

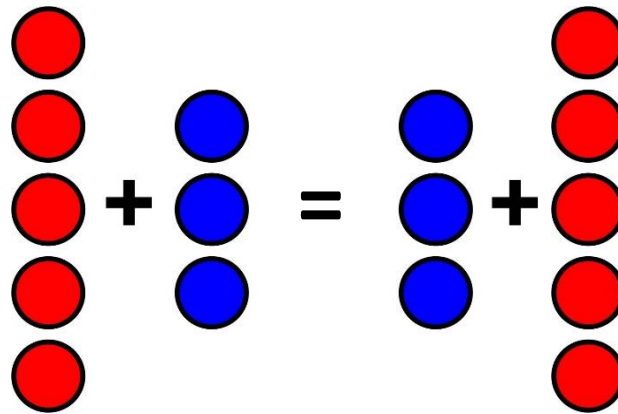
Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.1.a.1: Use properties of operations to produce equivalent linear expressions.
IAS Standard	MA.7.AF.1: Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions, including situations that involve factoring (e.g., given $2x - 10$, create an equivalent expression $2(x - 5)$). Justify each step in the process.
Content Limits	No more than one variable. One operation at a time. When using the distributive property coefficient is one inside parentheses.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	expression, equivalent, commutative property, associative property, distributive property
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will identify a property using equivalent expressions.
	Tier 2 Student will be able to identify the equivalent expression using any property of operations.
	Tier 3 Student will be able to identify the number that generates an equivalent expression using a given property.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Here is an equation.

$$5 + 3 = 3 + 5$$



What is this an example of?

- A. commutative property
- B. associative property
- C. distributive property

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.2.a.1: Solve equations with up to two variables based on real-world problems.
IAS Standard	MA.7.AF.2: Solve equations of the form $px + q = r$ and $p(x + q) = r$ fluently, where p , q , and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.
Content Limits	No more than one variable. Whole numbers no greater than twenty. No more than two operations.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Equation Response (EQ)
Construct-Relevant Vocabulary	equation, variable
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will select the inverse operation of a one-step equation with only one variable.
	Tier 2 Student will solve a one-step equation with only one variable.
	Tier 3 Student will be able to solve a two-step equation with only one variable.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Here is an equation.

$$x + 10 = 20$$

What is the value of x ?

- A. 2
- B. 10**
- C. 30

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.2.a.2: Use variables to represent quantities in a real-world or mathematical problem to solve linear equations.
IAS Standard	MA.7.AF.2: Solve equations of the form $px + q = r$ and $p(x + q) = r$ fluently, where p , q , and r are specific rational numbers. Represent real-world problems using equations of these forms and solve such problems.
Content Limits	No more than one variable. No more than two operations. Whole numbers no greater than twenty. Specify the variable in the word problem.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	equation, unknown
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify the unknown in a real-world problem. (tell what the variable represents in the problem)
	Tier 2 Student will be able to choose the correct equation given the real-world problem.
	Tier 3 Student will complete the equation that satisfies the given real-world problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Martha plants flowers in her garden. She starts with 3 flowers and plants 2 flowers each day for x days. She now has a total of 11 flowers in her garden.

Which equation represents this scenario?

A. $3x + 2 = 11$

B. $2x + 3 = 11$

C. $x + 5 = 11$

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.3.a.1: Solve inequalities with up to two variables based on real-world problems.
IAS Standard	MA.7.AF.3: Solve inequalities of the form $px + q (> \text{ or } \geq) r$ or $px + q (< \text{ or } \leq) r$, where p , q , and r are specific rational numbers. Represent real-world problems using inequalities of these forms and solve such problems. Graph the solution set of the inequality and interpret it in the context of the problem.
Content Limits	No more than one variable. Whole numbers no greater than twenty. No more than two operations.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	inequality
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will select the inverse operation of a one-step inequality with only one variable.
	Tier 2 Student will solve a one-step inequality with only one variable.
	Tier 3 Student will be able to solve a two-step inequality with only one variable.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 3	<p>Here is an inequality.</p> $3x + 3 \leq 15$ <p>What values of x make this inequality true?</p> <ul style="list-style-type: none">A. $x \leq 4$B. $x \leq 5$C. $x \leq 6$

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.3.a.2: Use variables to represent quantities in a real-world or mathematical problem to solve linear inequalities.
IAS Standard	MA.7.AF.3: Solve inequalities of the form $px + q (> \text{ or } \geq) r$ or $px + q (< \text{ or } \leq) r$, where p , q , and r are specific rational numbers. Represent real-world problems using inequalities of these forms and solve such problems. Graph the solution set of the inequality and interpret it in the context of the problem.
Content Limits	No more than one variable No more than two operations Whole numbers no greater than twenty Specify the variable in the word problem
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Equation Response (EQ)
Construct-Relevant Vocabulary	inequality
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify the unknown in a real-world problem. (tell what the variable represents in the problem)
	Tier 2 Student will be able to choose the correct inequality given the real-world problem.
	Tier 3 Student will complete the inequality that satisfies the given real-world problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Blake is going to Holiday World. In order to ride The Voyage Roller Coaster, he must be taller than 4 feet.

Which inequality represents the height (t) requirements for the Voyage?

A. $t < 4$ feet

B. $t > 4$ feet

C. $t \geq 4$ feet

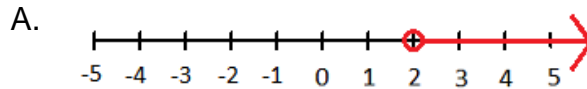
Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.3.a.3: Determine the graph of an inequality.
IAS Standard	MA.7.AF.3: Solve inequalities of the form $px + q (> \text{ or } \geq) r$ or $px + q (< \text{ or } \leq) r$, where p , q , and r are specific rational numbers. Represent real-world problems using inequalities of these forms and solve such problems. Graph the solution set of the inequality and interpret it in the context of the problem.
Content Limits	Variable is on the left side of the inequality. Integers between -10 and 10. One variable. No more than two operations.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Equation Response (EQ)
Construct-Relevant Vocabulary	graph, inequality
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will select the graph that matches the statement. (x is greater than 5 in words and not the symbol)
	Tier 2 Student will be able to select the correct graph given an inequality. (only opened circle)
	Tier 3 Student will be able to select the correct graph given an inequality. (open and closed circles)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

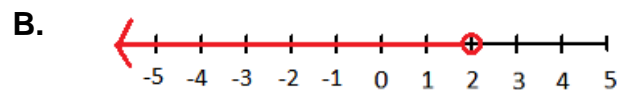
Here is an inequality.

$$x < 2$$

Which graph represents the inequality?

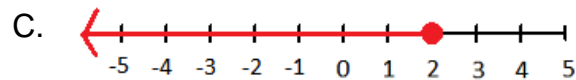


(audio: Here is a number line. The number line begins at negative five and ends at five. There is an open circle around two and an arrow going to the right.)



(audio: Here is a number line. The number line begins at negative five and ends at five. There is an open circle around two and an arrow going to the left.)

KEY



(audio: Here is a number line. The number line begins at negative five and ends at five. There is a closed circle around two and an arrow going to the left.)

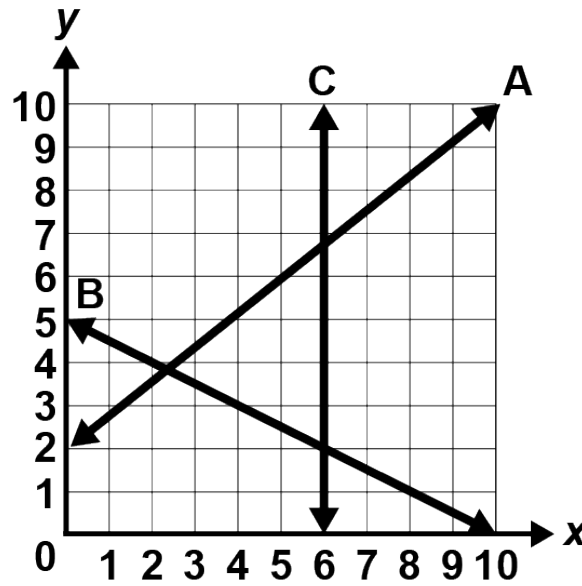
Tier 2

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.4.a.1: Relate slope to rate of change between two variables.
IAS Standard	MA.7.AF.4: Define slope as vertical change for each unit of horizontal change and recognize that a constant rate of change or constant slope describes a linear function. Identify and describe situations with constant or varying rates of change.
Content Limits	Quadrant 1
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)
Construct-Relevant Vocabulary	slope and rate of change, positive and negative, undefined
Cognitive Complexity	2
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify slope as positive or negative given a graph.
	Tier 2 Student will be able to identify a graph as having positive or negative slope.
	Tier 3 Student will be able to define slope as positive, negative, 0, and undefined.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Here is a graph. The graph has 3 lines.



