Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
1	1	MC	B	8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.
1	2	MC	D	8.NS.A.1 Know that all numbers are rational or irrational. Understand that every number has a decimal expansion; for rational numbers show that the decimal eventually repeats, and convert a decimal expansion which repeats eventually into a rational number.
1	3	MC	A	8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
1	4	MC	C	8.F.A.1 Understand that a function is a rule that assigns exactly one output to each input. The graph of a function is the set of ordered pairs consisting of an input and corresponding output.
1	5	MS	B, D, E	8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*
1	6	TE	see TE* item image at end of scoring guide	8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations.
1	7	Part A: MC Part B: MC	Part A: A Part B: B	8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
1	8	MC	B	8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*
1	9	MC	A	8.SP.A.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
1	10	SA	20	8.EE.A.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger.*

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Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
1	11	MC	B	8.EE.C.8b Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.*
1	12	MC	C	8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
1	13	MC	A	8.EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
1	14	TE	see TE* item image at end of scoring guide	8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
1	15	MC	B	8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.*
1	16	MC	C	8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
1	17	MS	C, D, F	8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 32 × 3-5 = 3-3 = 1/33 = 1/27.
1	18	SA	−2 or −5	8.F.A.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
1	19	MS	A, C, E	8.F.A.1 Understand that a function is a rule that assigns exactly one output to each input. The graph of a function is the set of ordered pairs consisting of an input and corresponding output.
1	20	MC	A	8.EE.A.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
2	21	SA	12	8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
2	22	TE	see TE* item image at end of scoring guide	8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
2	23	Part A: MC Part B: MC	Part A: A Part B: B	8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
2	24	MC	C	8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
2	25	MC	B	8.EE.C.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
2	26	MS	B, C	8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*
2	27	CR	see rubric	Micro-models: Autonomously apply a technique from pure mathematics to a real-world situation in which the technique yields valuable results even though it is obviously not applicable in a strict mathematical sense (e.g., profitably applying proportional relationships to a phenomenon that is obviously nonlinear or statistical in nature) using knowledge and skills articulated in Sub-claim A. 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
2	28	SA	9	8.EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair* .
2	29	Part A: MC Part B: SA	Part A: C Part B: 8	8.SP.A.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height* .

Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
2	30	CR	see rubric	Given an equation or system of equations, present the solution steps as a logical argument that concludes with the set of solutions (if any). 8.EE.C.7a Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). 8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
2	31	CR	see rubric	Apply geometric reasoning in a coordinate setting, and/or use coordinates to draw geometric conclusions. 8.G.A.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. 8.G.A.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
2	32	CR	see rubric	Solve multi-step contextual word problems with degree of difficulty appropriate to Grade 8, requiring application of knowledge and skills articulated in Sub-claim A. 8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.* 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
3	33	MS	B, C, D	8.EE.B.6 Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.
3	34	MC	C	8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
3	35	MC	A	8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse.
3	36	SA	20	8.F.A.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, the function A = s^2 giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*
3	37	CR	see rubric	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. 8.G.A.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*
3	38	MC	D	8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
3	39	SA	6	8.EE.C.8c Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair* .
3	40	Part A: MS Part B: SA	Part A: C, E Part B: 4.8	8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
3	41	CR	see rubric	Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. 7.NS.A.3 Solve real-world and mathematical problems involving the four operations with rational numbers.
3	42	Part A: MS Parts B & C: CR	Part A: A, F Parts B & C: see rubric	Solve multi-step contextual problems with degree of difficulty appropriate to grade 8, requiring application of knowledge and skills articulated in 7.RP.A, 7.NS.3, 7.EE, 7.G, and 7.SP.B. 7.RP.A.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour.* 7.RP.A.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. 7.RP.A.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.

Grade 8 Mathematics Practice Test
Scoring Guide (computer-based form)

Session	Sequence	Item Type	Key	Assessable Content
3	43	MC	B	8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

#27	
Score	**Description**
3	Student response includes each of the following 3 elements: • Finds unit rates for both companies • Valid work or explanation of how unit rates are found for each company • Finds the cost of buying 2,375 kilowatt-hours of electricity from the least expensive company Sample Student Response: The unit rate for Company P is \$0.12 per kilowatt-hour of electricity. When I divide the cost by the number of kilowatt-hours of electricity I get the unit rate. $150.00 \div 1250 = 0.12$ $198.00 \div 1650 = 0.12$ The slope of a linear function can be considered the function's rate. The unit rate for Company M is \$0.15 per kilowatt-hour of electricity. It costs \$285.00 to buy 2,375 kilowatt-hours of electricity from Company P.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

