2022 – Q24		Cluster	Quadratic Functions
24 The solutions to $p(x) = 0$ are $x = -7$ and $x = 7$. Which quadratic function could represent p ?		Subcluster	Writing and Solving Quadratic Equations
F $p(x) = x^2 - 49$		Content	Supporting
G $p(x) = x^2 + 49$		Process	
H $p(x) = x^2 - 14$		Stimulus	
J $p(x) = x^2 + 14$		Data Analysis	
*Correct Answer (F)		Item	State
		F*	61
		G	14
		H	16
		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			

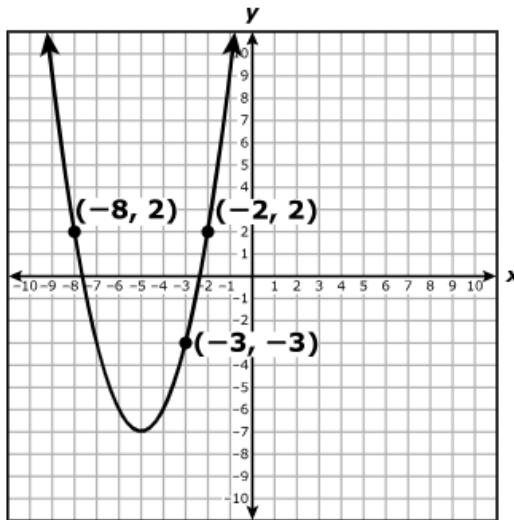
<p>A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry</p>	<p>Analysis of Assessed Standards</p>			
<p>2025 – Q15</p>	<p>Cluster Quadratic Functions</p>			
<p>A graph of a quadratic function is shown. Which location best represents the y-intercept of the function?</p>	<p>Subcluster Describing Quadratic Functions</p>			
<p>Select ONE correct answer.</p>	<p>Content Readiness</p>			
<p></p>	<p>Process</p>			
<p></p>	<p>Item Type Hot Spot (1 pt)</p>			
<p></p>	<p>Stimulus</p>			
<p></p>	<p>Data Analysis</p>			
<p></p>	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> </table>	Item	State	Local
Item	State	Local		
<p></p>	<table border="1"> <tbody> <tr> <td>Full Credit</td> <td>86</td> <td></td> </tr> </tbody> </table>	Full Credit	86	
Full Credit	86			
<p></p>	<table border="1"> <tbody> <tr> <td>No Credit</td> <td>14</td> <td></td> </tr> </tbody> </table>	No Credit	14	
No Credit	14			
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<p>*Correct Answer (Point at (0, -3))</p>	<table border="1"> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>			

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

Analysis of Assessed Standards

2025 – Q21

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



Which equation represents the axis of symmetry of the graph of f ?

(A) $x = -5$

(B) $x = -3$

(C) $y = -7$

(D) $y = 2$

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions

Content Readiness

Process

Item Type Multiple Choice (1 pt)

Stimulus

Data Analysis

Item	State	Local
A*	59	
B		
C		
D		

Error Analysis

Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

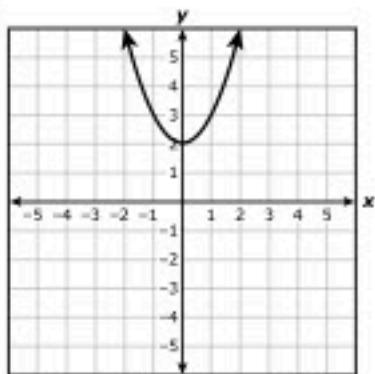
Learning from Mistakes
Instructional Implications

*Correct Answer (A)

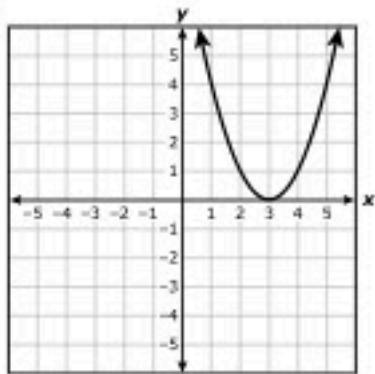
<p>A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry</p>	<p>Analysis of Assessed Standards</p>	
2024 – Q4	Cluster	Quadratic Functions
	Subcluster	Describing Quadratic Functions

Which graph best represents a quadratic function that has no real zeros?

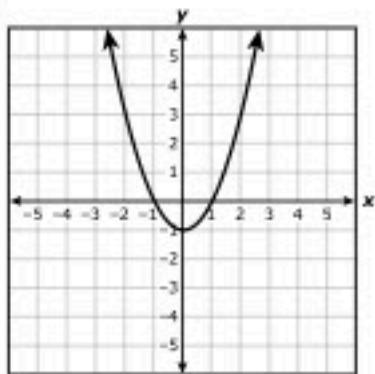
(A)



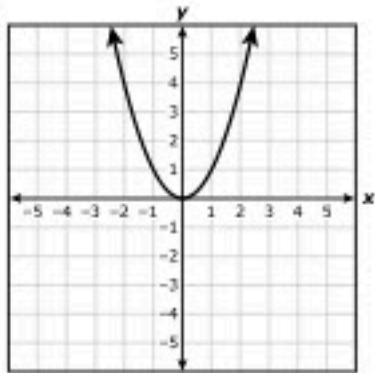
(B)



(C)



(D)



Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	58	

B

C

D

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

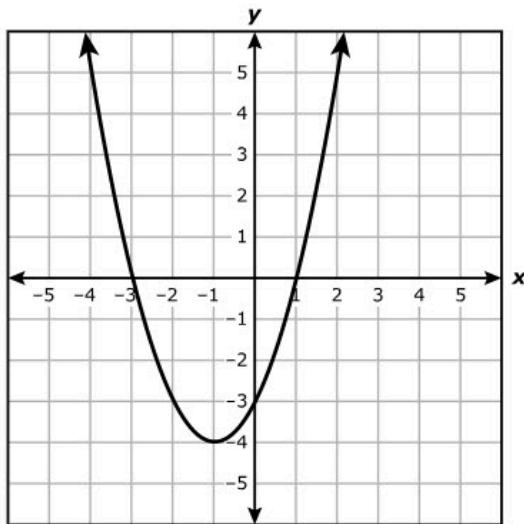
Learning from Mistakes Instructional Implications

*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

2024 – Q25

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



Complete the statement about the quadratic function.

Move the correct answer to each box. Not all answers will be used.

minimum maximum -4 -3 -1 0 1

The function has a [] value of [].

*Correct Answer (minimum; -4)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

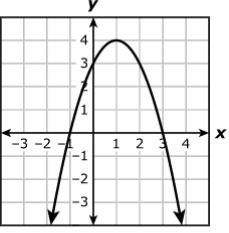
Data Analysis

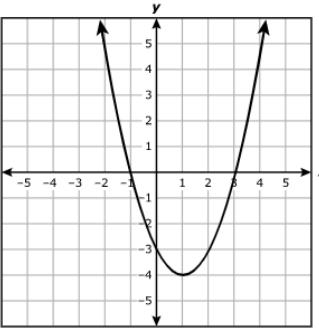
Item	State	Local
Full Credit	64	
No Credit	10	
Partial Credit	26	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