Which line shows a positive slope?

- A. Line A
- B. Line B
- C. Line C

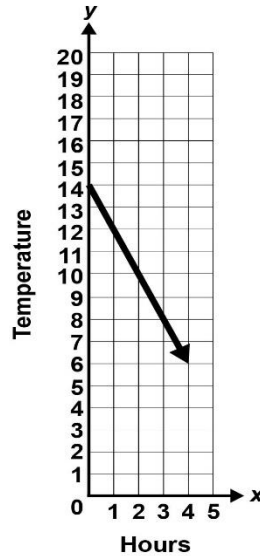
Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.4.a.2: Using real-world examples, recognize the graph that shows the correct slope between two variables.
IAS Standard	MA.7.AF.4: Define slope as vertical change for each unit of horizontal change and recognize that a constant rate of change or constant slope describes a linear function. Identify and describe situations with constant or varying rates of change.
Content Limits	Quadrant one. Rate of change simplifies to a whole number. Whole numbers no greater than 100.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	graph
Cognitive Complexity	2
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to match the rate of change to a real-world problem. (given the rate of change, positive and negative)
	Tier 2 Student will be able to match the rate of change to a real-world problem. (not given the rate of change, positive and negative)
	Tier 3 Student will be able to analyze a real-world problem to identify the correct graph.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

The temperature outside starts at 14°F and goes down by 2 degrees each hour.

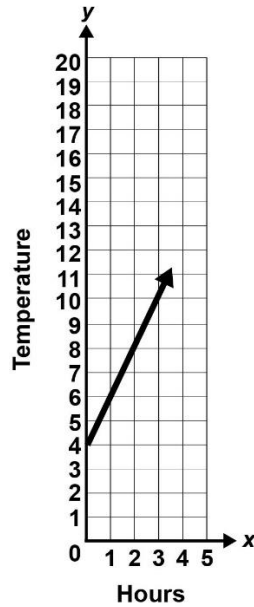
Which graph shows this temperature change?



A.

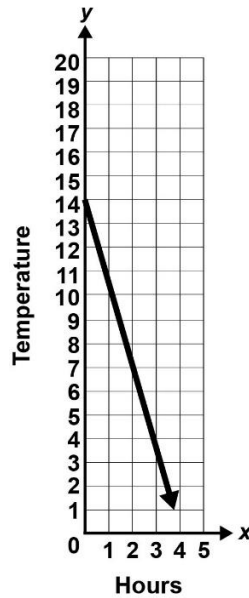
(audio: Here is a graph of a ray with labelled hours on the x axis, and temperature on the y axis. The ray begins at x is zero, y is fourteen and has slope of negative two)

KEY



B.

(audio: Here is a graph of a ray with labelled hours on the x axis, and temperature on the y axis. The ray begins at x is zero, y is four, and has a slope of two).



C.

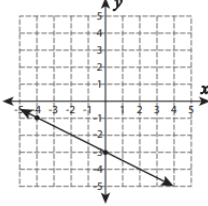
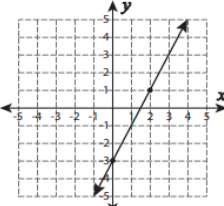
(audio: Here is a graph of a ray with labelled hours on the x axis, and temperature on the y axis. The ray begins at x is zero, y is fourteen, and has a slope of negative four).

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.5.a.1: Graph a line using slope and a point on the line.
IAS Standard	MA.7.AF.5: Graph a line given its slope and a point on the line. Find the slope of a line given its graph.
Content Limits	Coordinate axis stays between -10 and 10. Units go by ones.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Table Match (TM)
Construct-Relevant Vocabulary	slope, point, graph
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will match graphs to the given point and slope.
	Tier 2 Student will match graphs to the given point and slope.
	Tier 3 Student will match graphs to the given point and slope (use table matching).
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Match the graph with the given point (P) and slope (m).

Tier 2

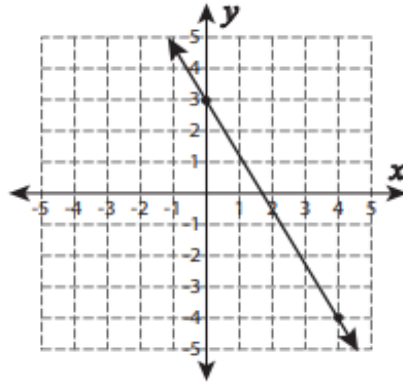
		
$P(0, -3); m = 2$		b
$P(0, -3); m = -\frac{1}{2}$	a	

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.5.a.2: Understand how to calculate the slope of a line.
IAS Standard	MA.7.AF.5: Graph a line given its slope and a point on the line. Find the slope of a line given its graph.
Content Limits	Coordinate axis stays between -10 and 10. Units go by ones.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	Slope
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Students will be able to calculate the slope of a positive line.
	Tier 2 Students will be able to calculate the slope of a positive or negative line.
	Tier 3 Students will be able to calculate the slope of a positive, negative, 0, or undefined line.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Here is a graph of a line.



What is the slope of the line?

- A. $-\frac{4}{7}$
- B. $-\frac{7}{4}$**
- C. $\frac{7}{4}$

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.6.a.1: Identify if the relationship is proportional between two quantities in a table.
IAS Standard	MA.7.AF.6: Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).
Content Limits	Whole numbers on the table. No more than 5 ordered pairs.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Matching (TM)
Construct-Relevant Vocabulary	proportion, proportional, or proportional relationship
Cognitive Complexity	2
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify if a table is proportional. (origin provided)
	Tier 2 Student will be able to identify if a table is proportional. (origin is not provided, using whole number factor)
	Tier 3 Student will be able to identify if a table is proportional. (origin is not provided, using common fraction factors)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Time	Distance
0	0
2	6
4	12
6	18

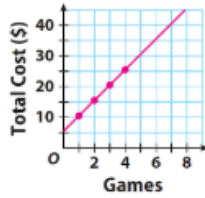
How can we describe the table?

- A. negative
- B. proportional**
- C. uneven

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.6.a.2: Determine if two quantities are in a proportional relationship using points graphed on a coordinate plane.
IAS Standard	MA.7.AF.6: Decide whether two quantities are in a proportional relationship (e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin).
Content Limits	Units in increments of one on each axis.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	proportional relationships, graph
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to determine if a graph represents a proportional relationship when it passes through the origin.
	Tier 2 Student will be able to extend the graph of a line from a set of ordered pairs, to determine if the graph of the line represents a proportional relationship as it approaches the origin. (ordered pairs are labeled on the graph)
	Tier 3 Student will be able to extend the graph of a line from a set of ordered pairs, to determine if the graph of the line represents a proportional relationship as it approaches the origin. (ordered pairs are not labeled on the graph)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

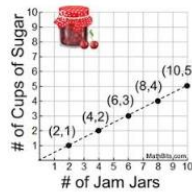
Sample Item

Which graph shows a proportional relationship?



A.

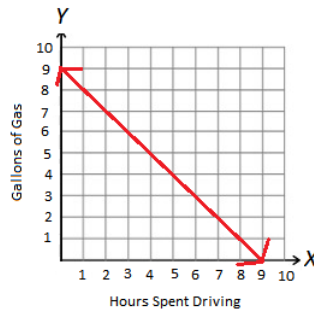
(audio: The line is increasing and goes through points x is zero, y is five; x is one, y is ten; and x is two, y is fifteen.)



B.

(audio: The line is increasing and goes through points x is two, y is one; x is four, y is two and x is six, y is three.)

KEY



C.

(audio: The line is decreasing and goes through points x is zero, y is nine; x is one, y is eight; and x is two, y is seven.)

