lead4ward

IQ: INVESTIGATING THE QUESTIONS

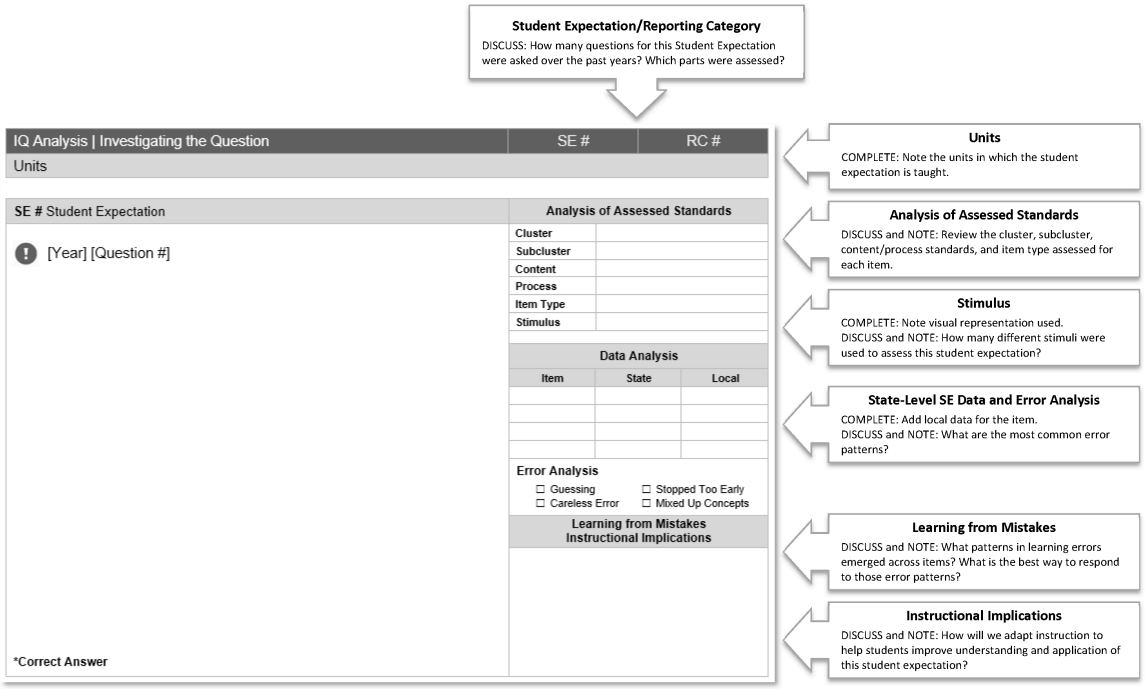
2025 Released Tests

Aligned to the Standards

CONTENT BUILDER FOR THE PLC

Math
Grade 8

IQ Analysis | Investigating the Question – Released Tests User Guide



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

Real Number Relationships

8.2 Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms.

IQ Analysis | Investigating the Question	8.2(C)	RC 1

8.2(C) convert between standard decimal notation and scientific notation

2025 – Q24

At its core, the sun can reach temperatures as high as 27 million degrees Fahrenheit, or 27,000,000 °F. How is this temperature written in scientific notation?

Ⓐ 27×10^{6}

Ⓑ 27×10^{-6}

Ⓒ 2.7×10^{7}

Ⓓ 2.7×10^{-7}

***Correct Answer (C)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Real Number Relationships
Subcluster	Representation of Real Numbers
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	**^**	
B		
C*	**45**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.2(D)	RC 1

8.2(D) order a set of real numbers arising from mathematical and real-world contexts

2025 – Q4

Which inequality is true?

Ⓐ $\frac{10}{3} < \sqrt{10}$

Ⓑ $-\frac{1}{8} < -\frac{1}{3}$

Ⓒ $150\% > 2$

Ⓓ $-0.07 > -0.7$

***Correct Answer (D)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards	
Cluster	Real Number Relationships
Subcluster	Magnitude of Real Numbers
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B	^	
C		
D*	41	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.2(D) order a set of real numbers arising from mathematical and real-world contexts

2025 – Q38

Which list shows the values ordered from least to greatest?

Ⓐ 7.42 $\frac{38}{5}$ $\sqrt{61}$ 745%

Ⓑ $\sqrt{61}$ $\frac{38}{5}$ 745% 7.42

Ⓒ 745% $\sqrt{61}$ $\frac{38}{5}$ 7.42

Ⓓ 7.42 745% $\frac{38}{5}$ $\sqrt{61}$

***Correct Answer (D)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards	
Cluster	Real Number Relationships
Subcluster	Magnitude of Real Numbers
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B	^	
C		
D*	66	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

Proportional and Non-Proportional Reasoning

8.4 Proportionality. The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope.

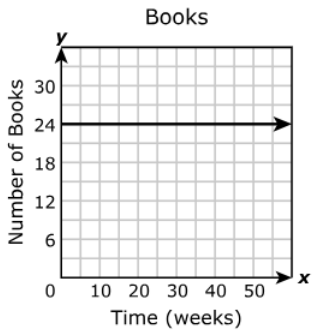
8.5 Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions.

