STAAR® Modified

State of Texas Assessments of Academic Readiness — Modified —

GRADE 8

Mathematics

Modified

Administered April 2014

RELEASED

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STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS

LENGTH

Customary	Metric
1 mile (mi) = 1,760 yards (yd)	1 kilometer (km) = 1,000 meters (m)
1 yard (yd) = 3 feet (ft)	1 meter (m) = 100 centimeters (cm)
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary	Metric
1 gallon (gal) = 4 quarts (qt)	1 liter (L) = 1,000 milliliters (mL)
1 quart (qt) = 2 pints (pt)	
1 pint (pt) = 2 cups (c)	
1 cup (c) = 8 fluid ounces (fl oz)	

WEIGHT AND MASS

Customary	Metric
1 ton (T) = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)

TIME

1 year = 12 months

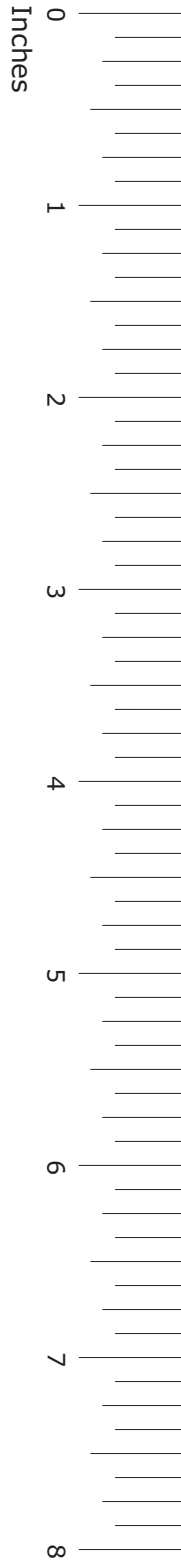
1 year = 52 weeks

1 week = 7 days

1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds



STAAR GRADE 8 MATHEMATICS REFERENCE MATERIALS

CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

SURFACE AREA

	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

VOLUME

Prism or cylinder	$V = Bh$
Pyramid or cone	$V = \frac{1}{3}Bh$
Sphere	$V = \frac{4}{3}\pi r^3$

ADDITIONAL INFORMATION

Pi	$\pi \approx 3.14$	or	$\pi \approx \frac{22}{7}$
Pythagorean theorem			$a^2 + b^2 = c^2$