Tier 1

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.7.a.1: Given a table or a graph of a line, identify the unit rate.
IAS Standard	MA.7.AF.7: Identify the unit rate or constant of proportionality in tables, graphs, equations, and verbal descriptions of proportional relationships.
Content Limits	Increments in units of one on each axis. No more than five ordered pairs in the table. Whole numbers no greater than 20.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	unit rate, table, graph
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify the unit rate from a graph or table. (Table/graph must provide (0,0) and (1, r))
	Tier 2 Student will be able to identify the unit rate from a graph or table. (Table/graph must provide (1, r))
	Tier 3 Student will be able to identify the unit rate from a graph or table.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Mrs. Jones is making chocolate chip cookies. She uses the following table to figure out the number of chocolate chips to use.

Chocolate Chips	Cookies
10	1
20	2
30	3

What is the unit rate of chocolate chips per cookie?

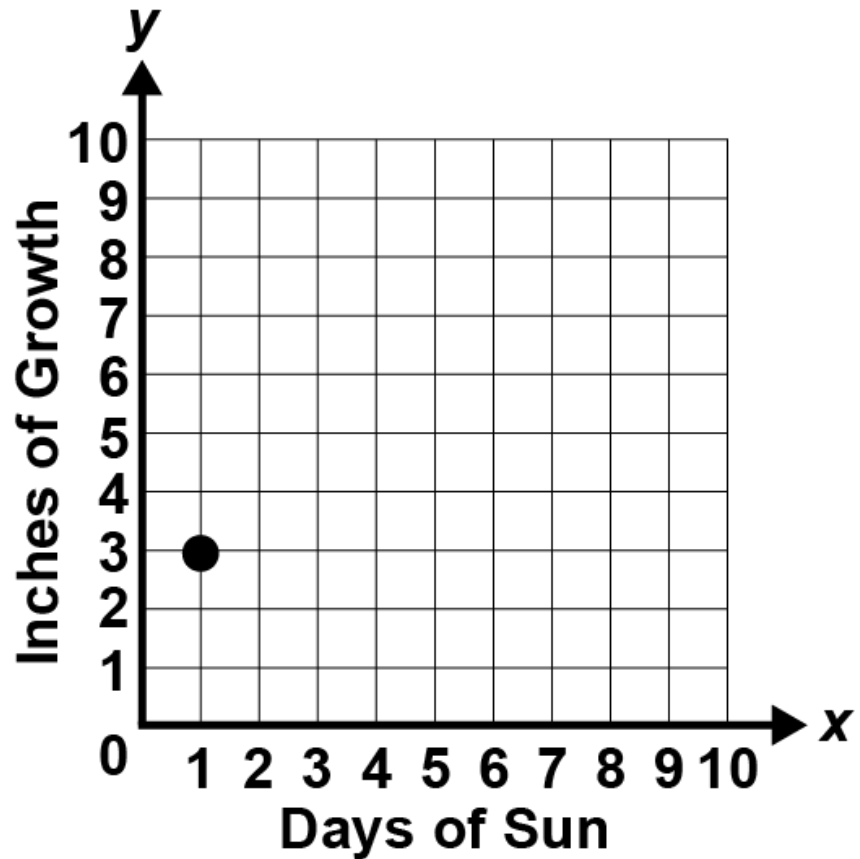
- A. 1 chocolate chip per cookie
- B. 10 chocolate chips per cookie**
- C. 20 chocolate chips per cookie

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.8.a.1: Given a proportional relationship, explain the meaning of the coordinates on the graph.
IAS Standard	MA.7.AF.8: Explain what the coordinates of a point on the graph of a proportional relationship mean in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$, where r is the unit rate.
Content Limits	Numbers up to ten. Increments in units of one on each axis.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	point, graph
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to select the statement that best describes the proportional relationship presented in the graph. (explain what the r represents in $(1, r)$)
	Tier 2 Student will be able to select the statement that best describes the proportional relationship presented in the graph. (explain what the 1 and r represents in $(1, r)$)
	Tier 3 Student will be able to select the statement that best describes the proportional relationship presented in the graph. (requires interpretation)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Here is a graph.



What does the 3 represent in the point (1, 3)?

- A. 3 days of growth in 1 inch
- B. 1 inch of growth in 3 days
- C. 3 inches of growth in 1 day

Reporting Category	Algebra and Functions
Content Connector	MA.7.AF.9.a.1: Represent proportional relationships as an equation and as a graph.
IAS Standard	MA.7.AF.9: Identify real-world and other mathematical situations that involve proportional relationships. Write equations and draw graphs to represent proportional relationships and recognize that these situations are described by a linear function in the form $y = mx$, where the unit rate, m , is the slope of the line.
Content Limits	Increments in each axis are in units of one. Units on each axis are not greater than 10.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	proportion, proportional relationships, graph
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify a graph that best represents a given proportional relationship.
	Tier 2 Student will be able to identify an equation or graph that best represents a given proportional relationship.
	Tier 3 Student will be able to identify an equation that best represents a given proportional relationship.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

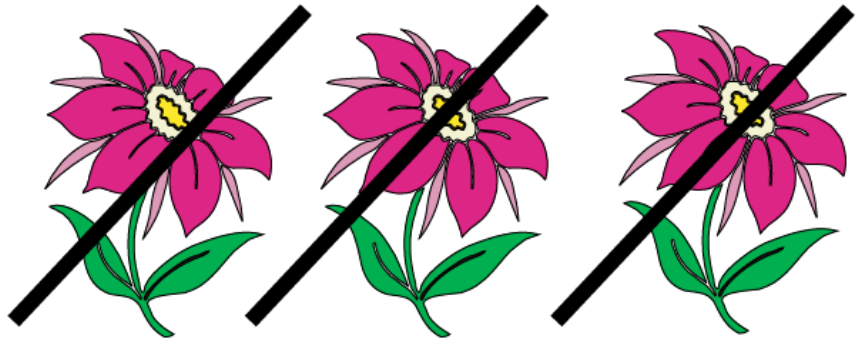
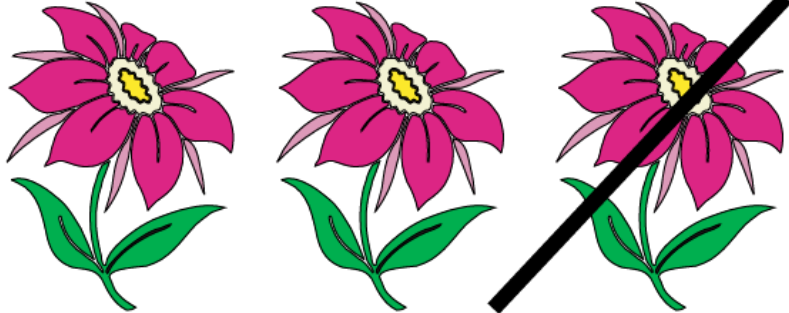
Which equation represents a proportional relationship?

- A. $y = 4$
- B. $y = 4x$**
- C. $y = 4x^2$

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.1.a.1: Add a positive and negative integer.
IAS Standard	MA.7.C.1: Understand $p + q$ as the number located a distance $ q $ from p , in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
Content Limits	Integers between -20 and 20 .
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	sum
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will add a positive and negative integer. (one-digit integers, results in one-digit positive sum)
	Tier 2 Student will add a positive and negative integer. (one-digit and two-digit integers, results in one-digit positive sum)
	Tier 3 Student will add a positive and negative integer. (two-digit integers, results in positive or negative sum)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

What is $6 + (-4)$?



Tier 1

- A. 10
- B. 2**
- C. -2

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.2.a.1: Subtract positive and negative integers.
IAS Standard	MA.7.C.2: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference and apply this principle in real-world contexts.
Content Limits	Integers between -20 and 20 .
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	difference, integers
Cognitive Complexity	3
Evidence Statements	
Evidence Statements	Tier 1 Student will subtract two positive numbers (resulting in positive difference).
	Tier 2 Student will subtract positive and negative integers.
	Tier 3 Student will subtract two negative numbers.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

What is $12 - (-5)$?

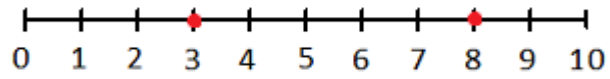
- A. 17**
- B. 7**
- C. -5**

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.2.a.2: Find the distance between two rational numbers on a number line using absolute value.
IAS Standard	MA.7.C.2: Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
Content Limits	Integers between -10 and 10 .
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	distance, number line
Cognitive Complexity	3
Evidence Statements	
Evidence Statements	Tier 1 Student will find the distance between two positive numbers, given a number line. (points are marked and labeled on the number line)
	Tier 2 Student will find the distance between two rational numbers, given a number line. (points are marked and labeled on the number line)
	Tier 3 Student will find the distance between two rational numbers, given a number line.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Here is a number line.