<p>A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry</p>	<p>Analysis of Assessed Standards</p>															
<p>2023 – Q19</p>	<p>Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process</p>															
<p>The graph of a quadratic function is shown on the grid.</p>	<p>Item Type Multiple Choice (1 pt) Stimulus</p>															
	<p>Data Analysis</p>															
<p>Which statement appears to be true?</p> <ul style="list-style-type: none"> <input type="radio"/> A The function has 3 zeros. <input type="radio"/> B The maximum value of the function is 3. <input type="radio"/> C The vertex of the graph of the function is $(4, 1)$. <input checked="" type="radio"/> D The equation of the axis of symmetry of the graph of the function is $x = 1$. 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Item</th> <th style="text-align: center;">State</th> <th style="text-align: center;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">8</td> <td></td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">11</td> <td></td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">29</td> <td></td> </tr> <tr> <td style="text-align: center;">D*</td> <td style="text-align: center;">52</td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	Item	State	Local	A	8		B	11		C	29		D*	52	
Item	State	Local														
A	8															
B	11															
C	29															
D*	52															
<p>*Correct Answer (D)</p>																

<p>A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry</p>	<p>Analysis of Assessed Standards</p>															
<p>! 2023 – Q49</p>	<p>Cluster Quadratic Functions Subcluster Describing Quadratic Functions</p>															
<p>The graph of a quadratic function is shown.</p>	<p>Content Readiness</p>															
	<p>Process</p>															
<p>Which values best represent the zeros of the function?</p>	<p>Item Type Multiselect (2 pts)</p>															
<p>Select TWO correct answers.</p>	<p>Stimulus</p>															
<p><input type="checkbox"/> $x = 1$</p> <p><input type="checkbox"/> $x = -4$</p> <p><input type="checkbox"/> $x = -1$</p> <p><input type="checkbox"/> $x = 3$</p> <p><input type="checkbox"/> $x = 0$</p> <p><input type="checkbox"/> $x = -3$</p>	<p>Data Analysis</p> <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>Full Credit</td> <td>69</td> <td></td> </tr> <tr> <td>No Credit</td> <td>10</td> <td></td> </tr> <tr> <td>Partial Credit</td> <td>21</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	Item	State	Local	Full Credit	69		No Credit	10		Partial Credit	21				
Item	State	Local														
Full Credit	69															
No Credit	10															
Partial Credit	21															
<p>*Correct Answer (C, D)</p>																

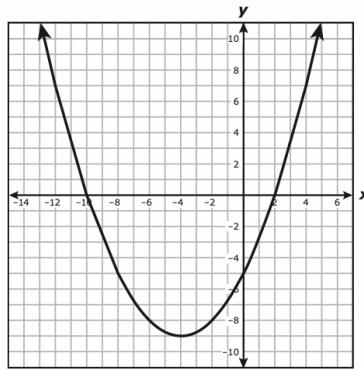
A.7(A) graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

! 2022 – Q1

- 1 The graph of quadratic function r is shown on the grid.



Which answer choice best represents the intercepts of the graph of r ?

- A** x-intercept: $(5, 0)$
y-intercepts: $(0, 10)$ and $(0, -2)$
- B** x-intercepts: $(0, -10)$ and $(0, 2)$
y-intercept: $(-5, 0)$
- C** x-intercept: $(0, 5)$
y-intercepts: $(10, 0)$ and $(-2, 0)$
- D** x-intercepts: $(-10, 0)$ and $(2, 0)$
y-intercept: $(0, -5)$

*Correct Answer (D)

Data Analysis

Item	State	Local
A	4	
B	20	
C	5	
D*	70	

Error Analysis

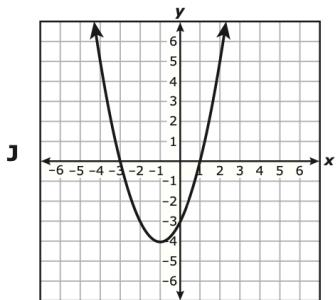
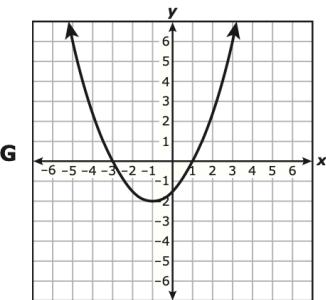
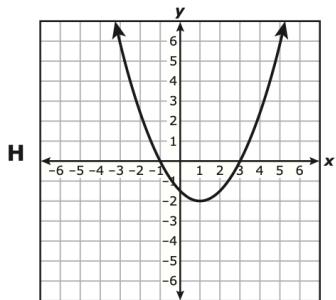
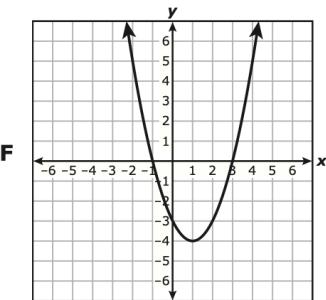
- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

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

2022 – Q40

40 Which graph best represents $h(x) = (x + 1)(x - 3)$?



*Correct Answer (F)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Stimulus	

Data Analysis

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

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			
2025 – Q9		Cluster	Quadratic Functions		
Which statement about the zeros of $h(x) = 3(x - 5)(x + 7)$ is true?		Subcluster	Writing and Solving Quadratic Equations		
<input type="radio"/> A The zeros are 15 and -21 because $h(15) = 0$ and $h(-21) = 0$.		Content	Supporting		
<input type="radio"/> B The zeros are -15 and 21 because $h(-15) = 0$ and $h(21) = 0$.		Process			
<input type="radio"/> C The zeros are 5 and -7 because $h(5) = 0$ and $h(-7) = 0$.		Item Type	Multiple Choice (1 pt)		
<input type="radio"/> D The zeros are -5 and 7 because $h(-5) = 0$ and $h(7) = 0$.		Stimulus			
Data Analysis					
	Item	State	Local		
	A				
	B				
	C*	64			
	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					

*Correct Answer (C)

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
! 2024 – Q34	Cluster Quadratic Functions
	Subcluster Writing and Solving Quadratic Equations
	Content Supporting
	Process
	Item Type Drag and Drop (2 pts)
	Stimulus
Data Analysis	
	Item State Local
	Full Credit 17
	No Credit 47
	Partial Credit 36
	Error Analysis
	<input type="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 ((2x + 3); (x - 5))

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	
! 2023 – Q8	Cluster	Quadratic Functions
Which statement about $f(x) = 4x^2 - 36x + 81$ is true?	Subcluster	Writing and Solving Quadratic Equations
<p>(A) The zeros are $\frac{3}{4}$ and -27 because $f(x) = (4x - 3)(x - 27)$.</p> <p>(B) The zeros are $-\frac{3}{2}$ and $\frac{27}{2}$ because $f(x) = (2x + 3)(2x + 27)$.</p> <p>(C) The zeros are $\pm \frac{9}{2}$ because $f(x) = (2x - 9)(2x + 9)$.</p> <p>(D) The only zero is $\frac{9}{2}$ because $f(x) = (2x - 9)^2$.</p>	Content	Supporting
	Process	
	Item Type	Multiple Choice (1 pt)
	Stimulus	
	Data Analysis	
	Item	State
	A	13
	B	17
	C	17
	D*	53
*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.7(B) describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions	Analysis of Assessed Standards	
2022 – Q30	Cluster	Quadratic Functions
30 Given $f(x) = x^2 - 36$, which statement is true?	Subcluster	Writing and Solving Quadratic Equations
<p>F The only zero, 6, can be found when $0 = (x - 6)(x - 6)$.</p> <p>G The only zero, 18, can be found when $0 = (x - 18)(x - 18)$.</p> <p>H The zeros, -6 and 6, can be found when $0 = (x + 6)(x - 6)$.</p> <p>J The zeros, -18 and 18, can be found when $0 = (x + 18)(x - 18)$.</p>	Content	Supporting
	Process	
	Stimulus	
	Data Analysis	
	Item	State
	F	12
	G	10
	H*	70
	J	8
*Correct Answer (H)	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
	Learning from Mistakes Instructional Implications	