MATHEMATICS

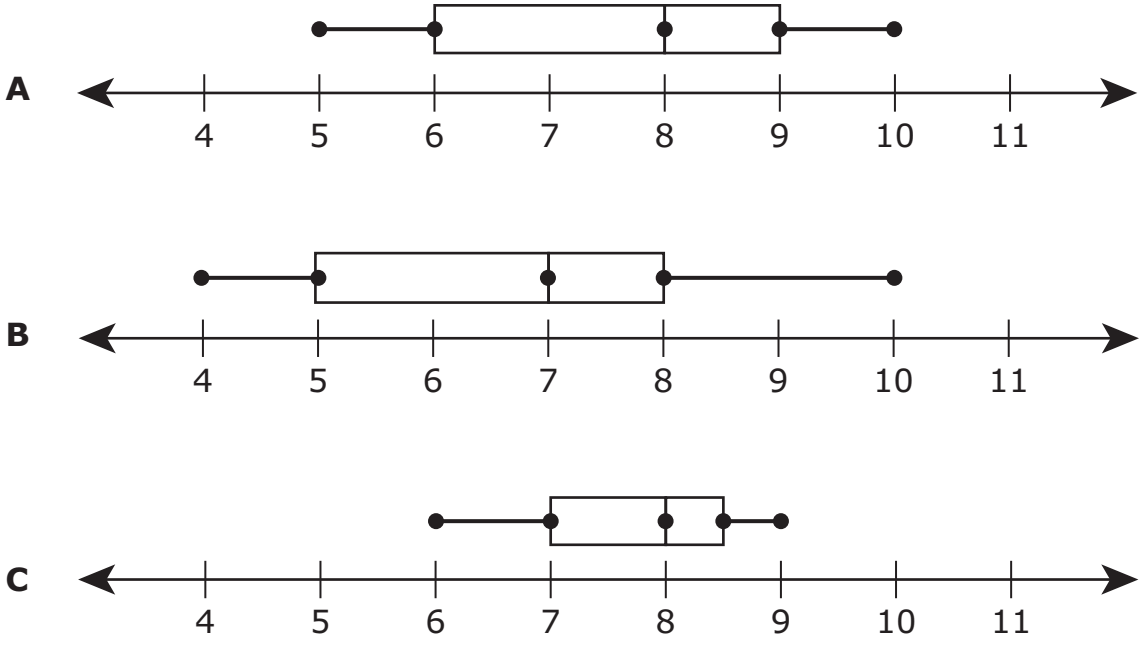
DIRECTIONS

Read each question. For a multiple-choice question, choose the best answer from the three choices provided and fill it in on your answer document. For a griddable question, fill in your answer in the grid on the answer document.

1 Look at the list below. It shows some scores from a math quiz.

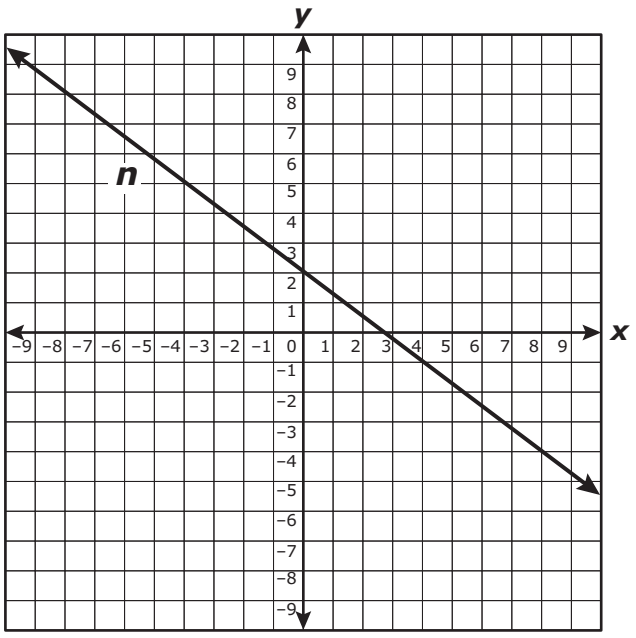
5, 6, 7, 8, 9, 9, 10

Which box and whisker plot best represents these data?



GO ON

2 Look at line *n* on the coordinate grid below.



Which table contains only ordered pairs for points on line *n*?

F

x	*y*
−8	8
0	2
4	1

G

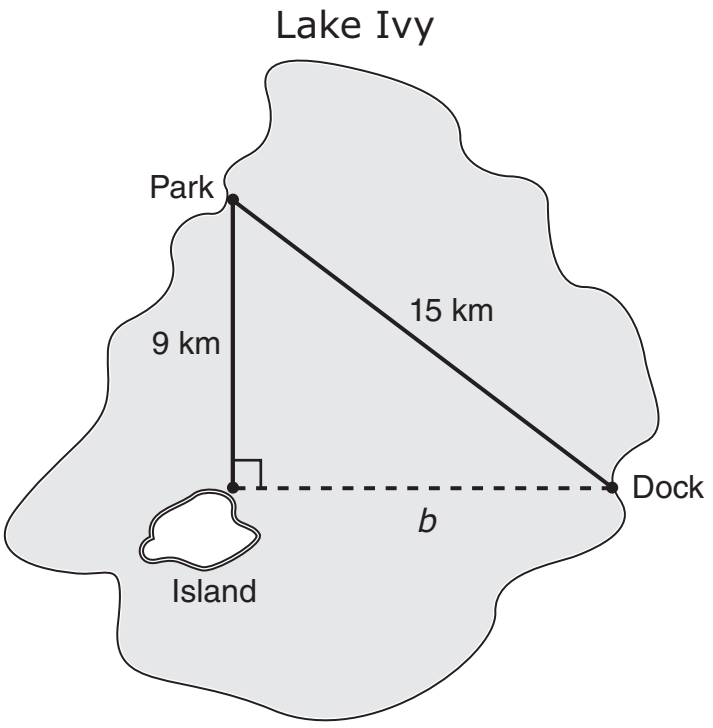
x	*y*
−4	5
0	2
8	−4

H

x	*y*
−8	8
−4	5
2	0

GO ON

3 Mr. Li sailed 15 kilometers across Lake Ivy from a dock to a park. He then sailed 9 kilometers (km) from the park to a small island, as shown below.