What is the distance between 3 and 8?

- A. 3
- B. 5**
- C. 11

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.3.a.1: Solve multiplication problems with positive and negative integers.
IAS Standard	MA.7.C.3: Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers.
Content Limits	Integers between -20 and 20 . Some problems must allow for identifying intermediate steps, like identifying that 3×-5 is equivalent to $-5 + -5 + -5$.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will multiply two positive single-digit integers. (single-digit integers, results in a single-digit product)
	Tier 2 Student will multiply a positive and a negative integer. (single digit and two-digit integers)
	Tier 3 Student will multiply a positive and a negative integer. (two-digit integers)

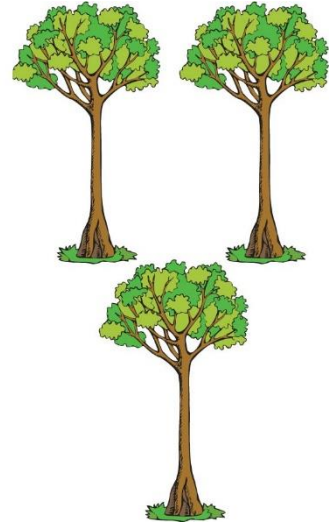
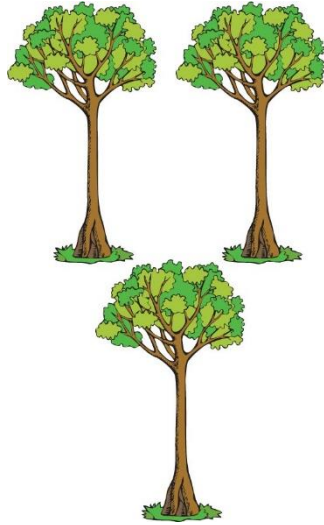
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 2	<p>What is the solution to 2×-10?</p> <p>A. -20 B. -8 C. 12</p>

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.4.a.1: Solve division problems with positive and negative integers.
IAS Standard	MA.7.C.4: Understand that integers can be divided, provided that the divisor is not zero, and that every quotient of integers (with non-zero divisor) is a rational number. Understand that if p and q are integers, then $-\left(\frac{p}{q}\right) = \frac{(-p)}{q} = \frac{p}{(-q)}$.
Content Limits	Integers between -20 and 20. No fraction answers.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will divide two positive integers. (single-digit integers, results in single-digit quotient)
	Tier 2 Student will divide a positive and negative integer. (single-digit integers)
	Tier 3 Student will divide a positive and negative integer. (single-digit and two-digit integers)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

What is $6 \div 2$?



- A. 12
- B. 4
- C. 3**

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.5.a.1: Determine unit rates given a ratio of lengths, areas, and other quantities measured in like units.
IAS Standard	MA.7.C.5: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
Content Limits	Whole numbers up to 20.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	ratio, unit rate
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will find the unit rate given the ratio and a diagram.
	Tier 2 Student will find the unit rate given a ratio.
	Tier 3 Student will find the unit rate given a labeled diagram.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A


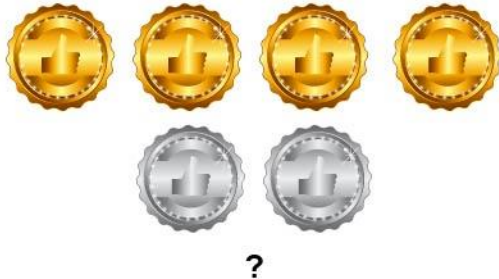
Sample Item	
Tier 2	<p>Kayla went to the store and paid \$10 for 5 pounds of apples. This is represented by the ratio 10:5.</p> <p>What is the unit rate of dollars per pound?</p> <p>A. \$2 per pound of apples B. \$5 per pound of apples C. \$15 per pound of apples</p>

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.6.a.1: Use proportions to solve ratio problems.
IAS Standard	MA.7.C.6: Use proportional relationships to solve ratio and percent problems with multiple operations, such as the following: simple interest, tax, markups, markdowns, gratuities, commissions, fees, conversions within and across measurement systems, percent increase and decrease, and percent error.
Content Limits	Answers result in integers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	ratio, proportion
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify the correct proportion for the given situation.
	Tier 2 Student will be able to solve a proportion for a situation using a given formula. (Students are given the formula and should be able to solve question)
	Tier 3 Student will be able to solve a proportion for a situation without a provided formula.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	<p>Adrian can drive 100 miles with 4 gallons of gas.</p> <p>Using the proportion $\frac{100}{x} = \frac{4}{1}$, how many miles can she drive with 1 gallon of gas?</p> <p>A. 40 miles B. 10 miles C. 25 miles</p>

Updated:07/19

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.6.a.2: Solve word problems involving ratios.
IAS Standard	MA.7.C.6: Use proportional relationships to solve ratio and percent problems with multiple operations, such as the following: simple interest, tax, markups, markdowns, gratuities, commissions, fees, conversions within and across measurement systems, percent increase and decrease, and percent error.
Content Limits	Answer must be to the exact whole, tenth, or hundredth (no rounding).
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	ratio
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will identify if a ratio increases or decreases given a real-world problem.
	Tier 2 Student is able to solve for a real-world ratio problem using a provided equation. (students are given the equation to solve).
	Tier 3 Student is able to solve a real-world ratio problem using a given formula. (students are given the formula and should be able to setup and solve the equation).

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 1	<p>Gordon has 3 gold medals and 2 silver medals. The ratio of gold to silver medals is 3:2.</p>  <p style="text-align: center;">3:2</p>  <p style="text-align: center;">?</p> <p>If Gordon wins another gold medal, what will happen to the ratio of gold to silver medals?</p> <p>A. The ratio will decrease. B. The ratio will increase. C. The ratio will remain the same.</p>

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.6.a.3: Use proportional relationships to solve multi-step percent problems.
IAS Standard	MA.7.C.6: Use proportional relationships to solve ratio and percent problems with multiple operations, such as the following: simple interest, tax, markups, markdowns, gratuities, commissions, fees, conversions within and across measurement systems, percent increase and decrease, and percent error.
Content Limits	Answer must be to the exact whole, tenth, or hundredth (no rounding).
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	proportion, percent, ratio
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will identify if a ratio increases or decreases given a proportional relationship.
	Tier 2 Student is able to solve a single step proportional relationship using a provided equation. (students are given the equation to solve)
	Tier 3 Student is able to solve a multi-step proportional relationship using a provided formula. (students are given the formula and should be able to set up and solve the equation)

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 2	<p>Erin buys a pair of shoes for 50% off their original price. The original price was \$80. Erin uses the following proportion to find out the sale price of the shoes.</p> $\frac{x}{80} = \frac{50}{100}$ <p>What is the sale price of the shoes?</p> <p>A. 30 B. 40 C. 50</p>

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.7.a.1: Compute with rational numbers.
IAS Standard	MA.7.C.7: Compute with rational numbers fluently using a standard algorithmic approach.
Content Limits	denominator only includes 2, 3, 4 positive numbers only
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	No context required
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will add rational numbers with common denominators.
	Tier 2 Student will add or subtract rational numbers.
	Tier 3 Student will add, subtract, or multiply with rational numbers.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

What is $\frac{1}{4} + \frac{2}{4}$?

A. $\frac{1}{4}$

B. $\frac{3}{4}$

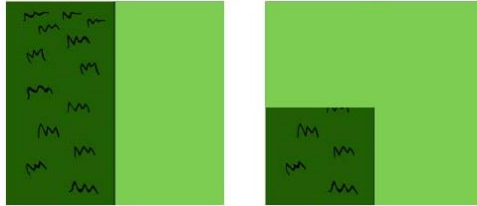
C. $\frac{3}{8}$

Reporting Category	Number Sense & Computation
Content Connector	MA.7.C.8.a.1: Using one operation, solve real-world problems involving rational numbers.
IAS Standard	MA.7.C.8: Solve real-world problems with rational numbers by using one or two operations.
Content Limits	The denominator only includes 2, 3, 4. Use positive numbers only.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	NA
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will add rational numbers with common denominators, given a real-world problem.
	Tier 2 Student will add or subtract rational numbers, given a real-world problem.
	Tier 3 Student will add, subtract, or multiply with rational numbers, given a real-world problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

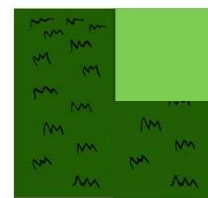
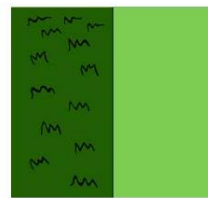
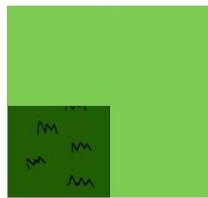
Sample Item

Tier 1

Jason mows $\frac{2}{4}$ of his lawn. He takes a break and then mows $\frac{1}{4}$ of his yard.