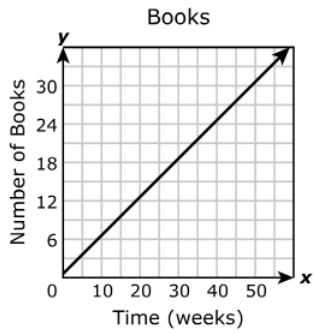
IQ Analysis | Investigating the Question	8.4(B)	RC 2

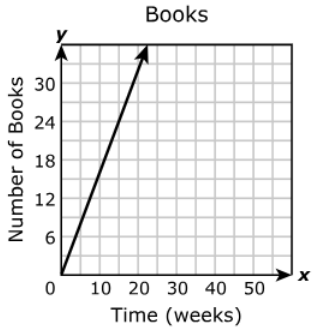
8.4(B) graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship

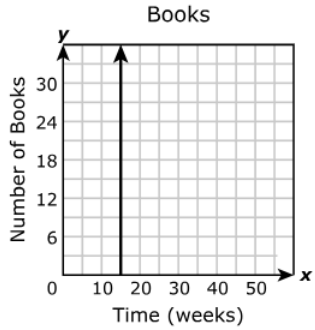
2025 – Q1

A student read 24 books in 15 weeks. Which graph has a slope that best models this rate?

Ⓐ


Ⓒ


Ⓑ


Ⓓ


***Correct Answer (B)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Slope
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	**77**	
C	**^**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.4(B) graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship

2025 – Q28

Dillon can bike 6 miles in 0.5 hour. Which line has a slope that best represents Dillon's speed in miles per hour?

Ⓐ

Ⓑ

Ⓒ

Ⓓ

***Correct Answer (B)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Slope
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	**^**	
B*	**55**	
C		
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

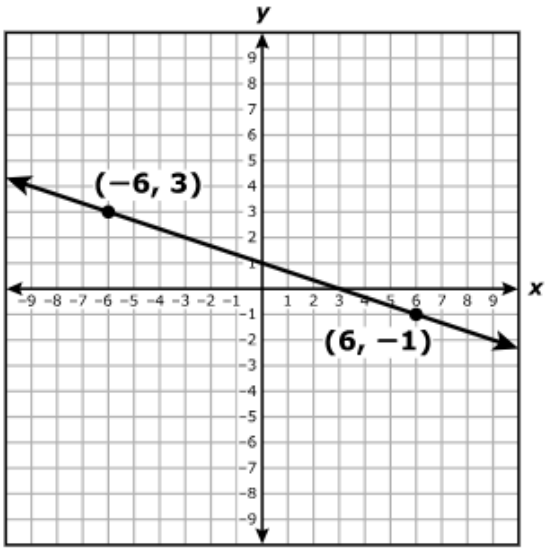
Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.4(C)	RC 2

8.4(C) use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems

2025 – Q5

The graph of a linear relationship is shown on the coordinate grid.



What are the slope and the y-intercept of the line?

Ⓐ slope = -3
y-intercept = 1

Ⓑ slope = $-\frac{1}{3}$
y-intercept = 1

Ⓒ slope = -3
y-intercept = 3

Ⓓ slope = $-\frac{1}{3}$
y-intercept = 3

***Correct Answer (B)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Non-Proportional Reasoning
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	^	
B*	61	
C		
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.4(C) use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems

2025 – Q30

Eva is starting a new job. She earns an hourly wage, and the cost of her uniform is taken out of her first paycheck. She makes a table showing different numbers of hours she could work, x, and the amount that her first paycheck would be, y.

Eva's Paycheck

Number of Hours Worked, x	First Paycheck Amount, y (dollars)
2	3.50
5	46.25
7	74.75
9	103.25
12	146.00

Based on the table, what is Eva's hourly wage and what is the cost of her uniform?