Pythagorean theorem

$a^2 + b^2 = c^2$

What is the distance, b, Mr. Li will sail from the island back to the dock?

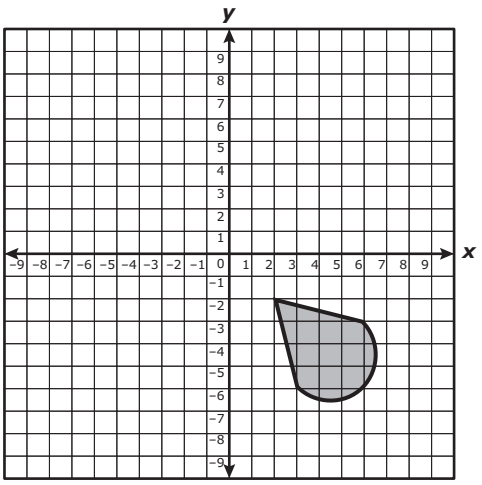
A 12 km

B 17 km

C 6 km

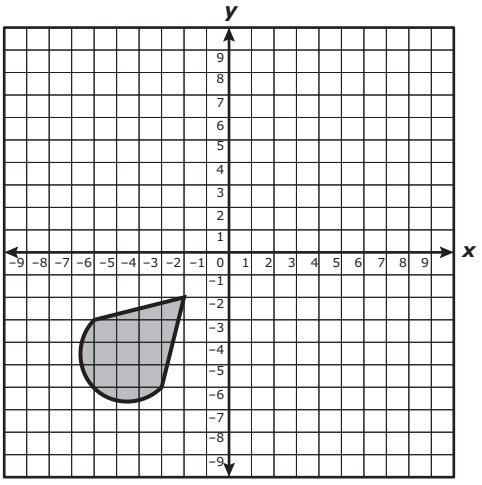
GO ON

4 The graph of a figure is shown below.

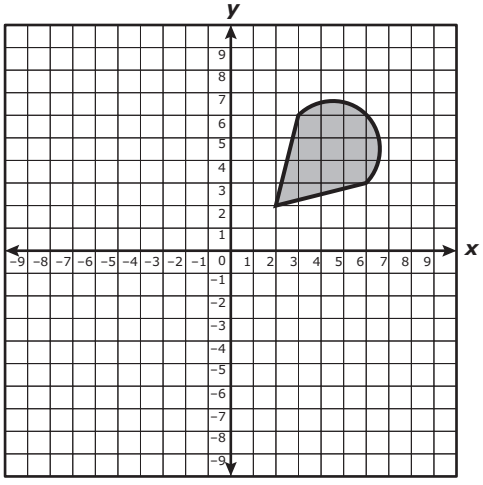


Which graph best represents the reflection of this figure across the *x*-axis?

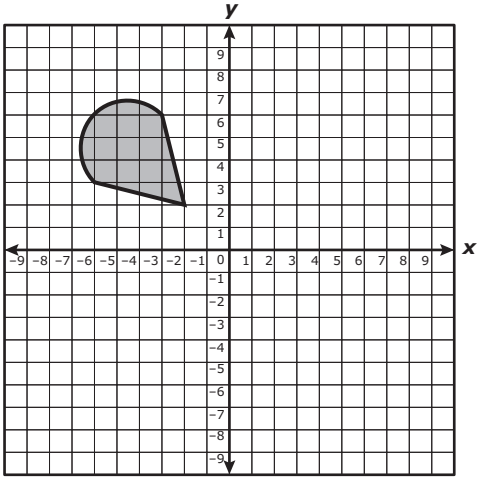
F



H



G



GO ON

5 Elissa plans to make a scale drawing of her rectangular closet floor. The floor is 6 feet long and 4 feet wide. If she uses a scale factor of $\frac{1}{12}$, what will be the length and width of her scale drawing?

A $\frac{3}{2}$ feet long and $\frac{4}{3}$ feet wide

B $\frac{1}{2}$ foot long and $\frac{1}{3}$ foot wide

C $\frac{3}{4}$ foot long and $\frac{1}{4}$ foot wide

---

6 There are some 3-legged stools and 4-legged stools in a room. The total number of stools in the room is 7, and the total number of legs is 23. How many 3-legged stools are in the room?