How much of his yard did he mow altogether?



A. $\frac{1}{4}$

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

C. $\frac{3}{4}$

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.1.a.1: Determine sample size to answer a given question.
IAS Standard	MA.7.DSP.1: Understand that statistics can be used to gain information about a population by examining a sample of the population and generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
Content Limits	Sample space is not greater than 10.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)
Construct-Relevant Vocabulary	sample and population random survey
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify if a sample size is appropriate for a given situation.
	Tier 2 Student will be able to identify the sample size given a diagram of a given situation.
	Tier 3 Student will be able to determine the sample size by solving for a given situation.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Hilary is working on a math project at school. She wants to do a survey to find out what types of music are most popular the school of 2000 students.

What would be the **best** sample size for her project?

- A. 50 students
- B. 2500 students
- C. **150 students**

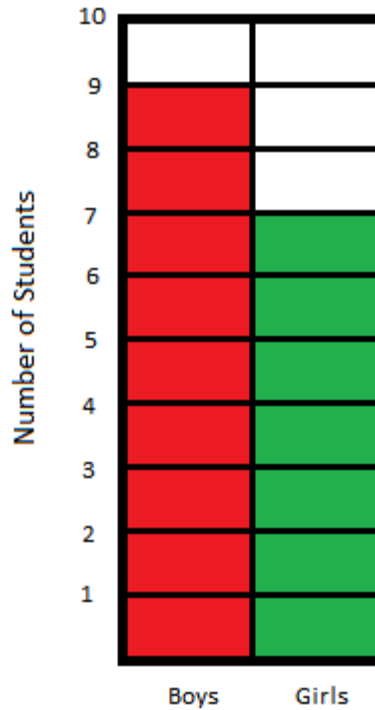
Reporting Category	Data Analysis
Content Connector	MA.7.DSP.2.a.1: Interpret data to draw conclusions.
IAS Standard	MA.7.DSP.2: Use data from a random sample to draw inferences about a population. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.
Content Limits	Positive numbers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	greater than, less than
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to determine greater than or less than from a given graph.
	Tier 2 Student will be able to analyze a graph to determine which category is chosen the most.
	Tier 3 Student will be able to use the data to derive further in-depth conclusions. (see sample below)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Mrs. Smith makes a bar graph of the students in her class.

Mrs. Smith's Students



Which statement is true?

- A. The number of boys is greater than the number of girls.
- B. The number of girls is greater than the number of boys.
- C. The number of girls is the same as the number of boys.

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.3.a.1: Identify the range, median, mean, or mode of a given data set.
IAS Standard	MA.7.DSP.3: Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.
Content Limits	Use positive integers.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	range, median, mean, mode
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student is able to find the range of a data set.
	Tier 2 Student is able to find measures of central tendency of a data set.
	Tier 3 Student is able to find measures of central tendency of a data set.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

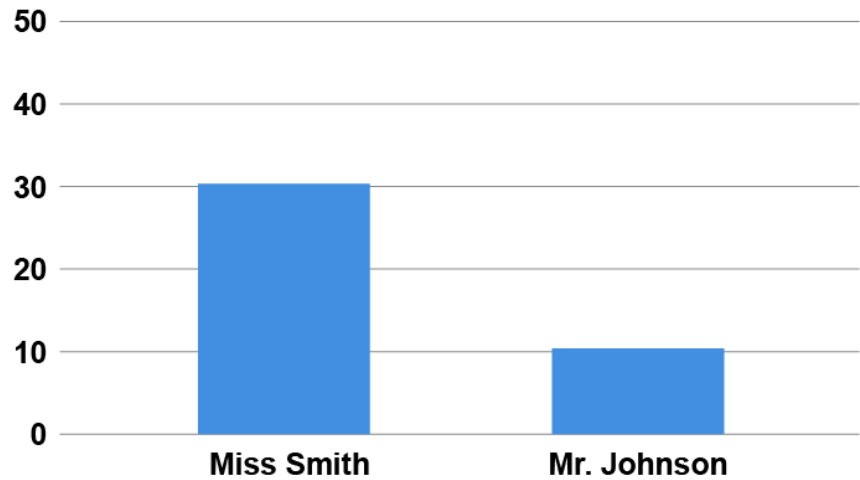
Sample Item	
Tier 1	<p>Here is a data set.</p> <p>2, 2, 4, 5, 7, 10, 13</p> <p>What is the range?</p> <p>A. 5 B. 11 C. 13</p>

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.3.a.2: Compare two similar populations/models to draw a conclusion.
IAS Standard	MA.7.DSP.3: Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.
Content Limits	Use positive integers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	range, mean, median
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to compare the data of two populations using only range.
	Tier 2 Student will be able to use measures of central tendency to compare the data of two ordered populations.
	Tier 3 Student will be able to use measures of central tendency to compare the data of two populations.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

The range of test scores in Miss Smith's class is 30. The range of test scores in Mr. Johnson's class is 10.



Which class has the greater range?

- A. Miss Smith's class has the greater range.
- B. Mr. Johnson's class has the greater range.
- C. The classes have the same range.

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.3.a.3: Make or select an appropriate statement based on two unequal data sets using measure of central tendency and shape.
IAS Standard	MA.7.DSP.3: Find, use, and interpret measures of center (mean and median) and measures of spread (range, interquartile range, and mean absolute deviation) for numerical data from random samples to draw comparative inferences about two populations.
Content Limits	Use positive integers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	median, mean
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to select a statement based on the data of two populations using only range.
	Tier 2 Student will be able to select a statement based on the data of two ordered populations.
	Tier 3 Student will be able to select a statement based on the data of two populations.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

Mrs. Jones' class and Mr. Kahn's class both take a test. Here are the results.

Mrs. Jones' class scores:

Month	Test Score
January	80
February	65
March	90

Mr. Kahn's class scores:

Month	Test Score
January	71
February	62
March	80

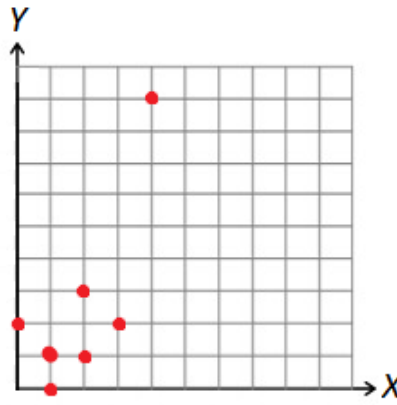
What can we say about the median score of the classes?

- A. Mrs. Jones' class had the higher median score.
- B. Mr. Kahn's class had the higher median score.
- C. The classes had the same median score.

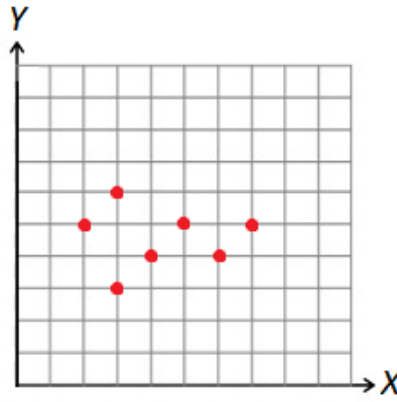
Reporting Category	Data Analysis
Content Connector	MA.7.DSP.4.a.1: Make or select a statement to compare the distribution of two data sets.
IAS Standard	MA.7.DSP.4: Make observations about the degree of visual overlap of two numerical data distributions represented in line plots or box plots. Describe how data, particularly outliers, added to a data set may affect the mean and/or median.
Content Limits	Use positive integers.
Allowable Stimulus Material	N/A
Context	Context allowed, but not required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	outlier, line plot, box plot
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will select the graph that shows an obvious outlier.
	Tier 2 Student will select a statement the best describes the outlier's representation in the given situation.
	Tier 3 Student will select the statement which best describes the comparison of two data sets.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

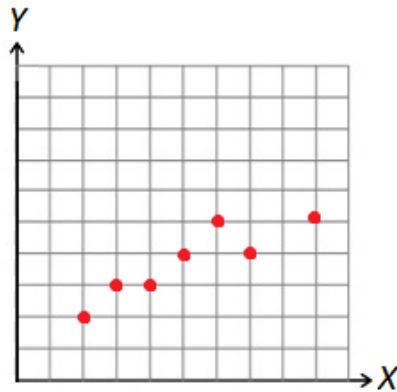
Which graph shows an outlier?