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

$2.00 $3.50 $9.25 $12.00 $14.25 $25.00

Hourly wage: _____ per hour

Uniform cost: _____

***Correct Answer ($14.25; $25.00)**

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Non-Proportional Reasoning
Content	Readiness
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**34**	
No Credit	**48**	
Partial Credit	**18**	

Error Analysis

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

Learning from Mistakes Instructional Implications

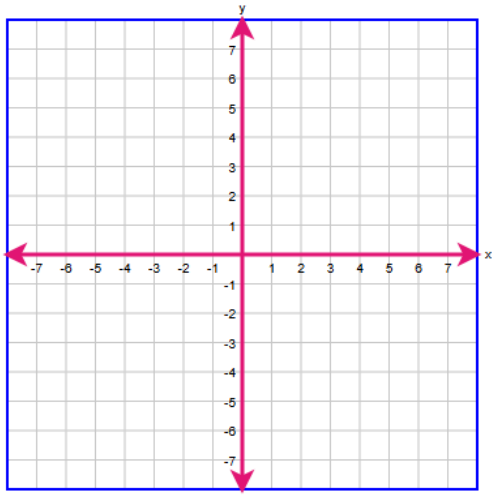
IQ Analysis | Investigating the Question	8.5(A)	RC 2

8.5(A) represent linear proportional situations with tables, graphs, and equations in the form of y = kx

2025 – Q7

Plot two points that represent a proportional relationship in which $y = 7$ when $x = 3$.

Select two points on the coordinate grid. A line will connect the points.



***Correct Answer ((0,0) and (3,7))**

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Proportional Reasoning
Content	Supporting
Process	
Item Type	Graphing (1 pt)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**33**	
No Credit	**67**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(E)	RC 2

8.5(E) solve problems involving direct variation

2025 – Q20

Malik owns a lawn-mowing business. The number of lawns he mows varies directly with the number of hours he works. On Tuesday he mowed 4 lawns in 5 hours.

How many lawns can Malik mow on Wednesday if he works for 7.5 hours?

Ⓐ 6.5

Ⓑ 10

Ⓒ 6

Ⓓ 9.375

***Correct Answer (C)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Proportional Reasoning
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	**^**	
B		
C*	**48**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(F)	RC 2

8.5(F) distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form y = mx + b, where b ≠ 0

2025 – Q36

Which statement about the equation $y = \frac{1}{2}x - 0.5$ is true?

Ⓐ The equation describes a non-proportional relationship, because the point $(0, -0.5)$ is a solution.

Ⓑ The equation describes a non-proportional relationship, because the slope is a fraction.

Ⓒ The equation describes a proportional relationship, because the point $(0, 0)$ is a solution.

Ⓓ The equation describes a proportional relationship, because it has a constant slope of $\frac{1}{2}$.

***Correct Answer (A)**
^highly chosen incorrect answer (D)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Proportional and Non-Proportional Recognition
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	**41**	
B		
C		
D	**^**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(G)	RC 2

8.5(G) identify functions using sets of ordered pairs, tables, mappings, and graphs

2025 – Q3

Which set of ordered pairs represents y as a function of x?

Ⓐ {(5, 13), (7, 17), (9, 21), (11, 25)}

Ⓑ {(5, −13), (5, 17), (9, −21), (11, 25)}

Ⓒ {(16, −4), (8, 22), (8, 9), (4, −6)}

Ⓓ {(5, 13), (7, 14), (9, 15), (9, 17)}

***Correct Answer (A)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Function Identification
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	73	
B	^	
C		
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

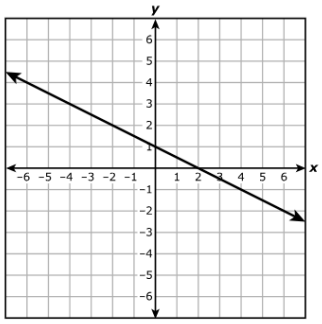
☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.5(G) identify functions using sets of ordered pairs, tables, mappings, and graphs

2025 – Q33

The graph of a relation is shown.



Which statement best describes this graph?

Ⓐ The graph represents y as a function of x, because each x-value corresponds to exactly one y-value.

Ⓑ The graph represents y as a function of x, because each x-value corresponds to multiple y-values.

Ⓒ The graph does not represent y as a function of x, because each x-value corresponds to exactly one y-value.

Ⓓ The graph does not represent y as a function of x, because each x-value corresponds to multiple y-values.

***Correct Answer (A)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards	
Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Function Identification
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	47	
B		
C	^	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(H)	RC 2

8.5(H) identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems

2025 – Q12

Which situation represents a proportional relationship?

Ⓐ The key on a map indicates that $\frac{1}{2}$ inch represents 12 miles.

Ⓑ Using a coupon to purchase bottles of apple juice for $2.28 each reduces the total cost by $1.00.

Ⓒ

x	y
1	4.25
3	12.75
5	22.25

Ⓓ

x	y
1	3
4	6
8	9

***Correct Answer (A)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Proportional and Non-Proportional Recognition
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	30	
B		
C	^	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(I)	RC 2

8.5(I) write an equation in the form y = mx + b to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations

2025 – Q16

A linear relationship includes the ordered pairs $(1, 2)$ and $(5, 7)$. Write an equation in slope-intercept form that can be used to model the relationship.