#30	
Score	**Description**
3	Student response includes the following 3 elements. • **Computation component** = 1 point o Correct conclusion about the equation with an appropriate explanation of why the conclusion is valid • **Reasoning component** = 2 points o Correctly uses the distributive property to simplify both sides of the equation o Correctly combines like terms, resulting in a false equation in which the variable has been eliminated and two non-equal numbers appear on opposite sides of the equal sign Sample Student Response: -2(11-12x) = -4(1-6x) -22+24x = -4 +24x Subtracting 24x from each side -22+24x -24x = -4 +24x -24x -22 = -4 This is impossible, since -22 is not equal to -4. Therefore, there is no solution to the equation.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

#31 Part A	
Score	**Description**
2	Student response includes each of the following 2 elements: • Identifies the transformation as a reflection • Identifies the reflection is across the line $x = 1$ Sample Student Response: The transformation from ABC to A'B'C' is a reflection across the line $x = 1$. Note: The student can receive 1 point for part A if they describe a correct sequence of transformations instead of a single transformation.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.
#31 Part B	
2	Student response includes each of the following 4 elements: • Identifies the transformation as a reflection • Identifies the reflection is across the *x*-axis • Identifies the transformation as a dilation with scale factor of 2 • Identifies the center of dilation as point C' Sample Student Response: To show the triangles are similar, dilate triangle A'B'C' using a scale factor of 2 with C' as the center of dilation. Then reflect the triangle across the x-axis.
1	Student response includes 2 or 3 of the 4 elements.
0	Student response is incorrect or irrelevant.

#32	
Score	**Description**
3	Student response includes the following 3 elements. • **Computation component** = 1 point o Determines the unit price for both gas stations • **Modeling component** = 2 points o Determines that gas station P charges more for gasoline o Correctly models determining the unit prices and the gas station that charges more for gasoline. Sample Student Response: Based on the unit prices, Gas Station P charges more for gasoline. The unit price for Gas Station P is \$4.00 per gallon since the constant linear graph for Gas Station P shows the point (5, 20), which means it costs \$20 for 5 gallons of gas. The table for Gas Station M shows that 10 gallons cost \$38, so the unit price for Gas Station M is $^{38}/_{10}$ = \$3.80 per gallon.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

#37 Part A	
Score	**Description**
1	Student response includes the following element. • **Reasoning component** = 1 point o Correctly reasons why $\angle KJN$ and $\angle LJM$ are both congruent Sample Student Response: $\angle KJN$ is congruent to $\angle LJM$ because they are the same angle since they exactly overlap.
0	Student response is incorrect or irrelevant.

Part B	
Score	**Description**
2	Student response includes the following element. • **Reasoning component** = 2 points o correct pair of corresponding congruent angles, $\angle JKN$ and $\angle JLM$ or $\angle JNK$ and $\angle JML$ o correctly reasons why the given pair of angles is congruent Sample Student Response: $\angle JKN$ is congruent to $\angle JLM$ OR $\angle JNK$ is congruent to $\angle JML$ Either line segment JL or line segment JM is a transversal to the parallel line segments KN and LM. When two parallel lines are intersected by a transversal, corresponding angles formed by the transversal are congruent. The pair of angles is also corresponding in terms of their locations in ΔKJN and ΔLJM.
1	Student response includes 1 of the 2 elements.
0	Student response is incorrect or irrelevant.

<table>
<tr><th colspan="2">#41 Part A</th></tr>
<tr><th>Score</th><th>Description</th></tr>
<tr><td>2</td><td>Student response includes the following 2 elements.
Computation component = 1 point
Determines both percentage increases
Reasoning component = 1 point
Correctly reasons that the student's claim is justified
Sample Student Response:
Percent increase from 1998 to 2000 is $(1.354 - 1.291)/1.291 \approx 0.0488$.
Percent increase from 2011 to 2013 is $(4.069 - 3.874)/3.874 \approx 0.0503$.
The percent increase for both periods is about 5%, so the student's claim can be justified.</td></tr>
<tr><td>1</td><td>Student response includes 1 of the 2 elements.</td></tr>
<tr><td>0</td><td>Student response is incorrect or irrelevant.</td></tr>
<tr><th colspan="2">Part B</th></tr>
<tr><th>Score</th><th>Description</th></tr>
<tr><td>2</td><td>Student response includes the following 2 elements.
Computation component = 1 point
Determines the percent error of the prediction, 0.8%
Reasoning component = 1 point
Correctly reasons that the newspaper's claim is correct
Sample Student Response:
The percent error of the prediction was 0.8%.
$\frac{4.10 - 4.069}{4.069} = 0.008$
Since 0.8% is less than 2%, the newspaper's claim was correct.</td></tr>
<tr><td>1</td><td>Student response includes 1 of the 2 elements.</td></tr>
<tr><td>0</td><td>Student response is incorrect or irrelevant.</td></tr>
</table>