A.
KEY
(audio: This one)



B.
(audio: This one)



C.
(audio: This one)

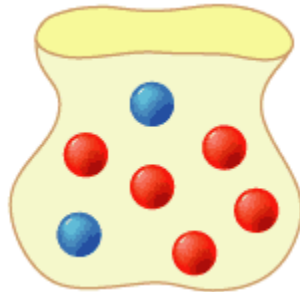
Tier 1

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.5.a.1: Describe the probability of events as being certain or impossible.
IAS Standard	MA.7.DSP.5: Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Understand that a probability near 0 indicates an unlikely event, a probability around $\frac{1}{2}$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. Understand that a probability of 1 indicates an event certain to occur and a probability of 0 indicates an event impossible to occur.
Content Limits	Use positive integers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Table Match (TM)
Construct-Relevant Vocabulary	certain, impossible
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will identify an event as certain or impossible in a given situation.
	Tier 2 Student will identify an event as certain or impossible in a given situation.
	Tier 3 Student will identify an event as certain or impossible in a given situation.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Here is a bag of marbles. The bag has 2 blue marbles and 5 red marbles. Mia wants to pick a purple marble.



What is the probability that Mia will pick a purple marble?

- A. certain
- B. equal
- C. **impossible**

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.6.a.1: Make a prediction regarding the probability of an event occurring; conduct simple probability experiments.
IAS Standard	MA.7.DSP.6: Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its relative frequency from a large sample.
Content Limits	Whole numbers up to 20. Use visuals for all tiers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	likelihood, probability
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to determine if an event has a likelihood of occurring.
	Tier 2 Student will be able to predict the probability of an event occurring unrelated to a larger sample. (separate by groups to make it more visually separated)
	Tier 3 Student will be able to predict the probability of an event occurring related to a large sample. (random sample of data where students need to organize the information)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

Sandra is flipping a quarter to see if it will land on heads or tails. Here are her results.

Heads	X		X			X	X		X		X	X		
Tails		X		X	X			X		X			X	X

Based on Sandra's results, what is the probability of her next flip being heads?

- A. 1:2
- B. 1:7
- C. 6:14

Reporting Category	Data Analysis
Content Connector	MA.7.DSP.7.a.1: Compare actual results of simple experiments with theoretical probabilities.
IAS Standard	MA.7.DSP.7: Develop probability models that include the sample space and probabilities of outcomes to represent simple events with equally likely outcomes. Predict the approximate relative frequency of the event based on the model. Compare probabilities from the model to observed frequencies; evaluate the level of agreement and explain possible sources of discrepancy.
Content Limits	Whole numbers up to 20. Use visuals for all tiers.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Numeric Response (NR)
Construct-Relevant Vocabulary	chance or probability, number cube
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to determine if an event is certain or impossible from a simple set of data.
	Tier2 Student will be able to determine if an event is likely, unlikely, certain, or impossible from a grouped set of data.
	Tier 3 Student will be able to determine if an event is likely, unlikely, certain, or impossible from a randomized set of data.

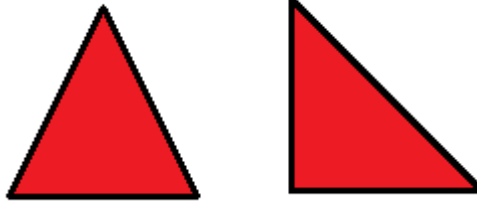
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 3	<p>What is the best likelihood of rolling a 2 on a fair number cube?</p> <p>A. impossible B. unlikely C. likely D. certain</p>

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.2.a.1: Identify similar polygons.
IAS Standard	MA.7.GM.2: Identify and describe similarity relationships of polygons including the angle-angle criterion for similar triangles, and solve problems involving similarity.
Content Limits	Polygons have up to 8 sides.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	polygon, individual shape names: circle, square, rectangle, triangle, etc.
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will identify a polygon.
	Tier 2 Student will identify if two polygons are similar.
	Tier 3 Student will identify and explain which polygons are similar to a given polygon.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Here are two triangles.



How can we describe the triangles?

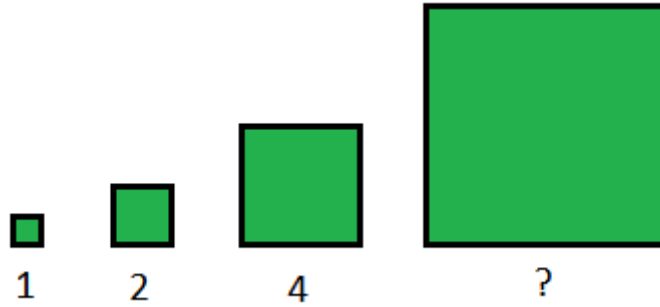
- A. they are similar
- B. they are different types**
- C. they are congruent

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.3.a.1: When given a real-world situation, determine the appropriate scale.
IAS Standard	MA.7.GM.3: Solve real-world and other mathematical problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing. Create a scale drawing by using proportional reasoning.
Content Limits	All scale models should be familiar objects. Only whole numbers in scale. All models and figures being compared should be drawn appropriately for the scale.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	scale
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to determine if an object has been enlarged or reduced in size.
	Tier 2 Student will be able to determine the scale given two similar polygons (scale should already be in simplest form).
	Tier 3 Student will determine a side length of a succeeding polygon in a pattern of similar polygons.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

Here is a pattern.



What is the next side length in the pattern?

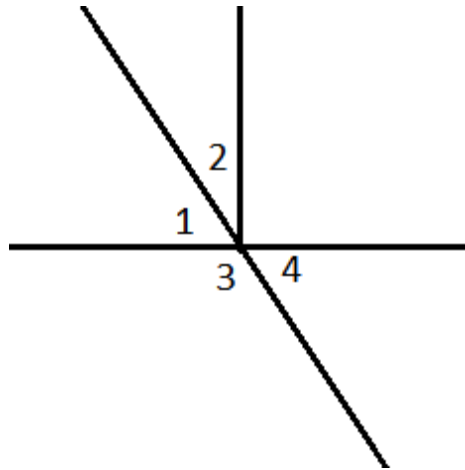
- A. 6
- B. 8**
- C. 16

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.4.a.1: Identify various angles in a real-world situation.
IAS Standard	MA.7.GM.4: Solve real-world and other mathematical problems that involve vertical, adjacent, complementary, and supplementary angles.
Content Limits	Use object visuals for Tier 1 and 2. Use real-world intersecting lines (such as a road map) for Tier 3. Restrict labels of angles to 1, 2, 3, and 4.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)
Construct-Relevant Vocabulary	angle, complementary, supplementary, adjacent
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify which object is across from or next to the given object.
	Tier 2 Student will be able to identify a complementary or supplementary angle from a given angle.
	Tier 3 Student will be able to identify a complementary or supplementary angle in a real-world problem.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 2

Here are angles 1, 2, 3 and 4.



Which angle is complementary to Angle 1?