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

0.75 0.8 1.2 1.25 1.4

$y =$ [ ] x + [ ]

***Correct Answer (1.25; 75)**

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Non-Proportional Reasoning
Content	Readiness
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**42**	
No Credit	**37**	
Partial Credit	**21**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.5(I) write an equation in the form y = mx + b to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations

2025 – Q40

The total cost for a company to make a product includes fixed costs of $3,050 plus $15.25 per product. Which function can be used to find c, the total cost in dollars to make p products?

Ⓐ $c = 200p + 3{,}050$

Ⓑ $c = 15.25p + 200$

Ⓒ $c = 3{,}050p + 15.25$

Ⓓ $c = 15.25p + 3{,}050$

***Correct Answer (D)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Proportional and Non-Proportional Reasoning
Subcluster	Non-Proportional Reasoning
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C	**^**	
D*	**59**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

Equations and Inequalities

8.8 Expressions, equations, and relatioships. The student applies mathematical process standards to use one-variable equations or inequalities in problem situations.

8.9 Expressions, equations, and relationships. The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations.

IQ Analysis | Investigating the Question	8.8(A)	RC 2

8.8(A) write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants

2025 – Q14

Jamia can rent a moving truck from Company A for $49.00 plus $0.65 per mile. She can rent a moving truck from Company B for $60.00 plus $0.55 per mile.

Write an inequality that represents the minimum number of miles, x, for which the cost of renting a moving truck from Company A is greater than the cost from Company B.

Enter your answers in the boxes provided.

$\square + \square x > \square + \square x$

1	2	3
4	5	6
7	8	9
	0	
.	-	$\frac{\square}{\square}$

***Correct Answer (49, 0.65, 60, 0.55)**

Analysis of Assessed Standards

Cluster	Equations and Inequalities
Subcluster	Representation and Solutions of Equations/Inequalities
Content	Supporting
Process	
Item Type	Equation Editor (1 pt)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**58**	
No Credit	**42**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.8(C)	RC 2

8.8(C) model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants

2025 – Q10

What value of x makes the equation true?

$$-6x + 8 = 2(x - 12)$$

Ⓐ −2.5

Ⓑ 2.5

Ⓒ −4

Ⓓ 4

***Correct Answer (D)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
A		
B	**^**	
C		
D*	**55**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.8(C) model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants

2025 – Q22

The measures of two angles are $\left(\frac{1}{8}x + 61\right)°$ and $\left(\frac{3}{4}x - 27\right)°$. The angle measures are equal.

What is the value of x?

Ⓐ $\frac{704}{5}$

Ⓑ $\frac{272}{7}$

Ⓒ $\frac{704}{7}$

Ⓓ $\frac{272}{5}$

***Correct Answer (A)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards

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

Data Analysis

Item	State	Local
A*	**47**	
B	**^**	
C		
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

Geometry and Measurement - Two-Dimensional

8.3 Proportionality. The student applies mathematical process standards to use proportional relationships to describe dilations.

8.10 Two-dimensional shapes. The student applies mathematical process standards to develop transformational geometry concepts.

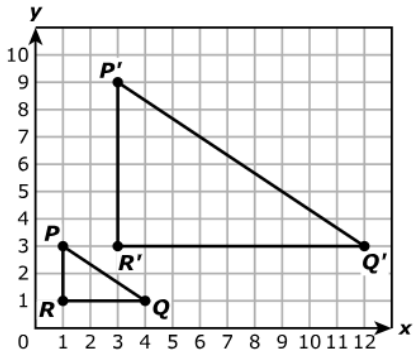
Connected Knowledge and Skills 8.8

IQ Analysis | Investigating the Question	8.3(B)	RC 3

8.3(B) compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane

2025 – Q13

Triangle PQR is dilated with the center of dilation at the origin to form triangle $P'Q'R'$.



Which statement must be true?

Ⓐ Triangle PQR was dilated by a scale factor of $\frac{1}{3}$ to create triangle $P'Q'R'$.

Ⓑ $\frac{PR}{P'R'} = \frac{R'Q'}{RQ}$

Ⓒ $P'Q' = 3(PQ)$

Ⓓ Triangle PQR is congruent to triangle $P'Q'R'$.

***Correct Answer (C)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Dilations
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	^	
B		
C*	31	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.3(C)	RC 3

8.3(C) use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation

2025 – Q17

Triangle MNP is graphed on a coordinate plane. The triangle is dilated with the origin as the center of dilation to create triangle $M'N'P'$. The table shows the coordinates of the original vertices and the corresponding coordinates of the new vertices after the dilation is applied.

Vertices of $\triangle MNP$	Vertices of $\triangle M'N'P'$
$(-4, 6)$	$(-10, 15)$
$(2, 6)$	$(5, 15)$
$(-4, -2)$	$(-10, -5)$

Which rule represents the dilation that was applied to triangle MNP to create triangle $M'N'P'$?