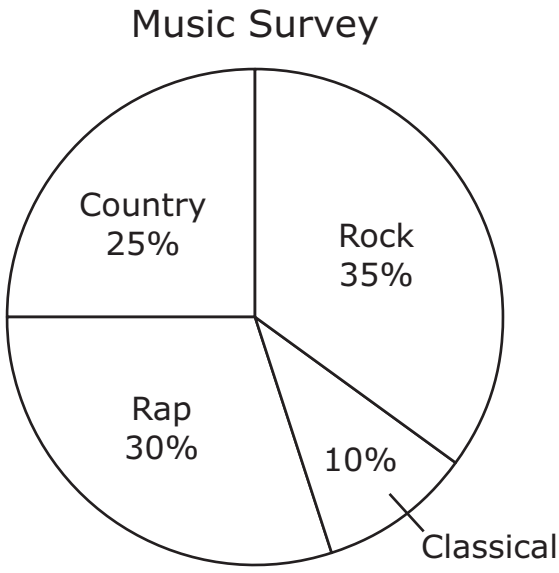
F 6

G 2

H 5

GO ON

7 Perry surveyed students in his school. He asked the students to choose the type of music they like best. His results are shown in the graph below.



Based on the graph, which of these is a valid conclusion?

A More students chose rock than chose country and rap combined.

B Students chose rap to classical by a ratio of 3 to 1.

C Exactly 75% of the students chose either country or rock.

GO ON

8 A class is planning a picnic.

- There will be 100 students at the picnic.
- Each student will eat 2 or 3 hot dogs.
- Hot dogs come in packages of 8.

What is a reasonable estimate of the number of packages of hot dogs needed for the picnic?

F 75

G 32

H 13

---

9 A student found that the radius of a circle is $\sqrt{118}$ millimeters long. Which measurement is closest to the length of this radius?

A 59 millimeters

B 33 millimeters

C 11 millimeters

GO ON

10 Look at the table below. It shows the relationship between pints and gallons.

Units of Measure

Pints	Gallons
8	1
16	2
24	3

Based on the table, how many pints are equivalent to 6 gallons?

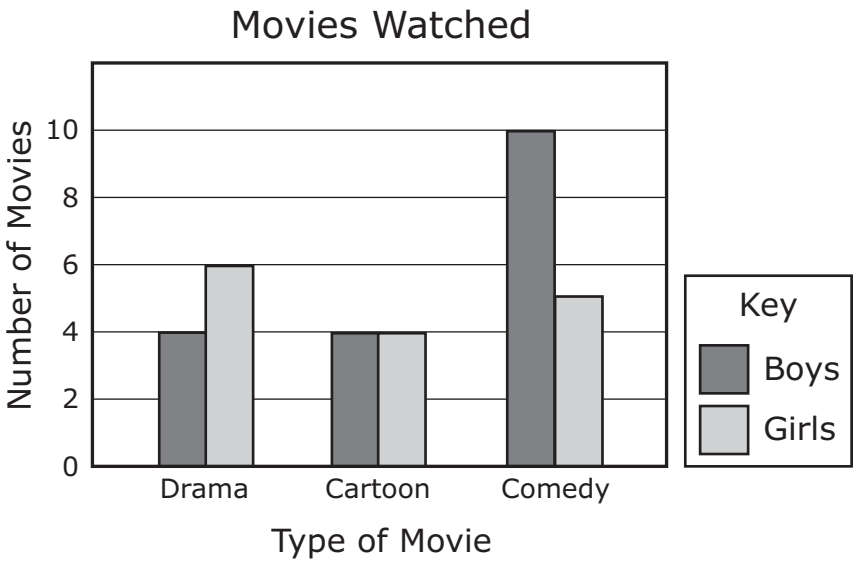
You may practice recording your answer in the grid below.

			.
⓪	⓪	⓪	
①	①	①	
②	②	②	
③	③	③	
④	④	④	
⑤	⑤	⑤	
⑥	⑥	⑥	
⑦	⑦	⑦	
⑧	⑧	⑧	
⑨	⑨	⑨	

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

GO ON

11 Students completed a survey about the kinds of movies they watched during the last month. The results are shown in the graph below.