- A. Angle 2
- B. Angle 3
- C. Angle 4

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.5.a.1: Understand the formulas to calculate the area and circumference of a circle.
IAS Standard	MA.7.GM.5: Understand the formulas for area and circumference of a circle and use them to solve real-world and other mathematical problems; give an informal derivation of the relationship between circumference and area of a circle.
Content Limits	Keep scenarios real world. Include as many graphics as possible.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)
Construct-Relevant Vocabulary	area, circumference
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify a scenario as area or circumference of a circle.
	Tier 2 Student will understand the difference between the formulas for area and circumference of a circle by matching the description to the formula.
	Tier 3 Student will use the given formula for area or circumference of a circle to solve.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	<p>Here are the formulas to find the area and circumference of a circle.</p> $A = \pi \times r^2 \text{ and } C = 2 \times \pi \times r$ <p>What is the area and circumference of a circle with a radius of 6 inches?</p> <p>A. $A = 6\pi$, and $C = 2\pi$ B. $A = 36\pi$, and $C = 12\pi$ C. $A = 6\pi^2$, and $C = 6\pi$</p>

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.6.a.1: Given a model and an equation with all variables given, find the volume of a cylinder.
IAS Standard	MA.7.GM.6: Solve real-world and other mathematical problems involving volume of cylinders and three-dimensional objects composed of right rectangular prisms.
Content Limits	Keep scenarios real world. Include as many graphics as possible. If no calculator is allowed, keep the numbers as whole numbers up to five.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Equation Response (EQ)
Construct-Relevant Vocabulary	volume, cylinder
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will identify a cylinder. (provide a circle, cone, and sphere as choices)
	Tier 2 Student will identify a given situation as a volume scenario.
	Tier 3 Student will find the volume of a cylinder, given a model and the formula. (all information is provided to find the volume)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

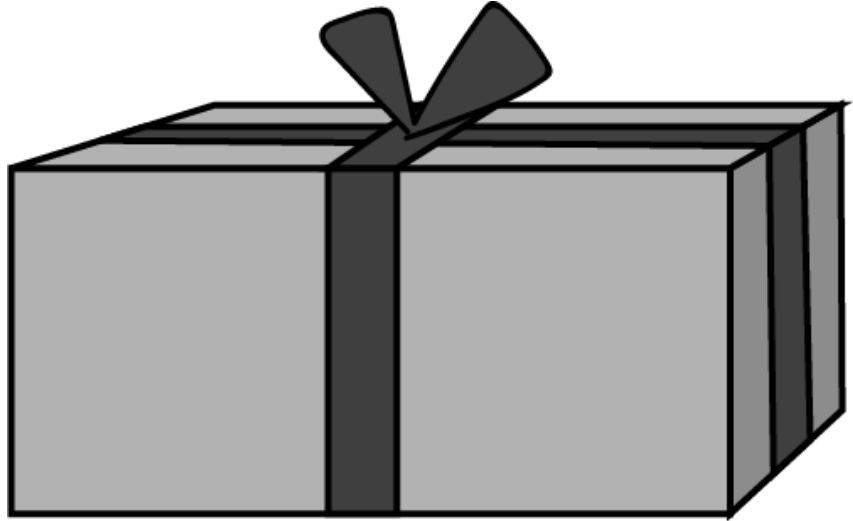
Sample Item	
Tier 2	<p>Candace fills a cup with water.</p> <p>What does this represent?</p> <ul style="list-style-type: none">A. areaB. circumferenceC. volume

Reporting Category	Geometry and Measurement
Content Connector	MA.7.GM.7.a.1: Understand surface area and identify it in a real-world situation.
IAS Standard	MA.7.GM.7: Construct nets for right rectangular prisms and cylinders and use the nets to compute the surface area; apply this technique to solve real-world and other mathematical problems.
Content Limits	Keep scenarios real world. Include as many graphics as possible. If no calculator is allowed, keep the numbers as whole numbers up to five.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	surface area, net
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will identify surface area from a given scenario.
	Tier 2 Student will identify parts of a net of a cylinder.
	Tier 3 Student will match the net of the surface area of a cylinder to given nets.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1

Bobbie wants to wrap a gift box.



What information does she need to determine how much paper to use?

- A. **surface area**
- B. volume
- C. weight

Reporting Category	Number Sense & Computation
Content Connector	MA.7.NS.1.a.1: Determine the prime factorization of whole numbers.
IAS Standard	MA.7.NS.1: Find the prime factorization of whole numbers and write the results using exponents.
Content Limits	Use prime numbers up to 7. Use composite numbers up to 40.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	prime factorization, prime number
Cognitive Complexity	5
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify a prime number.
	Tier 2 Student will be able to identify the prime factorization of a number less than 20.
	Tier 3 Student will be able to identify the prime factorization of a number less than 40.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 3

What is the prime factorization of 36?

A. 6×6

B. $4 \times 3 \times 3$

C. $2 \times 2 \times 3 \times 3$

Reporting Category	Number Sense & Computation
Content Connector	MA.7.NS.2.a.1: Identify perfect squares.
IAS Standard	MA.7.NS.2: Understand the inverse relationship between squaring and finding the square root of a perfect square integer. Find square roots of perfect square integers.
Content Limits	Use positive numbers. Use numbers up to 36. Use the symbol, not the written form, of square root.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to describe the process of deriving a perfect square.
	Tier 2 Student will be able to identify the square root of a whole number up to 16.
	Tier 3 Student will be able to identify the square root of a whole number up to 36.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 2	What is $\sqrt{16}$? A. 4 B. 8 C. 16

Reporting Category	Number Sense & Computation
Content Connector	MA.7.NS.3.a.1: Understand the definition of rational and irrational numbers.
IAS Standard	MA.7.NS.3: Know there are rational and irrational numbers. Identify, compare, and order rational and common irrational numbers ($\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, π) and plot them on a number line.
Content Limits	The denominator only includes 2, 3, 4.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM)
Construct-Relevant Vocabulary	rational numbers, irrational numbers
Cognitive Complexity	4
Evidence Statements	
Evidence Statements	Tier 1 Student will define a number as rational or irrational (whole numbers and proper fractions that include denominators of 2, 3, and 4).
	Tier 2 Student will define a number as rational or irrational (integers, mixed numbers, and fractions that include denominators of 2, 3, and 4).
	Tier 3 Student will define a number as rational or irrational (positives, negatives, fractions, sq. roots., etc..)
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 1	<p>Here is a number.</p> <p>10</p> <p>How can we describe this number?</p> <p>A. It is rational. B. It is irrational. C. It is negative.</p>

Reporting Category	Number Sense & Computation
Content Connector	MA.7.NS.3.a.2: Order and compare rational and irrational numbers using a number line.
IAS Standard	MA.7.NS.3: Know there are rational and irrational numbers. Identify, compare, and order rational and common irrational numbers ($\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, π) and plot them on a number line.
Content Limits	Number line from -5 to 5. Denominator only includes 2, 3, 4. Order no more than 4 numbers. Numbers to be compared or ordered should be done such that a student can compare them without need of a calculator to calculate decimal equivalents of square roots or fractions.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	least, greatest, number line
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will order and compare whole numbers and common fractions (fractions that include denominators of 2, 3, and 4).
	Tier 2 Student will order and compare integers, mixed numbers, and common fractions (fractions that include denominators of 2, 3, and 4).
	Tier 3 Student will order and compare rational and irrational numbers.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 3	<p>Which is a true statement comparing 5 and $\sqrt{5}$?</p> <p>A. $5 > \sqrt{5}$ B. $5 < \sqrt{5}$ C. $5 = \sqrt{5}$</p>

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	<p>PS.1: Make sense of problems and persevere in solving them. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than simply jumping into a solution attempt. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” and “Is my answer reasonable?” They understand the approaches of others to solving complex problems and identify correspondences between different approaches. Mathematically proficient students understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</p>
Content Limits	<p>Below grade level curriculum. Whole numbers up to 20. Operations limited to addition and subtraction.</p>
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	<p>Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)</p>
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6

Evidence Statements	
Evidence Statements	<p>Tier 1 Student will know if a given option is an entry point to a problem.</p>
	<p>Tier 2 Student will be able to determine if an answer is reasonable.</p>
	<p>Tier 3 Student will persevere in solving a problem.</p>
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 1	<p>Nick received 4 stars on Monday and 2 stars on Tuesday.</p> <p>Nick wants to find the total number of stars he has received.</p> <p>Which expression should he use?</p> <p>A. 4×2 B. $4 + 2$ C. $4 - 2$</p>

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	PS.2: Reason abstractly and quantitatively. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
Content Limits	Whole numbers under 25. Answers result in whole numbers. No more than 2 step equations for error analysis problems.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to translate mathematical terms to symbols.
	Tier 2 Student will be able to reason using mathematical symbols.
	Tier 3 Student will be able to flexibly use different properties of operations.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 1	<p>Maddie wants to know the sum of 4 and 7.</p> <p>Which operation symbol should she use?</p> <p>A. + B. - C. ×</p>

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	<p>PS.3: Construct viable arguments and critique the reasoning of others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They analyze situations by breaking them into cases and recognize and use counterexamples. They organize their mathematical thinking, justify their conclusions and communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. They justify whether a given statement is true always, sometimes, or never. Mathematically proficient students participate and collaborate in a mathematics community. They listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.</p>
Content Limits	<p>Below grade level curriculum. Whole numbers up to 20. Operations limited to addition and subtraction. Assess reasoning about mathematics, not about reasoning about assumptions or conclusions related to a contextual situation. A context may be included, if the emphasis is on the mathematical reasoning.</p>
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	<p>Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Numeric Response (NR)</p>
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6