Ⓐ $(x, y) \rightarrow \left(\frac{2}{5}x, \frac{2}{5}y\right)$

Ⓑ $(x, y) \rightarrow (2.5x, 2.5y)$

Ⓒ $(x, y) \rightarrow (6x, 6y)$

Ⓓ $(x, y) \rightarrow \left(\frac{1}{6}x, \frac{1}{6}y\right)$

***Correct Answer (B)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Dilations
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

8.3(C) use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation

2025 – Q29

Quadrilateral *PQRT* is dilated with the origin as the center of dilation to create quadrilateral *P′Q′R′T′*. Point *P* is located at (3, 6), and point *P′* is located at (8, 16).
Which rule best represents the dilation that was applied to quadrilateral *PQRT* to create quadrilateral *P′Q′R′T′*?

Ⓐ $(x, y) \rightarrow (x + 5, y + 10)$

Ⓑ $(x, y) \rightarrow (x - 5, y - 10)$

Ⓒ $(x, y) \rightarrow \left(\frac{8}{3}x, \frac{8}{3}y\right)$

Ⓓ $(x, y) \rightarrow \left(\frac{3}{8}x, \frac{3}{8}y\right)$

***Correct Answer (C)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Dilations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	^	
B		
C*	44	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.10(B)	RC 3

8.10(B) differentiate between transformations that preserve congruence and those that do not

2025 – Q39

Quadrilateral *JKLM* is transformed to form quadrilateral *J'K'L'M'*. Which transformation does NOT preserve congruence?

Ⓐ Reflection over the *x*-axis

Ⓑ Reflection over the *y*-axis

Ⓒ Dilation with a scale factor of 4

Ⓓ Clockwise rotation with center (0, 0)

***Correct Answer (C)**
^highly chosen incorrect answer (D)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Transformations
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C*	**60**	
D	**^**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

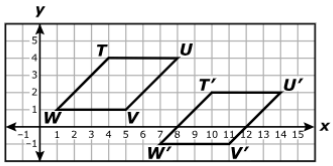
Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.10(C)	RC 3

8.10(C) explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation

2025 – Q6

Quadrilateral $TUVW$ is transformed, creating quadrilateral $T'U'V'W'$.



Which rule describes the transformation applied to quadrilateral $TUVW$ to create quadrilateral $T'U'V'W'$?

Ⓐ $(x, y) \rightarrow (x + 6, y + 2)$

Ⓑ $(x, y) \rightarrow (x - 6, y + 2)$

Ⓒ $(x, y) \rightarrow (x + 6, y - 2)$

Ⓓ $(x, y) \rightarrow (x - 6, y - 2)$

***Correct Answer (C)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Transformations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B	**^**	
C*	**67**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.10(C) explain the effect of translations, reflections over the x- or y-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation

2025 – Q32

Triangle *UVW* and triangle *PQR* are transformed on a coordinate plane. Complete each rule with the coordinates of the image of the transformation.

Move the correct answer into each box in the table. Each answer may be used more than once. Not all answers will be used.

$(-x, -y)$ $(y, -x)$ $(-x, y)$ $(x, -y)$

Transformation	Rule
Triangle *UVW* reflected across the *y*-axis	$(x, y) \rightarrow$
Triangle *PQR* rotated 90° clockwise about the origin	$(x, y) \rightarrow$

***Correct Answer ((-x, y); (y, -x))**

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Transformations
Content	Readiness
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**23**	
No Credit	**39**	
Partial Credit	**39**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.10(D)	RC 3

8.10(D) model the effect on linear and area measurements of dilated two-dimensional shapes

2025 – Q11

Two parallelograms are similar. The dimensions of the larger parallelogram are 8.4 times the corresponding dimensions of the smaller parallelogram.

Complete the sentences about the area and perimeter of the two parallelograms.

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

The area of the larger parallelogram is _____ times the area of the smaller parallelogram.

The perimeter of the larger parallelogram is _____ times the perimeter of the smaller parallelogram.

***Correct Answer (70.56; 8.4)**

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Two-Dimensional
Subcluster	Dilations
Content	Supporting
Process	
Item Type	Inline Choice (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**12**	
No Credit	**43**	
Partial Credit	**44**	

Error Analysis

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

Learning from Mistakes Instructional Implications

Geometry and Measurement - Pythagorean Theorem

8.7 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems.

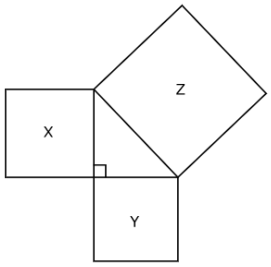
Connected Knowledge and Skills 8.6

IQ Analysis | Investigating the Question	8.6(C)	RC 3

8.6(C) use models and diagrams to explain the Pythagorean theorem

2025 – Q27

Squares X, Y, and Z are joined at two vertices each to create the right triangle shown in the diagram.