<p>A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d</p> <p>2025 – Q12</p> <p>The quadratic function $f(x) = x^2$ with vertex $(0, 0)$ has been transformed to create $g(x) = f(x + 8.7)$. What is the vertex of g?</p> <p> <input type="radio"/> Ⓛ $(0, 8.7)$ <input type="radio"/> Ⓜ $(0, -8.7)$ <input type="radio"/> Ⓝ $(8.7, 0)$ <input checked="" type="radio"/> Ⓞ $(-8.7, 0)$ </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>Item Type</td><td>Multiple Choice (1 pt)</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></td><td></td></tr> <tr> <td>B</td><td></td><td></td></tr> <tr> <td>C</td><td></td><td></td></tr> <tr> <td>D*</td><td>41</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		Item Type	Multiple Choice (1 pt)	Stimulus		Item	State	Local	A			B			C			D*	41		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Cluster	Quadratic Functions																															
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<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																															

*Correct Answer (D)

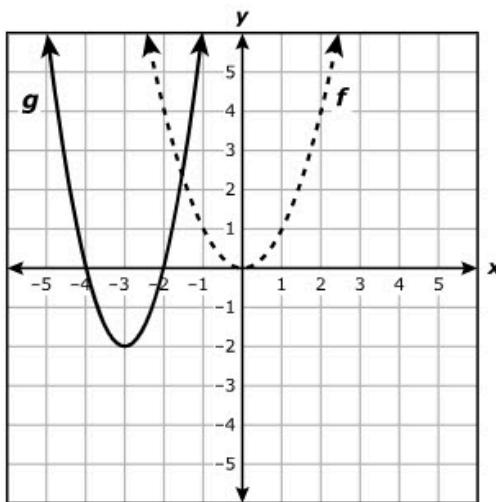
A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards																		
2025 – Q39	Cluster Quadratic Functions																		
	Subcluster Describing Quadratic Functions																		
	Content Readiness																		
	Process																		
	Item Type Inline Choice (2 pts)																		
	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;">Full Credit</td> <td style="text-align: center;">36</td> <td></td> </tr> <tr> <td style="text-align: center;">No Credit</td> <td style="text-align: center;">37</td> <td></td> </tr> <tr> <td style="text-align: center;">Partial Credit</td> <td style="text-align: center;">27</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Item	State	Local	Full Credit	36		No Credit	37		Partial Credit	27							
Item	State	Local																	
Full Credit	36																		
No Credit	37																		
Partial Credit	27																		
	Error Analysis																		
	<input type="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 (right; up)

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

! 2024 – Q21

The quadratic function $f(x) = x^2$ is transformed to create g as shown in the graph.



What is the equation for g ?

(A) $g(x) = f(x + 3) - 2$

(B) $g(x) = 2f(x + 3) - 2$

(C) $g(x) = f(x - 3) + 2$

(D) $g(x) = 2f(x - 3) + 2$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	44	
C		
D		

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

2024 – Q29

If $f(x) = x^2$ and $g(x) = f(x + 7.2)$, what is the vertex of the graph of g ?

(A) $(7.2, 0)$

(B) $(-7.2, 0)$

(C) $(0, 7.2)$

(D) $(0, -7.2)$

*Correct Answer (B)

Analysis of Assessed Standards

Cluster	Quadratic Functions
Subcluster	Describing Quadratic Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	41	
C		
D		

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards															
<p>! 2023 – Q38</p> <p>The function $f(x) = x^2$ was transformed to create the function $g(x) = f(x - 3) - 9$. What are the coordinates of the vertex of the graph of g?</p> <p>Move the correct answer to each box. Not all answers will be used.</p> <p style="margin-left: 40px;">(<input style="width: 20px; height: 15px; border: 1px solid black;" type="text" value="-9"/> , <input style="width: 20px; height: 15px; border: 1px solid black;" type="text" value="3"/>)</p>	<p>Cluster Quadratic Functions</p> <p>Subcluster Describing Quadratic Functions</p> <p>Content Readiness</p> <p>Process</p> <p>Item Type Drag and Drop (2 pts)</p> <p>Stimulus</p>															
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Item	State	Local														
Full Credit	30															
No Credit	35															
Partial Credit	35															

*Correct Answer (3, -9)

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards															
<p>2022 – Q13</p> <p>13 Which answer choice describes how the graph of $f(x) = x^2$ was transformed to create the graph of $n(x) = x^2 - 1$?</p>	<p>Cluster Quadratic Functions</p> <p>Subcluster Describing Quadratic Functions</p> <p>Content Readiness</p> <p>Process</p> <p>Stimulus</p>															
<p>A A vertical shift up</p> <p>B A horizontal shift to the left</p> <p>C A vertical shift down</p> <p>D A horizontal shift to the right</p>	<p>Data Analysis</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; background-color: #e0e0e0;">Item</th> <th style="text-align: center; background-color: #e0e0e0;">State</th> <th style="text-align: center; background-color: #e0e0e0;">Local</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">11</td> <td></td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">13</td> <td></td> </tr> <tr> <td style="text-align: center;">C*</td> <td style="text-align: center;">67</td> <td></td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">8</td> <td></td> </tr> </tbody> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	Item	State	Local	A	11		B	13		C*	67		D	8	
Item	State	Local														
A	11															
B	13															
C*	67															
D	8															
<p>*Correct Answer (C)</p>																

A.7(C) determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a , b , c , and d	Analysis of Assessed Standards															
2022 – Q50	Cluster Quadratic Functions Subcluster Describing Quadratic Functions Content Readiness Process Stimulus															
<p>50 Quadratic functions p and q are graphed on the grid. The graph of p was transformed to create the graph of q.</p>	Data Analysis															
<p>Which function best represents the graph of q?</p> <p>F $q(x) = -(x - 2)^2$ G $q(x) = -(x + 2)^2$ H $q(x) = -x^2 - 2$ J $q(x) = -x^2 + 2$</p>	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>F</td> <td>11</td> <td></td> </tr> <tr> <td>G</td> <td>17</td> <td></td> </tr> <tr> <td>H</td> <td>11</td> <td></td> </tr> <tr> <td>J*</td> <td>60</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	11		G	17		H	11		J*	60	
Item	State	Local														
F	11															
G	17															
H	11															
J*	60															
<p>*Correct Answer (J)</p>	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	
!	2025 – Q26	Cluster	Quadratic Functions
	The equation $x(x + 3) = 108$ can be used to find the width, x , of a rectangular deck that has an area of 108 square feet. What is the width of the deck in feet?	Subcluster	Writing and Solving Quadratic Equations
	(A) 6 ft	Content	Readiness
	(B) 4 ft	Process	
	(C) 9 ft	Item Type	Multiple Choice (1 pt)
	(D) 3 ft	Stimulus	
Data Analysis			
	Item	State	Local
	A		
	B		
	C*	56	
	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			

*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	
2025 – Q36	Cluster	Quadratic Functions
What are the solutions to the equation $(2x + 1)^2 = 25$?	Subcluster	Writing and Solving Quadratic Equations
Move the correct answer to each box. Not all answers will be used.	Content	Readiness
	Process	
	Item Type	Drag and Drop (2 pts)
	Stimulus	
	Data Analysis	
	Item	State
	Full Credit	34
	No Credit	25
	Partial Credit	42
	Error Analysis	
	<input type="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 (-3; 2)

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	
2024 – Q18	Cluster	Quadratic Functions
Function g is defined by $g(x) = 3x^2 - 2x - 5$. What are the solutions to $g(x) = 0$?	Subcluster	Writing and Solving Quadratic Equations
	Content	Readiness
	Process	
	Item Type	Multiple Choice (1 pt)
	Stimulus	
	Data Analysis	
	Item	State
	A	
	B*	54
	C	
	D	
	Error Analysis	
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
*Correct Answer (B)	Learning from Mistakes Instructional Implications	