#42 Part A	
Score	**Description**
1	Student response includes the following element. • **Computation component** = 1 point o Machine Scored: Selects only the following two options: 1/24 cup of milk is used to make each muffin 1 cup of milk is used to make every 24 muffins
0	Student response is incorrect or irrelevant.

#42 Part B	
Score	**Description**
3	Student response includes the following 3 elements. • **Computation component** = 1 point o Indicates that 32 batches of muffins can be made with 1 gallon of milk • **Modeling component** = 2 points o Correct strategy to find the total number of cups in a gallon Note: Providing the correct number of cups in a gallon is sufficient to satisfy this element. o Correct strategy to find the number of batches of muffins that can be made with 1 gallon of milk Sample Student Response: There are 2 cups in a pint, 2 pints in a quart, and 4 quarts in a gallon, so there are $2 \times 2 \times 4 = 16$ cups in a gallon. One cup of milk is needed for 24 muffins, so 1 gallon of milk can make $24 \times 16 = 384$ muffins. This means that $384 \div 12 = 32$ batches of muffins can be made using 1 gallon of milk. Note: The student may show modeling using only equations. If the equations shown represent a valid modeling process, credit should be awarded.
2	Student response includes 2 of the 3 elements.
1	Student response includes 1 of the 3 elements.
0	Student response is incorrect or irrelevant.

<table>
<tr><th colspan="2">#42 Part C</th></tr>
<tr><td>Score</td><td>Description</td></tr>
<tr><td>2</td><td>Student response includes the following elements.

• Computation component = 1 point

o Indicates 7.5 gallons of milk are needed to make 96 muffins every day for 30 days

• Modeling component = 1 point

o Correct strategy to find the number of gallons of milk needed to make 96 muffins each day for 30 days

Sample Student Response:

The bakery makes 96 ÷ 12 = 8 batches of muffins each day. In 30 days, the bakery makes 30 × 8 = 240 batches. Since 32 batches can be made with 1 gallon of milk, 240 batches can be made with 240 ÷ 32 = 7.5 gallons of milk.

Notes:
o The student may receive modeling points if the student shows a sufficient modeling process for some or all of the parts indicated but makes one or more computational errors resulting in incorrect answer(s).
o The student may receive computation points if he or she computes the correct answer(s) to one or all of the parts but shows no work or insufficient work to indicate a correct modeling process.
o The student may not receive more than 2 total points (across all parts) for modeling if the explanations, while sufficient to indicate that the student has a correct process, contain nonsense statements.</td></tr>
<tr><td>1</td><td>Student response includes 1 of the 2 elements.</td></tr>
<tr><td>0</td><td>Student response is incorrect or irrelevant.</td></tr>
</table>

Technology Enhanced Item Images/Keys

#6

Before Response

Indicate whether each of these statements about the figures is true or false by selecting a box in each row.

	True	False
Each figure has one pair of parallel line segments.	☐	☐
The two figures have at least one point in common.	☐	☐
The area of Figure 1 is less than the area of Figure 2.	☐	☐
The figures lie in different quadrants of the coordinate plane.	☐	☐
The acute angles in each figure are congruent to one another.	☐	☐
The perimeter of Figure 1 is greater than the perimeter of Figure 2.	☐	☐

Correct Response

Indicate whether each of these statements about the figures is true or false by selecting a box in each row.