The area of Square X is 441 square centimeters, and the area of Square Y is 400 square centimeters. Which measurement is closest to the side length of Square Z in centimeters?

Ⓐ 29 cm

Ⓑ 41 cm

Ⓒ 421 cm

Ⓓ 841 cm

***Correct Answer (A)**
^highly chosen incorrect answer (D)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Pythagorean Theorem
Subcluster	Pythagorean Theorem
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	**28**	
B		
C		
D	**^**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.7(C)	RC 3

8.7(C) use the Pythagorean Theorem and its converse to solve problems

2025 – Q19

A right triangle has a leg with a length of 12 feet and a hypotenuse of 13.6 feet. What is the length of the other leg of the triangle in feet?

Ⓐ 6.4 ft

Ⓑ 25.6 ft

Ⓒ 1.6 ft

Ⓓ 3.2 ft

***Correct Answer (A)**
^highly chosen incorrect answer (B,C)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Pythagorean Theorem
Subcluster	Pythagorean Theorem
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

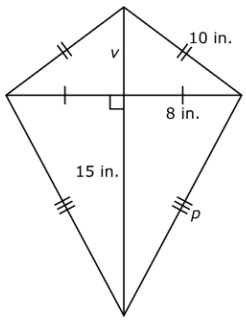
☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.7(C) use the Pythagorean Theorem and its converse to solve problems

2025 – Q23

Wood pieces that were used to build the frame of a kite are shown.



What are the measures of the missing vertical length, v, and the missing side length, p, in inches?

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

5 6 13 17 18 23 33 36

The measure of the missing vertical length, v, is [ ] inches, and the measure of the missing side length, p, is [ ] inches.

***Correct Answer (6; 17)**

Analysis of Assessed Standards	
Cluster	Geometry and Measurement - Pythagorean Theorem
Subcluster	Pythagorean Theorem
Content	Readiness
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**34**	
No Credit	**40**	
Partial Credit	**25**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

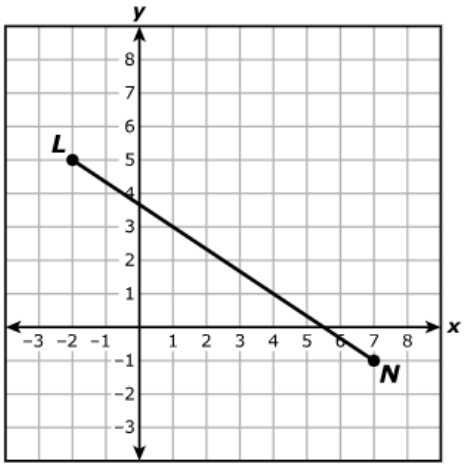
Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.7(D)	RC 3

8.7(D) determine the distance between two points on a coordinate plane using the Pythagorean Theorem

2025 – Q15

Line segment *LN* is shown on the coordinate grid.



Which measurement is closest to the length of line segment *LN* in units?

Ⓐ 9 units

Ⓑ 15 units

Ⓒ 7 units

Ⓓ 11 units

***Correct Answer (D)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Pythagorean Theorem
Subcluster	Pythagorean Theorem
Content	Supporting
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

Geometry and Measurement - Three-Dimensional

8.6 Expressions, equations, and relationships. The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas.

8.7 Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to solve problems.

IQ Analysis | Investigating the Question	8.6(A)	RC 3

8.6(A) describe the volume formula V = Bh of a cylinder in terms of its base area and its height

2025 – Q25

A swimming pool is in the shape of a cylinder:

- The diameter of the swimming pool is 15 feet.
- The height of the swimming pool is 4.5 feet.

Complete the equation that represents V, the volume of the swimming pool in cubic feet.

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

2.25 | 4.5 | 7.5 | 15 | 2.25^2 | 4.5^2 | 7.5^2 | 15^2

$V = \pi(____)(____)$

***Correct Answer (7.52; 4.5 OR 4.5; 7.52)**

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Three-Dimensional
Subcluster	Volume
Content	Supporting
Process	
Item Type	Drag and Drop (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**36**	
No Credit	**24**	
Partial Credit	**40**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.7(A)	RC 3

8.7(A) solve problems involving the volume of cylinders, cones, and spheres

2025 – Q21

A sphere has a diameter of 6 centimeters. What is the volume of the sphere in cubic centimeters in terms of π?

Ⓐ 12π cm^3

Ⓑ 36π cm^3

Ⓒ 48π cm^3

Ⓓ 288π cm^3

***Correct Answer (B)**
^highly chosen incorrect answer (A)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Three-Dimensional
Subcluster	Volume
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A	**^**	
B*	**60**	
C		
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.7(A) solve problems involving the volume of cylinders, cones, and spheres

2025 – Q35

The volume of a cone is approximately 1,647 cubic centimeters. The height of the cone is 13 centimeters.