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		
! 2024 – Q31	Cluster	Quadratic Functions	
	Subcluster	Writing and Solving Quadratic Equations	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A		
	B		
	C		
	D*	30	
Error Analysis			
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes Instructional Implications			
<small>*Correct Answer (D)</small>			

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															
! 2023 – Q41	<p>Function k is defined as $k(x) = x^2 + 32x + 248$. What are the solutions to $k(x) = 0$?</p> <p>(A) $x = -16 + 2\sqrt{2}$ and $x = -16 - 2\sqrt{2}$</p> <p>(B) $x = 16 + 2\sqrt{2}$ and $x = 16 - 2\sqrt{2}$</p> <p>(C) $x = -32 + 4\sqrt{2}$ and $x = -32 - 4\sqrt{2}$</p> <p>(D) $x = 32 + 4\sqrt{2}$ and $x = 32 - 4\sqrt{2}$</p>															
	Cluster Quadratic Functions Subcluster Writing and Solving Quadratic Equations Content Readiness Process Item Type Multiple Choice (1 pt) Stimulus															
	Data Analysis															
	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A*</td> <td>30</td> <td></td> </tr> <tr> <td>B</td> <td>28</td> <td></td> </tr> <tr> <td>C</td> <td>27</td> <td></td> </tr> <tr> <td>D</td> <td>14</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A*	30		B	28		C	27		D	14	
Item	State	Local														
A*	30															
B	28															
C	27															
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.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															
2022 – Q17	<p>17 Which value of x is the solution to this equation?</p> $5x^2 = 30x - 45$ <p>A $x = 3$ B $x = -3$ C $x = 5$ D $x = -5$</p>															
	Cluster Quadratic Functions Subcluster Writing and Solving Quadratic Equations Content Readiness Process Stimulus															
	Data Analysis															
	<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>A*</td> <td>56</td> <td></td> </tr> <tr> <td>B</td> <td>15</td> <td></td> </tr> <tr> <td>C</td> <td>18</td> <td></td> </tr> <tr> <td>D</td> <td>11</td> <td></td> </tr> </tbody> </table>	Item	State	Local	A*	56		B	15		C	18		D	11	
Item	State	Local														
A*	56															
B	15															
C	18															
D	11															
	Error Analysis															
	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early															
	Learning from Mistakes Instructional Implications															

*Correct Answer (A)

A.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		
2022 – Q27	Cluster	Quadratic Functions	
27 What is the positive solution to $x^2 + 9x - 22 = 0$?	Subcluster	Writing and Solving Quadratic Equations	
Record your answer and fill in the bubbles on your answer document.	Content	Readiness	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	2	45*	
		54	
*Correct Answer (2)	Error Analysis		
	<input type="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(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	
! 2023 – Q13		Cluster	Quadratic Functions
An experiment examined the relationship between the number of miles a car traveled, y , per gallon of gasoline and the speed of the car, x , in miles per hour. The table displays the data collected.		Subcluster	Writing and Solving Quadratic Equations
		Content	Supporting
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
		Data Analysis	
		Item	State
		A*	41
		B	32
		C	9
		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)			

<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>2022 – Q22</p> <p>22 A person dives into a pool from its edge to swim to the other side. The table shows the depth in feet of the person from the surface of the water after x seconds. The data can be modeled by a quadratic function.</p> <p style="text-align: center;">Pool</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Time, x (seconds)</th><th style="text-align: center;">Depth of Person from Surface of Water, $d(x)$ (feet)</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td><td style="text-align: center;">−2.85</td></tr> <tr> <td style="text-align: center;">4</td><td style="text-align: center;">−8.28</td></tr> <tr> <td style="text-align: center;">6</td><td style="text-align: center;">−9.3</td></tr> <tr> <td style="text-align: center;">8.5</td><td style="text-align: center;">−7.65</td></tr> <tr> <td style="text-align: center;">10</td><td style="text-align: center;">−5.1</td></tr> <tr> <td style="text-align: center;">11.5</td><td style="text-align: center;">−1.38</td></tr> </tbody> </table> <p>Which function best models the data?</p> <p>F $d(x) = 0.05x^2 + 0.74x$</p> <p>G $d(x) = 0.05x^2 + 0.74x + 9.17$</p> <p>H $d(x) = 0.26x^2 - 3.11x$</p> <p>J $d(x) = 0.26x^2 - 3.11x + 1$</p> <p>*Correct Answer (H)</p>	Time, x (seconds)	Depth of Person from Surface of Water, $d(x)$ (feet)	1	−2.85	4	−8.28	6	−9.3	8.5	−7.65	10	−5.1	11.5	−1.38	<p>Analysis of Assessed Standards</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50px; vertical-align: top;">Cluster</td><td>Quadratic Functions</td></tr> <tr> <td>Subcluster</td><td>Writing and Solving Quadratic Equations</td></tr> <tr> <td>Content</td><td>Supporting</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50px; text-align: center;">Item</th><th style="width: 50px; text-align: center;">State</th><th style="width: 50px; text-align: center;">Local</th></tr> <tr> <td style="text-align: center;">F</td><td style="text-align: center;">12</td><td></td></tr> <tr> <td style="text-align: center;">G</td><td style="text-align: center;">14</td><td></td></tr> <tr> <td style="text-align: center;">H*</td><td style="text-align: center;">63</td><td></td></tr> <tr> <td style="text-align: center;">J</td><td style="text-align: center;">11</td><td></td></tr> </table> <p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Quadratic Functions	Subcluster	Writing and Solving Quadratic Equations	Content	Supporting	Process		Stimulus		Item	State	Local	F	12		G	14		H*	63		J	11	
Time, x (seconds)	Depth of Person from Surface of Water, $d(x)$ (feet)																																							
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F	12																																							
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A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains		Analysis of Assessed Standards		
! 2025 – Q17		Cluster	Quadratic Functions	
		Subcluster	Describing Quadratic Functions	
		Content	Supporting	
		Process		
		Item Type	Equation Editor (1 pt)	
		Stimulus		
Data Analysis				
	Item	State	Local	
	Full Credit	44		
	No Credit	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 (68)				

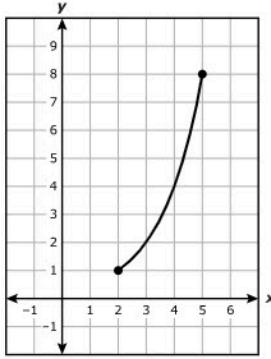
A.12(B) evaluate functions, expressed in function notation, given one or more elements in their domains	Analysis of Assessed Standards	
2024 – Q48	Cluster	Quadratic Functions
If $f(x) = 3x^2 - 7$, what is the value of $f(4)$?	Subcluster	Describing Quadratic Functions
(A) 29	Content	Supporting
(B) 17	Process	
(C) 41	Item Type	Multiple Choice (1 pt)
(D) 27	Stimulus	
Data Analysis		
	Item	State
	A	
	B	
	C*	57
	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		

*Correct Answer (C)