Based on the graph, which statement is true?

A Girls watched more comedies than cartoons and dramas combined.

B Girls watched two times as many dramas as boys watched.

C Girls watched about half as many comedies as boys watched.

GO ON

12 Anna put marbles in two bags.

- She put 3 red marbles and 2 green marbles in the first bag.
- She put 2 yellow marbles and 5 blue marbles in the second bag.

Which equation shows how to find the probability of drawing a green marble from the first bag and a blue marble from the second bag?

F $\frac{2}{5} \times \frac{5}{7} = \frac{10}{35}$

G $\frac{2}{12} \times \frac{5}{12} = \frac{10}{144}$

H $\frac{2}{5} + \frac{5}{7} = \frac{39}{35}$

---

13 Mark works for a company. He earns $10 an hour and worked 9 hours yesterday. Which person earned the same amount of money that Mark did yesterday?

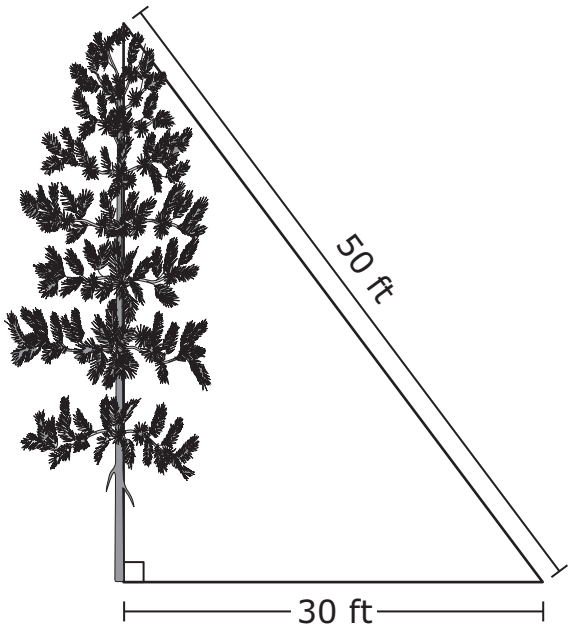
A Ricky earns $12 an hour and worked 8 hours yesterday.

B Amanda earns $20 an hour and worked 5 hours yesterday.

C Heather earns $15 an hour and worked 6 hours yesterday.

GO ON

14 Look at the tree below.



Pythagorean theorem

$a^2 + b^2 = c^2$

How tall is the tree?

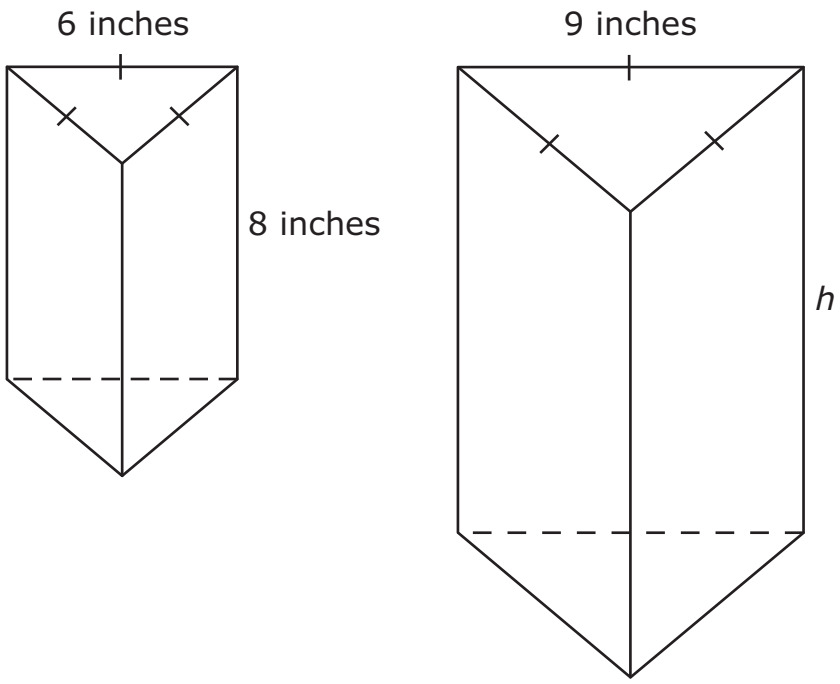
F 20 feet

G 40 feet

H 60 feet

GO ON

15 The triangular prisms shown below are similar.



What is *h*, the height of the larger prism in inches?