Evidence Statements	
Evidence Statements	<p>Tier 1 Student will determine the validity of an argument.</p>
	<p>Tier 2 Student will use facts, definitions, and formulas to identify a valid counterexample to an argument.</p>
	<p>Tier 3 Student will make a conjecture based on a pattern.</p>
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 2	<p>Josh says all four-sided polygons are squares. Kylie says that Josh is not correct.</p> <p>What statement would support Kylie?</p> <p>A. Rectangles are also four-sided polygons. B. Circles are also polygons. C. All four-sided polygons are squares.</p>

Updated: 07/19

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	PS.4: Model with mathematics. Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace using a variety of appropriate strategies. They create and use a variety of representations to solve problems and to organize and communicate mathematical ideas. Mathematically proficient students apply what they know and are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.
Content Limits	No more than 3 choices. No bigger than 3x3 when using a table or matching.
Allowable Stimulus Material	N/A
Context	Context required
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will solve a problem by analyzing information given in an intentional order.
	Tier 2 Student will use models and reasoning to solve for a missing answer.
	Tier 3 Student will use models and deductive reasoning to analyze relationships and draw a conclusion.

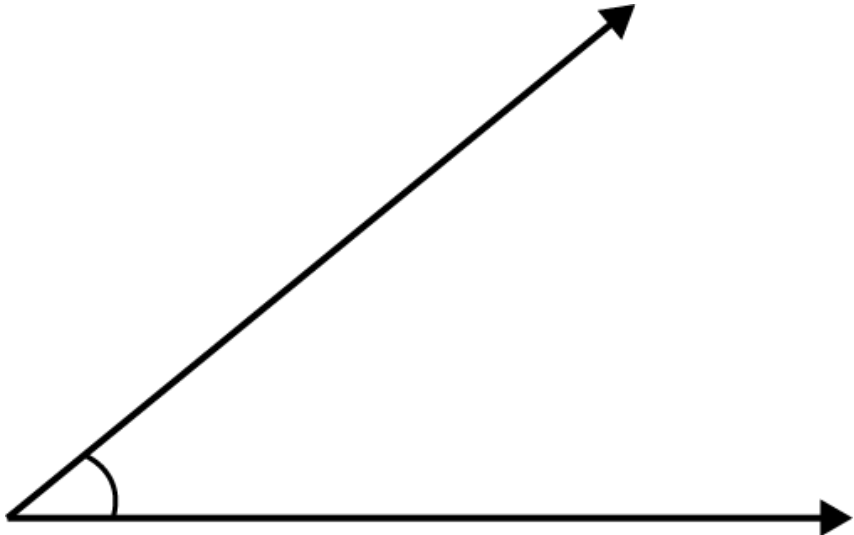


Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 3	<p>There are 3 kids: Nick, Sam, and Kyle. There are 3 pets: dog, cat, and bird.</p> <p>Nick does have a bird. Sam has a cat.</p> <p>What pet does Nick have?</p> <p>A. Cat B. Bird C. Dog</p>

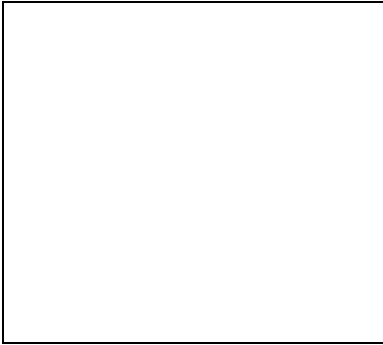
Reporting Category	Process Standards (aggregate reporting only)
IAS Standard	PS.5: Use appropriate tools strategically. Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Mathematically proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. Mathematically proficient students identify relevant external mathematical resources, such as digital content, and use them to pose or solve problems. They use technological tools to explore and deepen their understanding of concepts and to support the development of learning mathematics. They use technology to contribute to concept development, simulation, representation, reasoning, communication and problem solving.
Content Limits	Below grade level curriculum. Whole numbers up to 20. Operations limited to addition and subtraction.
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	ruler, protractor, scale, calculator, thermometer, spreadsheet
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will pick an appropriate tool for a given problem.
	Tier 2 Student will be familiar with appropriate external mathematical resources.
	Tier 3 Student will use technology to deepen their understanding of a given problem.

Accessibility and Accommodation Considerations

Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item

Tier 1	<p>Jack wants to measure an angle.</p>  <p>Which tool should Jack use?</p> <p>A.  ruler</p> <p>B.  scale</p>
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C.

protractor

KEY

Reporting Category	Process Standards (aggregate reporting only)
IAS Standard	<p>PS.6: Attend to precision. Mathematically proficient students communicate precisely to others. They use clear definitions, including correct mathematical language, in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They express solutions clearly and logically by using the appropriate mathematical terms and notation. They specify units of measure and label axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently and check the validity of their results in the context of the problem. They express numerical answers with a degree of precision appropriate for the problem context.</p>
Content Limits	<p>Below grade level curriculum. Whole numbers up to 20. Operations limited to addition and subtraction. Answers result in whole numbers. No more than 2 step equations for error analysis problems.</p>
Allowable Stimulus Material	N/A
Context	Context allowable
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	<p>Tier 1 Student will be able to use mathematical language.</p>
	<p>Tier 2 Student will be able to explain the meanings of symbols chosen to solve a problem.</p>
	<p>Tier 3 Student will be able to use mathematical language and symbols to express solutions.</p>

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 2	<p>Here is an expression.</p> $4 + 5$ <p>What does this expression mean?</p> <p>A. Four is increased by five. B. Four is decreased by five. C. Four is multiplied by five.</p>

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	PS.7: Look for and make use of structure. Mathematically proficient students look closely to discern a pattern or structure. They step back for an overview and shift perspective. They recognize and use properties of operations and equality. They organize and classify geometric shapes based on their attributes. They see expressions, equations, and geometric figures as single objects or as being composed of several objects.
Content Limits	Whole numbers under 100 for the numeric patterns. Cubes or squares for geometric patterns. For multiples and addends, use whole numbers under 5.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will be able to identify simple patterns.
	Tier 2 Student will be able to continue a pattern of 2D shapes, figures, and simple (+ and -) numeric patterns.
	Tier 3 Student will be able to continue a pattern of 3D shapes, figures, and (multiplication) numeric patterns.

Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A
Sample Item	
Tier 2	<p>Here is a pattern.</p> <p>25, 22, 19, 16, ...</p> <p>Which number comes next in the pattern?</p> <p>A. 14 B. 13 C. 12</p>

Reporting Category	Process Standards (aggregate reporting only)
Content Connector / IAS Standard	PS.8: Look for and express regularity in repeated reasoning. Mathematically proficient students notice if calculations are repeated and look for general methods and shortcuts. They notice regularity in mathematical problems and their work to create a rule or formula. Mathematically proficient students maintain oversight of the process, while attending to the details as they solve a problem. They continually evaluate the reasonableness of their intermediate results.
Content Limits	Whole numbers under 50. Multiples and addends no greater than 5. Below grade level curriculum.
Allowable Stimulus Material	N/A
Context	No context
Recommended Response Mechanisms	Multiple Choice (MC) Multiple Select (MS) Table Match (TM) Equation Response (EQ)
Construct-Relevant Vocabulary	N/A
Cognitive Complexity	6
Evidence Statements	
Evidence Statements	Tier 1 Student will tell if a pattern repeats.
	Tier 2 Student will identify the rule for a pattern.
	Tier 3 Student will identify the rule for a pattern and provide the next result in the sequence.
Accessibility and Accommodation Considerations	
Stimulus Graphic Limitations	Stimulus graphics will be limited to clear photos, illustrations, diagrams, tables, and charts that directly relate to the passage topic. Information contained within stimulus graphics is ineligible for assessment unless specifically prescribed by Content Connector and/or evidence statements.
Linguistic Complexity	To be determined after IDOE review
Reference Tools	N/A

Sample Item	
Tier 1	<p>Which group of letters shows a repeating pattern?</p> <p>A. D, E, F, D, E, F, D, E, F B. D, E, F, D, D, E, E, F, F C. D, E, F, F, D, F, E, E, D</p>

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