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

<p>A.9(A) determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities</p>	<p>Analysis of Assessed Standards</p>					
<p>2024 – Q17</p>	<p>Cluster Exponential Functions Subcluster Describing Exponential Functions</p>					
<p>A part of an exponential function is graphed on the grid.</p>	<p>Content Supporting</p>					
	<p>Process</p>					
	<p>Item Type Multiselect (2 pts)</p>					
<p>Stimulus</p>						
	<p>Data Analysis</p>					
<table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> </table>	Item	State	Local	<table border="1"> <thead> <tr> <th>Full Credit</th> <th>49</th> </tr> </thead> </table>	Full Credit	49
Item	State	Local				
Full Credit	49					
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> The domain is the set of all real numbers greater than or equal to 1 and less than or equal to 8.</td> </tr> </tbody> </table>	<input type="checkbox"/> The domain is the set of all real numbers greater than or equal to 1 and less than or equal to 8.	<table border="1"> <tbody> <tr> <td><input type="checkbox"/> No Credit</td> <td>23</td> </tr> </tbody> </table>	<input type="checkbox"/> No Credit	23		
<input type="checkbox"/> The domain is the set of all real numbers greater than or equal to 1 and less than or equal to 8.						
<input type="checkbox"/> No Credit	23					
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> The domain is the set of all real numbers.</td> </tr> </tbody> </table>	<input type="checkbox"/> The domain is the set of all real numbers.	<table border="1"> <tbody> <tr> <td><input type="checkbox"/> Partial Credit</td> <td>28</td> </tr> </tbody> </table>	<input type="checkbox"/> Partial Credit	28		
<input type="checkbox"/> The domain is the set of all real numbers.						
<input type="checkbox"/> Partial Credit	28					
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> The range is the set of all real numbers greater than or equal to 1 and less than or equal to 8.</td> </tr> </tbody> </table>	<input type="checkbox"/> The range is the set of all real numbers greater than or equal to 1 and less than or equal to 8.	<table border="1"> <tbody> <tr> <td><input type="checkbox"/> Error Analysis</td> <td><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</td> </tr> </tbody> </table>	<input type="checkbox"/> Error Analysis	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts		
<input type="checkbox"/> The range is the set of all real numbers greater than or equal to 1 and less than or equal to 8.						
<input type="checkbox"/> Error Analysis	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts					
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> The range is the set of all real numbers greater than or equal to 2 and less than or equal to 5.</td> </tr> </tbody> </table>	<input type="checkbox"/> The range is the set of all real numbers greater than or equal to 2 and less than or equal to 5.	<table border="1"> <tbody> <tr> <td><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</td> </tr> </tbody> </table>	<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early			
<input type="checkbox"/> The range is the set of all real numbers greater than or equal to 2 and less than or equal to 5.						
<input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early						
<table border="1"> <tbody> <tr> <td><input type="checkbox"/> The range is the set of all real numbers.</td> </tr> </tbody> </table>	<input type="checkbox"/> The range is the set of all real numbers.	<table border="1"> <tbody> <tr> <td>Learning from Mistakes Instructional Implications</td> </tr> </tbody> </table>	Learning from Mistakes Instructional Implications			
<input type="checkbox"/> The range is the set of all real numbers.						
Learning from Mistakes Instructional Implications						
<p>*Correct Answer (B , D)</p>						

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

Analysis of Assessed Standards

! 2023 – Q18

Which statement about $p(x) = -7(4)^x$ is true?

- (A) The domain is all real numbers greater than or equal to 4.
- (B) The range is all real numbers less than 0.
- (C) The domain is all real numbers less than or equal to 0.
- (D) The range is all real numbers.

Cluster

Exponential Functions

Subcluster

Describing Exponential Functions

Content

Supporting

Process

Item Type

Multiple Choice (1 pt)

Stimulus

Data Analysis

Item

State

Local

A

23

B*

33

C

27

D

17

Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

**Learning from Mistakes
Instructional Implications**

*Correct Answer (B)

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	
	Cluster	Exponential Functions
2025 – Q49	Subcluster	Describing Exponential Functions
The population of a town can be modeled by the exponential function $P(t) = 26,080(0.85)^t$, where t represents the number of years since 2010.	Content	Supporting
Choose the correct answer from each drop-down menu to complete the sentences.	Process	
The initial population of the town in 2010 was [].	Item Type	Inline Choice (2 pts)
The population is [] at a rate of [] per year.	Stimulus	
Data Analysis		
	Item	State
	Full Credit	25
	No Credit	39
	Partial Credit	36
Error Analysis		
<input type="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 (26,080; decreasing; 15%)

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		
2024 – Q5	Cluster	Exponential Functions	
An investor deposited money into an investment account that earns interest compounded annually. The function shown models the amount of money in the account in dollars after t years.	Subcluster	Describing Exponential Functions	
$A(t) = 1,550(1.02)^t$	Content	Supporting	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C*	61	
	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		
*Correct Answer (C)			

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		
! 2023 – Q27	Cluster	Exponential Functions	
The function $w(t) = 270(1.029)^t$ can be used to estimate the number of whales in the North Atlantic Ocean at the end of t years. What does 1.029 represent in this function?	Subcluster	Describing Exponential Functions	
<p>(A) The initial number of whales in the North Atlantic Ocean</p> <p>(B) The decay factor of the number of whales in the North Atlantic Ocean</p> <p>(C) The number of whales in the North Atlantic Ocean at the end of the first year</p> <p>(D) The growth factor of the number of whales in the North Atlantic Ocean</p>	Content	Supporting	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	10	
	B	14	
	C	19	
Correct Answer (D)	D	57	
	Error Analysis		
	<input type="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		
2022 – Q36	Cluster	Exponential Functions	
36 An insect population after x months can be modeled by the function $g(x) = 18(1.3)^x$. Which statement is the best interpretation of one of the values in this function?	Subcluster	Describing Exponential Functions	
<p>F The insect population increased by 13 insects each month.</p> <p>G The insect population decreased by 13 insects each month.</p> <p>H The insect population increased at a rate of 30% each month.</p> <p>J The insect population decreased at a rate of 30% each month.</p>	Content	Supporting	
	Process		
	Stimulus		
	Data Analysis		
	Item	State	Local
	F	22	
	G	10	
	H*	61	
	J	7	
*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.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	
2025 – Q18		Cluster	Exponential Functions
The table represents some points on the graph of an exponential function.		Subcluster	Writing Exponential Functions
		Content	Readiness
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
	A		
	B		
	C*	65	
	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			

*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	Analysis of Assessed Standards		
2025 – Q47	Cluster	Exponential Functions	
A bank customer opened a money market account with \$2,500. Each year the bank will add interest to the account, which will increase the account's value by 0.5%.	Subcluster	Writing Exponential Functions	
Which function can be used to determine the amount, A, in the account after t years?	Content	Readiness	
<p>(A) $A(t) = 2,500(0.50)^t$</p> <p>(B) $A(t) = 2,500(1.005)^t$</p> <p>(C) $A(t) = 2,500 + 0.50t$</p> <p>(D) $A(t) = 2,500(1.005)t$</p>	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B*	41	
	C		
	D		
*Correct Answer (B)	Error Analysis		
	<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
	Learning from Mistakes Instructional Implications		

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

2024 – Q19

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

x	$g(x)$
1	48
2	72
3	108
4	162

Which function represents the relation shown in the table?

(A) $g(x) = 32\left(\frac{2}{3}\right)^x$

(B) $g(x) = 48\left(\frac{2}{3}\right)^x$

(C) $g(x) = 32\left(\frac{3}{2}\right)^x$

(D) $g(x) = 48\left(\frac{3}{2}\right)^x$

*Correct Answer (C)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)

Stimulus

Data Analysis

Item	State	Local
A		
B		
C*	59	
D		

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

! 2024 – Q43

A company currently has 500 employees. The number of employees is expected to grow at a rate of 2% each year.

Write an exponential function to model the number of employees in the company, y , after x years.

Enter your answer in the box provided.