Which measurement is closest to the diameter of the base of the cone in centimeters?

Ⓐ 22 cm

Ⓑ 11 cm

Ⓒ 12.7 cm

Ⓓ 6.4 cm

***Correct Answer (A)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Three-Dimensional
Subcluster	Volume
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

IQ Analysis | Investigating the Question	8.7(B)	RC 3

8.7(B) use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders

2025 – Q9

The lateral surface area of a triangular prism is 252 square feet. The side lengths of the triangular base are 6 feet, 7 feet, and 8 feet.

What is the height of the prism in feet?

Enter your answer in the box.

***Correct Answer (12)**

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Three-Dimensional
Subcluster	Surface Area
Content	Readiness
Process	
Item Type	Equation Editor (1 pt)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**39**	
No Credit	**61**	

Error Analysis

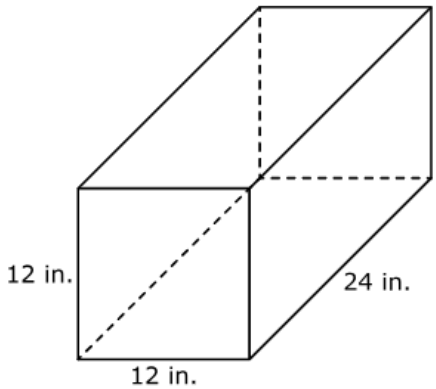
- ☐ Guessing
- ☐ Mixed Up Concepts
- ☐ Careless Error
- ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.7(B) use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders

2025 – Q37

The dimensions of a rectangular prism are shown in the diagram.



What is the total surface area of the rectangular prism in square inches?

Ⓐ 864 in.^{2}

Ⓑ 1, 440 in.^{2}

Ⓒ 1, 152 in.^{2}

Ⓓ 3, 456 in.^{2}

***Correct Answer (B)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Geometry and Measurement - Three-Dimensional
Subcluster	Surface Area
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B*	**48**	
C	**^**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

Data Analysis

8.5 Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions.

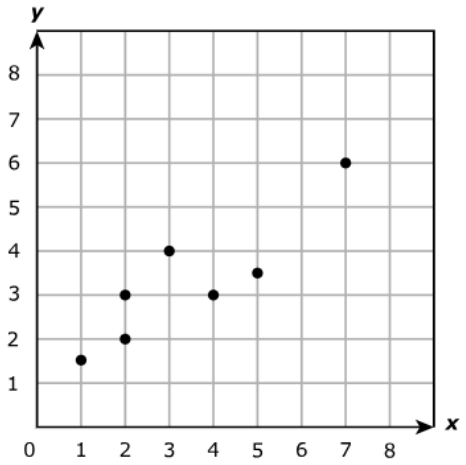
8.11 Measurement and data. The student applies mathematical process standards to use statistical procedures to describe data.

IQ Analysis | Investigating the Question	8.5(C)	RC 4

8.5(C) contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation

2025 – Q18

The graph shows seven data points.



Which pair of points could be added to the graph to suggest a linear relationship?

Ⓐ (3, 7) and (8, 1)

Ⓑ (2, 1) and (2, 8)

Ⓒ (2, 5) and (6, 1)

Ⓓ (5, 4) and (6, 6)

***Correct Answer (D)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Data Analysis
Subcluster	Interpretation of Data
Content	Supporting
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B		
C	^	
D*	71	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

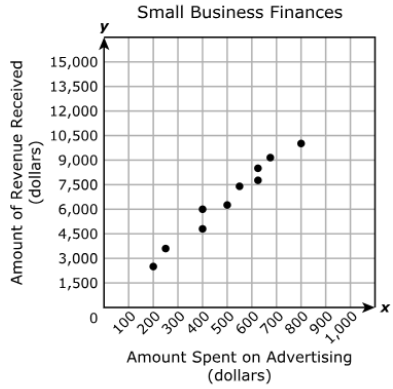
Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.5(D)	RC 4

8.5(D) use a trend line that approximates the linear relationship between bivariate sets of data to make predictions

2025 – Q8

The scatterplot shows the relationship between the amount of money a small business spent on advertising in each of 10 weeks and the amount of revenue in dollars the business received each week.



Based on the scatterplot, which value is the best prediction for the amount of revenue in dollars the business will receive in a week when $1,000 is spent on advertising?