	True	False
Each figure has one pair of parallel line segments.	☑	☐
The two figures have at least one point in common.	☐	☑
The area of Figure 1 is less than the area of Figure 2.	☐	☑
The figures lie in different quadrants of the coordinate plane.	☐	☑
The acute angles in each figure are congruent to one another.	☑	☐
The perimeter of Figure 1 is greater than the perimeter of Figure 2.	☐	☑

Technology Enhanced Item Images/Keys

#14

Before Response

Erin designs packaging for a company. She draws a two-dimensional figure to represent the base of a small package. To represent the base of a large package, she performs the following steps on the original figure:

- First, she dilates it by a factor greater than 1, centered at the origin.
- Then, she rotates it.
- Finally, she dilates it by a factor less than 1, centered at the origin.

Complete the statement to describe the similarity and congruence of the figure representing the base of the large package.

Select from the drop-down menus to correctly complete the statement.

It [▾] and [▾] to the figure representing the base of the small package.

Correct Response

Erin designs packaging for a company. She draws a two-dimensional figure to represent the base of a small package. To represent the base of a large package, she performs the following steps on the original figure:

- First, she dilates it by a factor greater than 1, centered at the origin.
- Then, she rotates it.
- Finally, she dilates it by a factor less than 1, centered at the origin.

Complete the statement to describe the similarity and congruence of the figure representing the base of the large package.

Select from the drop-down menus to correctly complete the statement.

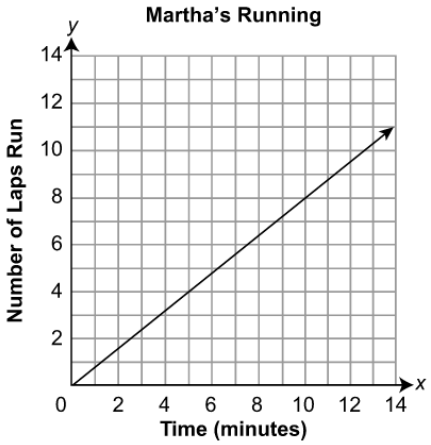
It [must be similar ▾] and [could be congruent ▾] to the figure representing the base of the small package.

Technology Enhanced Item Images/Keys

#22

Before Response

Glenda and Martha run track for their school. Glenda can run $\frac{3}{4}$ of a lap in 1 minute. The graph below shows the number of laps Martha can run over time.

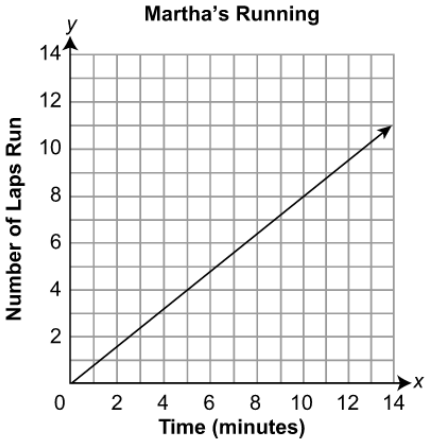


Glenda and Martha decide to run a 20-lap race. Glenda's and Martha's running rates remain constant for all 20 laps. Select the correct names and numbers to complete the statement.

[▾] will win the race, because she runs at a pace [▾] lap per minute faster than [▾].

Correct Response

Glenda and Martha run track for their school. Glenda can run $\frac{3}{4}$ of a lap in 1 minute. The graph below shows the number of laps Martha can run over time.



Glenda and Martha decide to run a 20-lap race. Glenda's and Martha's running rates remain constant for all 20 laps. Select the correct names and numbers to complete the statement.

[Martha ▾] will win the race, because she runs at a pace [0.05 ▾] lap per minute faster than [Glenda ▾].

LEAP

Assessment Reference Sheet

Grade 8

1 inch = 2.54 centimeters
1 meter = 39.37 inches
1 mile = 5280 feet
1 mile = 1760 yards
1 mile = 1.609 kilometers

1 kilometer = 0.62 mile
1 pound = 16 ounces
1 pound = 0.454 kilogram
1 kilogram = 2.2 pounds
1 ton = 2000 pounds

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 gallon = 3.785 liters
1 liter = 0.264 gallon
1 liter = 1000 cubic centimeters

Triangle	$A = \frac{1}{2}bh$
Parallelogram	$A = bh$
Circle	$A = \pi r^2$
Circle	$C = \pi d$ or $C = 2\pi r$
General Prisms	$V = Bh$
Cylinder	$V = \pi r^2 h$
Sphere	$V = \frac{4}{3}\pi r^3$
Cone	$V = \frac{1}{3}\pi r^2 h$
Pythagorean Theorem	$a^2 + b^2 = c^2$