$y =$

<input type="button" value="←"/>	<input type="button" value="→"/>	<input type="button" value="↶"/>	<input type="button" value="↷"/>	<input type="button" value="✖"/>			
1	2	3	x	y			
4	5	6	+	-	•	÷	
7	8	9	<	≤	=	≥	>
	0		\square^0	\square_0	()	$\sqrt{\square}$	π
.	-	$\frac{\square}{\square}$					

*Correct Answer (500(1.02) x)

Analysis of Assessed Standards

Cluster	Exponential Functions
Subcluster	Writing Exponential Functions
Content	Readiness
Process	
Item Type	Equation Editor (1 pt)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	20	
No Credit	80	

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		
! 2023 – Q14	Cluster	Exponential Functions	
<p>Researchers studied the population of a town over time and modeled the data using an exponential function.</p> <ul style="list-style-type: none"> The initial estimated population was 48,000. After the first year, the population of the town was 50,400. <p>If the population of the town continues to grow at this rate each year, which function can be used to model the population x years after the researchers began their study?</p>	Subcluster	Writing Exponential Functions	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
Data Analysis			
	Item	State	Local
	A*	37	
	B	16	
	C	14	
	D	32	
Error Analysis			
	<input type="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)

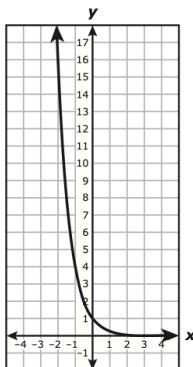
A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay	Analysis of Assessed Standards		
2023 – Q36	Cluster	Exponential Functions	
This year the number of students who participated in sports was 317. Each year the number of students who participate in sports increases by 4%.	Subcluster	Writing Exponential Functions	
Which function can be used to model the number of students participating in sports after x years?	Content	Readiness	
<p>(A) $f(x) = 317(4)^x$</p> <p>(B) $f(x) = 4x + 317$</p> <p>(C) $f(x) = 317(1.04)^x$</p> <p>(D) $f(x) = 1.04x + 317$</p>	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A	30	
	B	13	
	C*	50	
	D	6	
*Correct Answer (C)	Error Analysis		
	<input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts <input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early		
	Learning from Mistakes Instructional Implications		

A.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

2022 – Q9

- 9** An exponential function is graphed on the grid.



Which function is best represented by the graph?

- A** $p(x) = (0.25)^x$
- B** $p(x) = 2(0.5)^x$
- C** $p(x) = (1.25)^x$
- D** $p(x) = (25)^x$

Cluster Exponential Functions

Subcluster Writing Exponential Functions

Content Readiness

Process

Stimulus

Data Analysis

Item	State	Local
A*	68	
B	14	
C	15	
D	3	

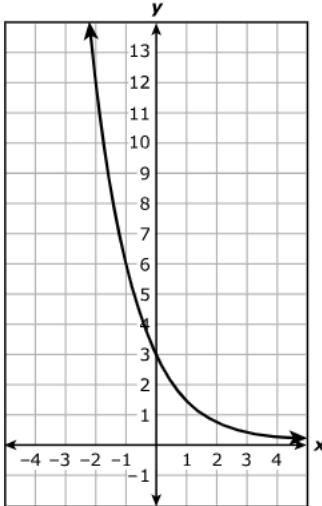
Error Analysis

- Guessing Mixed Up Concepts
- Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

*Correct Answer (A)

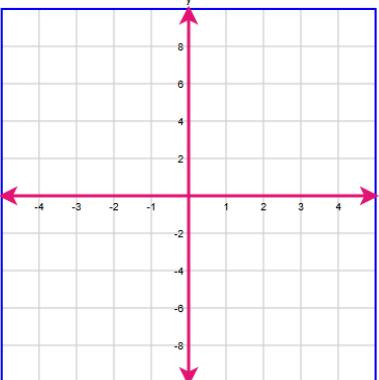
<p>A.9(C) write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay</p> <p>2022 – Q26</p> <p>26 The table shows the value in dollars of a motorcycle at the end of x years.</p> <p style="text-align: center;">Motorcycle</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of Years, x</th><th>0</th><th>1</th><th>2</th><th>3</th></tr> </thead> <tbody> <tr> <td>Value, $v(x)$ (dollars)</td><td>9,000</td><td>8,100</td><td>7,290</td><td>6,561</td></tr> </tbody> </table> <p>Which exponential function models this situation?</p> <p>F $v(x) = 9,000(1.1)^x$</p> <p>G $v(x) = 9,000(0.9)^x$</p> <p>H $v(x) = 8,100(1.1)^x$</p> <p>J $v(x) = 8,100(0.9)^x$</p>	Number of Years, x	0	1	2	3	Value, $v(x)$ (dollars)	9,000	8,100	7,290	6,561	<p>Analysis of Assessed Standards</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Cluster</td><td>Exponential Functions</td></tr> <tr> <td>Subcluster</td><td>Writing Exponential Functions</td></tr> <tr> <td>Content</td><td>Readiness</td></tr> <tr> <td>Process</td><td></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table> <p>Data Analysis</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">Item</td><td>State</td><td>Local</td></tr> <tr> <td>F</td><td>12</td><td></td></tr> <tr> <td>G*</td><td>65</td><td></td></tr> <tr> <td>H</td><td>14</td><td></td></tr> <tr> <td>J</td><td>8</td><td></td></tr> </table> <p>Error Analysis</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Guessing</td><td style="width: 50%;"><input type="checkbox"/> Mixed Up Concepts</td></tr> <tr> <td><input type="checkbox"/> Careless Error</td><td><input type="checkbox"/> Stopped Too Early</td></tr> </table> <p>Learning from Mistakes Instructional Implications</p>	Cluster	Exponential Functions	Subcluster	Writing Exponential Functions	Content	Readiness	Process		Stimulus		Item	State	Local	F	12		G*	65		H	14		J	8		<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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<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																																							
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																																							
<p>*Correct Answer (G)</p>																																								

A.9(D) graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems		Analysis of Assessed Standards	
2025 – Q2		Cluster	Exponential Functions
The graph of an exponential function is shown on the grid.		Subcluster	Describing Exponential Functions
		Content	Readiness
		Process	
		Item Type	Multiple Choice (1 pt)
		Stimulus	
Data Analysis			
	Item	State	Local
A			
B			
C			
D*	79		
Error Analysis			
<input type="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 statement is best represented by the graph of the function?

- A The equation of the asymptote of the graph is $x = 4$.
- B The function is increasing on the interval $x > 0$ and decreasing on the interval $x < 0$.
- C The x -intercept of the graph of the function is $(8, 0)$.
- D The y -intercept of the graph of the function is $(0, 3)$.

*Correct Answer (D)