Ⓐ $15,000

Ⓑ $11,000

Ⓒ $13,000

Ⓓ $8,000

***Correct Answer (C)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards

Cluster	Data Analysis
Subcluster	Interpretation of Data
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A		
B	**^**	
C*	**54**	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

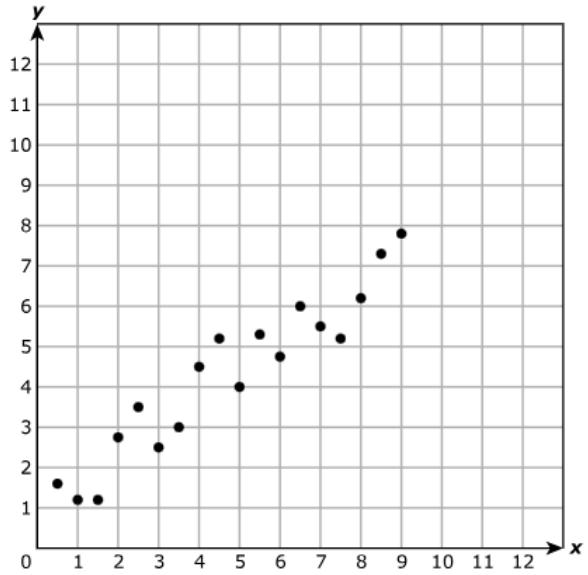
☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.5(D) use a trend line that approximates the linear relationship between bivariate sets of data to make predictions

2025 – Q31

The scatterplot shows a relationship between x and y.



Based on the scatterplot, which is the best prediction of the value of y when x is 10?

Ⓐ 6.5

Ⓑ 10

Ⓒ 12.5

Ⓓ 8

***Correct Answer (D)**
^highly chosen incorrect answer (B)

Analysis of Assessed Standards	
Cluster	Data Analysis
Subcluster	Interpretation of Data
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

Personal Financial Literacy

8.12 Personal financial literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor.

IQ Analysis | Investigating the Question	8.12(A)	RC 4

8.12(A) solve real-world problems comparing how interest rate and loan length affect the cost of credit

2025 – Q34

Mr. Jiménez wants to borrow $6,850.00 from a bank to buy new furniture.

- Bank X offers a 5-year loan at 3.5% simple interest.
- Bank Y offers a 3-year loan at 4.75% simple interest.

At which bank will Mr. Jiménez pay less interest over the life of the loan, and how much less interest will he pay?

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

Mr. Jiménez will pay less interest at [ ].

He will pay [ ] less interest over the life of the loan.

***Correct Answer (Bank Y; $222.63)**

Analysis of Assessed Standards

Cluster	Personal Financial Literacy
Subcluster	Calculations
Content	Supporting
Process	
Item Type	Inline Choice (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**37**	
No Credit	**30**	
Partial Credit	**32**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	8.12(D)	RC 4

8.12(D) calculate and compare simple interest and compound interest earnings

2025 – Q2

Janice deposits $4,500 into an investment account that earns 4% simple interest. She makes no additional deposits or withdrawals.

Complete the sentence about the amount of interest earned and the total balance after 5 years.

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

After 5 years, Janice's investment account will have earned [ ] in interest and will have a total balance of [ ].

***Correct Answer ($900; $5,400)**

Analysis of Assessed Standards

Cluster	Personal Financial Literacy
Subcluster	Calculations
Content	Readiness
Process	
Item Type	Inline Choice (2 pts)
Stimulus	

Data Analysis

Item	State	Local
Full Credit	**66**	
No Credit	**16**	
Partial Credit	**18**	

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

8.12(D) calculate and compare simple interest and compound interest earnings

2025 – Q26

Jack plans to deposit $500 into a new bank account that earns 2% interest compounded annually. He will make no more deposits or withdrawals.

Over a period of 2 years, how much more will he earn in interest on this account than he would if he earned simple interest at a 2% annual rate?

Ⓐ $0.20

Ⓑ $10.20

Ⓒ $20.00

Ⓓ $2.02

***Correct Answer (A)**
^highly chosen incorrect answer (C)

Analysis of Assessed Standards

Cluster	Personal Financial Literacy
Subcluster	Calculations
Content	Readiness
Process	
Item Type	Multiple Choice (1 pt)
Stimulus	

Data Analysis

Item	State	Local
A*	29	
B		
C	^	
D		

Error Analysis

☐ Guessing ☐ Mixed Up Concepts

☐ Careless Error ☐ Stopped Too Early

Learning from Mistakes Instructional Implications

IQ Analysis | Investigating the Question	SE	RC
Units		

	Analysis of Assessed Standards	
	Cluster	
	Subcluster	
	Content	
	Process	
	Item Type	
	Stimulus	

Data Analysis

Item	State	Local

Error Analysis

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

Learning from Mistakes
Instructional Implications

*** Correct Answer ( )**

	Analysis of Assessed Standards	
	Cluster	
	Subcluster	
	Content	
	Process	
	Item Type	
	Stimulus	

Data Analysis

Item	State	Local

Error Analysis

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

Learning from Mistakes
Instructional Implications

*** Correct Answer ( )**