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																		
! 2025 – Q33																			
Graph the function $f(x) = 6\left(\frac{1}{3}\right)^x$.																			
Select the type of graph. Drag the two points and the asymptote, if applicable, to their correct positions.																			
<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <input type="checkbox"/> Linear <input type="checkbox"/> Quadratic <input checked="" type="checkbox"/> Exponential </div>																			
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Cluster</th> <th>Exponential Functions</th> </tr> </thead> <tbody> <tr> <td>Subcluster</td> <td>Describing Exponential Functions</td> </tr> <tr> <td>Content</td> <td>Readiness</td> </tr> <tr> <td>Process</td> <td></td> </tr> <tr> <td>Item Type</td> <td>Graphing (1 pt)</td> </tr> <tr> <td>Stimulus</td> <td></td> </tr> </tbody> </table>	Cluster	Exponential Functions	Subcluster	Describing Exponential Functions	Content	Readiness	Process		Item Type	Graphing (1 pt)	Stimulus							
Cluster	Exponential Functions																		
Subcluster	Describing Exponential Functions																		
Content	Readiness																		
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Stimulus																			
	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>Full Credit</td> <td>34</td> <td></td> </tr> <tr> <td>No Credit</td> <td>66</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Item	State	Local	Full Credit	34		No Credit	66										
Item	State	Local																	
Full Credit	34																		
No Credit	66																		
<small>*Correct Answer (Exponential curve going through (0, 6) and (1, 2) with an asymptote of y = 0)</small>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="background-color: #cccccc;">Error Analysis</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><input type="checkbox"/> Guessing</td> <td style="text-align: center;"><input type="checkbox"/> Mixed Up Concepts</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/> Careless Error</td> <td style="text-align: center;"><input type="checkbox"/> Stopped Too Early</td> </tr> <tr> <td colspan="2" style="text-align: center; background-color: #cccccc;"> Learning from Mistakes Instructional Implications </td> </tr> <tr> <td colspan="2" style="height: 40px;"></td> </tr> </tbody> </table>	Error Analysis		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	Learning from Mistakes Instructional Implications											
Error Analysis																			
<input type="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	Analysis of Assessed Standards		
2024 – Q11	Cluster	Exponential Functions	
	Subcluster	Describing Exponential Functions	
	Content	Readiness	
	Process		
	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C*	53	
	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		

*Correct Answer (C)

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

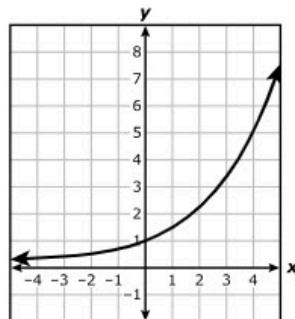
2024 – Q27

An exponential function has these characteristics:

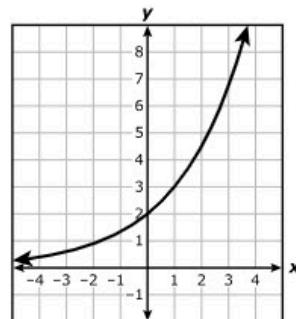
- The y -intercept is 2.
- The function increases at a rate of 50%.

Which graph best represents this function?

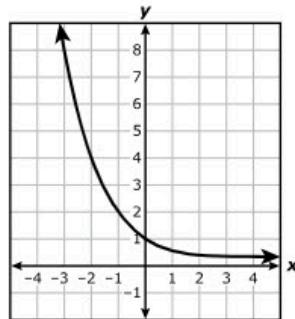
(A)



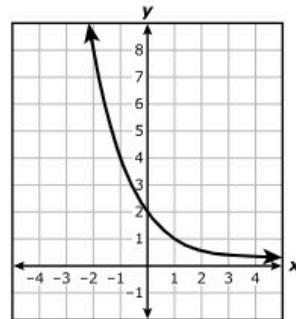
(C)



(B)



(D)



*Correct Answer (C)

Cluster

Exponential Functions

Subcluster

Describing Exponential Functions

Content

Readiness

Process

Item Type

Multiple Choice (1 pt)

Stimulus

Data Analysis

Item

State

Local

A

B

C*

74

D

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																			
2023 – Q9	Cluster Exponential Functions Subcluster Describing Exponential Functions Content Readiness Process Item Type Drag and Drop (2 pts) Stimulus																			
What is the equation of the asymptote of the graph of the function $y = 16(0.75)^x$? Move the correct answer to each box. Not all answers will be used.																				
x y 0 0.75 12 16 _____ = _____																				
_____ = _____ *Correct Answer (y, 0)	Data Analysis <table border="1"> <thead> <tr> <th>Item</th> <th>State</th> <th>Local</th> </tr> </thead> <tbody> <tr> <td>Full Credit</td> <td>14</td> <td></td> </tr> <tr> <td>No Credit</td> <td>27</td> <td></td> </tr> <tr> <td>Partial Credit</td> <td>59</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> 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	Item	State	Local	Full Credit	14		No Credit	27		Partial Credit	59					<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
Item	State	Local																		
Full Credit	14																			
No Credit	27																			
Partial Credit	59																			
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts																			
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early																			

<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>2023 – Q42</p> <p>A customer purchases an electronic device for \$650. Each year the value of the electronic device decreases by 30%. Which statement is true about the graph that represents the relationship between the value of the device in dollars, y, and the number of years, x, since the device was purchased?</p> <p>(A) The y-intercept of the graph is 650.</p> <p>(B) The y-intercept of the graph is 455.</p> <p>(C) The graph has a vertical asymptote at $x = 0$.</p> <p>(D) The graph has a horizontal asymptote at $y = 30$.</p>	Analysis of Assessed Standards	
Cluster	Exponential Functions	
Subcluster	Describing Exponential Functions	
Content	Readiness	
Process		
Item Type	Multiple Choice (1 pt)	
Stimulus		
Data Analysis		
Item	State	Local
A*	55	
B	14	
C	13	
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)

<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>2022 – Q20</p> <p>20 What is the value of the y-intercept of the graph of $h(x) = 12.3(4.9)^x$?</p> <p>Record your answer and fill in the bubbles on your answer document.</p>	Analysis of Assessed Standards	
Cluster	Exponential Functions	
Subcluster	Describing Exponential Functions	
Content	Readiness	
Process		
Stimulus		
Data Analysis		
Item	State	Local
12.3	50*	
	49	
Error Analysis		
<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts	
<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early	
Learning from Mistakes		
Instructional Implications		

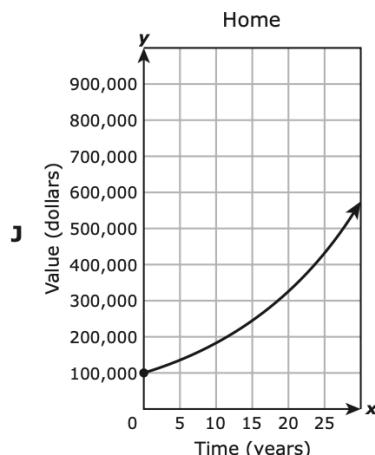
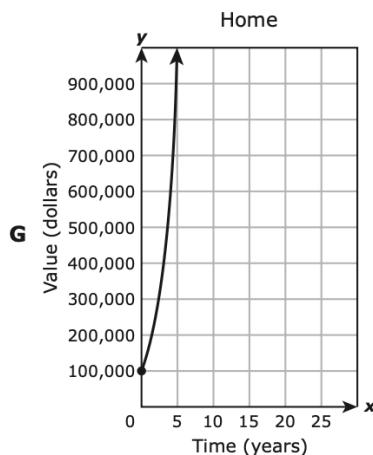
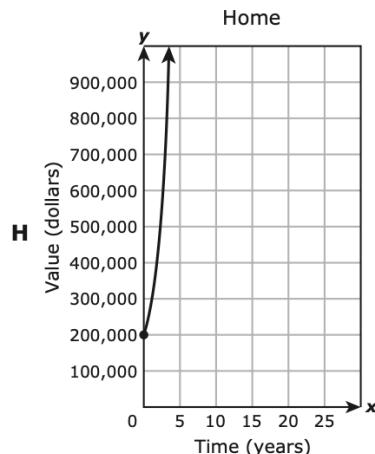
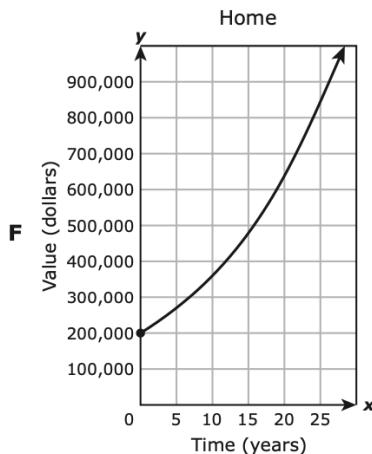
*Correct Answer (12.3)

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

2022 – Q52

- 52** The initial value of a home is \$200,000. The value of the home will increase at a rate of 6% each year.

Which graph best models this situation?



*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	10	
H	24	
J	13	

Error Analysis

- Guessing Mixed Up Concepts
 Careless Error Stopped Too Early

Learning from Mistakes Instructional Implications

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													
2025 – Q43		Cluster													
A student drops a ball and measures the height of the ball while it is bouncing. The table shows the height of the ball in inches, y , after it has bounced x times.		Exponential Functions													
<p style="text-align: center;">Bouncing Ball</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of Bounces, x</th> <th>Height of Ball, y (inches)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>72</td> </tr> <tr> <td>1</td> <td>43.2</td> </tr> <tr> <td>2</td> <td>25.9</td> </tr> <tr> <td>3</td> <td>15.6</td> </tr> <tr> <td>4</td> <td>9.3</td> </tr> </tbody> </table>		Number of Bounces, x	Height of Ball, y (inches)	0	72	1	43.2	2	25.9	3	15.6	4	9.3	Subcluster	
Number of Bounces, x	Height of Ball, y (inches)														
0	72														
1	43.2														
2	25.9														
3	15.6														
4	9.3														
		Writing Exponential Functions													
		Content													
Supporting		Process													
		Item Type													
Multiple Choice (1 pt)		Stimulus													
Data Analysis															
		Item													
		State													
		Local													
		A*													
		61													
		B													
		C													
		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															

Which exponential function best models the data?

(A) $y = 72(0.6)^x$

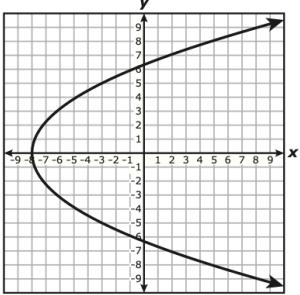
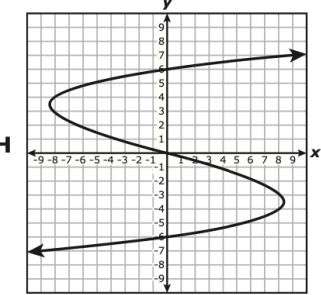
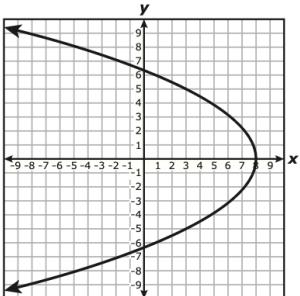
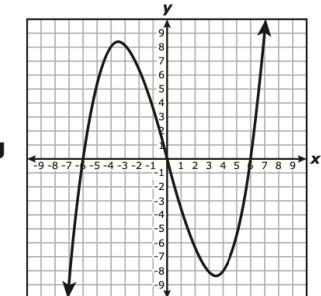
(B) $y = 43.2(0.6)^x$

(C) $y = 72(0.4)^x$

(D) $y = 43.2(0.4)^x$

*Correct Answer (A)

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																																	
2022 – Q44 <p>44 The table shows the net revenue in millions of dollars of a company every three months for two years. An exponential function can be used to model the data.</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></td></tr> <tr> <td>Stimulus</td><td></td></tr> </table>	Cluster	Exponential Functions	Subcluster	Writing Exponential Functions	Content	Supporting	Process		Stimulus																								
Cluster	Exponential Functions																																	
Subcluster	Writing Exponential Functions																																	
Content	Supporting																																	
Process																																		
Stimulus																																		
<p style="text-align: center;">Company</p> <table border="1"> <thead> <tr> <th>Time, x (months)</th><th>Net Revenue, $r(x)$ (millions of dollars)</th></tr> </thead> <tbody> <tr><td>3</td><td>274</td></tr> <tr><td>6</td><td>389</td></tr> <tr><td>9</td><td>467</td></tr> <tr><td>12</td><td>560</td></tr> <tr><td>15</td><td>960</td></tr> <tr><td>18</td><td>1,100</td></tr> <tr><td>21</td><td>1,320</td></tr> <tr><td>24</td><td>1,584</td></tr> </tbody> </table>	Time, x (months)	Net Revenue, $r(x)$ (millions of dollars)	3	274	6	389	9	467	12	560	15	960	18	1,100	21	1,320	24	1,584	<p style="text-align: center;">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>61</td><td></td></tr> <tr><td>G</td><td>17</td><td></td></tr> <tr><td>H</td><td>15</td><td></td></tr> <tr><td>J</td><td>7</td><td></td></tr> </tbody> </table>	Item	State	Local	F*	61		G	17		H	15		J	7	
Time, x (months)	Net Revenue, $r(x)$ (millions of dollars)																																	
3	274																																	
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21	1,320																																	
24	1,584																																	
Item	State	Local																																
F*	61																																	
G	17																																	
H	15																																	
J	7																																	
<p>Which function best models the data?</p> <p>F $r(x) = 223.06(1.09)^x$</p> <p>G $r(x) = 1.09(223.06)^x$</p> <p>H $r(x) = 2,232.91(0.92)^x$</p> <p>J $r(x) = 0.92(2,232.91)^x$</p> <p>*Correct Answer (F)</p>	<p>Error Analysis</p> <p><input type="checkbox"/> Guessing <input type="checkbox"/> Mixed Up Concepts</p> <p><input type="checkbox"/> Careless Error <input type="checkbox"/> Stopped Too Early</p> <p>Learning from Mistakes Instructional Implications</p>																																	

A.12(A) decide whether relations represented verbally, tabularly, graphically, and symbolically define a function		Analysis of Assessed Standards			
2022 – Q4					
4 Which graph represents y as a function of x ?					
 F					
 H					
 G					
 J					
Analysis of Assessed Standards					
Cluster	Exponential Functions				
Subcluster	Describing Exponential Functions				
Content	Supporting				
Process					
Stimulus					
Data Analysis					
Item	State	Local			
F	23				
G	17				
H	9				
J*	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 (J)					

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	
2025 – Q40	Cluster	Exponential Functions	
A sequence can be generated by using the equation shown, where $a_1 = 100$ and n is a whole number greater than 1.	Subcluster	Writing Exponential Functions	
$a_n = 1.1a_{(n-1)}$	Content	Supporting	
What are the first four terms in the sequence?	Process		
<p>(A) 100 210 441 926.1</p> <p>(B) 100 109 118.9 129.79</p> <p>(C) 100 101.1 102.2 103.3</p> <p>(D) 100 110 121 133.1</p>	Item Type	Multiple Choice (1 pt)	
	Stimulus		
	Data Analysis		
	Item	State	Local
	A		
	B		
	C		
	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 (D)

A.12(D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms		Analysis of Assessed Standards	
2022 – Q41		Cluster	Exponential Functions
41 The first six terms in a geometric sequence are shown, where $a_1 = -4$.	$-4 \quad -16 \quad -64 \quad -256 \quad -1,024 \quad -4,096 \dots$	Subcluster	Writing Exponential Functions
Based on this information, which equation can be used to find the n^{th} term in the sequence, a_n ?		Content	Supporting
A $a_n = -4n$		Process	
B $a_n = -(4)^n$		Stimulus	
C $a_n = -n^2$		Data Analysis	
D $a_n = (-4)^n$		Item	State
*Correct Answer (B)		A	22
		B*	36
		C	14
		D	28
		Error Analysis	
		<input type="checkbox"/> Guessing	<input type="checkbox"/> Mixed Up Concepts
		<input type="checkbox"/> Careless Error	<input type="checkbox"/> Stopped Too Early
		Learning from Mistakes Instructional Implications	

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

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