A 11 inches

B $9\frac{1}{2}$ inches

C 12 inches

GO ON

16 A tractor uses 0.1 gallon of fuel per minute. Fuel costs $3 per gallon. What is the total cost of the fuel used by this tractor in 1 hour?

1 hour = 60 minutes

F $18

G $20

H $6

---

17 The owner of a store recorded the total number of items each customer bought during the last 6 days. Which measure of data can the owner use to determine the number of items people bought most often?

A Range

B Mode

C Mean

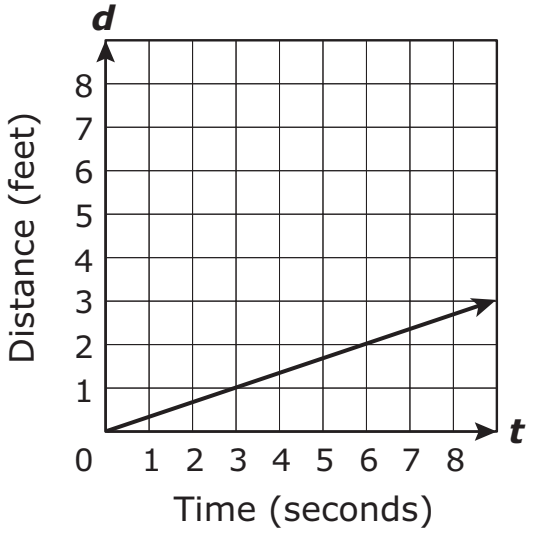
GO ON

18 Look at the table below. It shows time in seconds, t, and distance in feet, d.

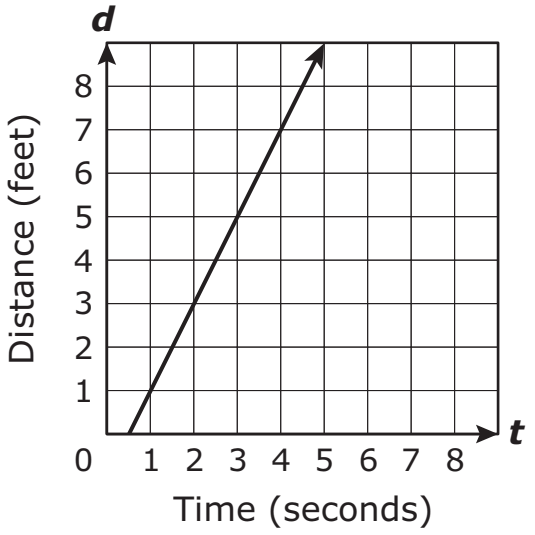
Time, t (seconds)	Distance, d (feet)
2	$\frac{2}{3}$
3	1
5	$1\frac{2}{3}$
6	2

Which graph best represents the data in the table?

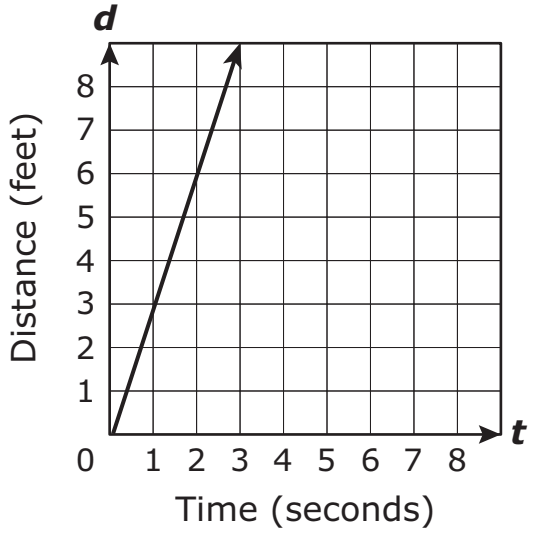
F



H



G



GO ON

19 Madeline earned $35 for working 7 hours. Which equation can be used to find d, the amount she would earn for working 8 hours at this rate?

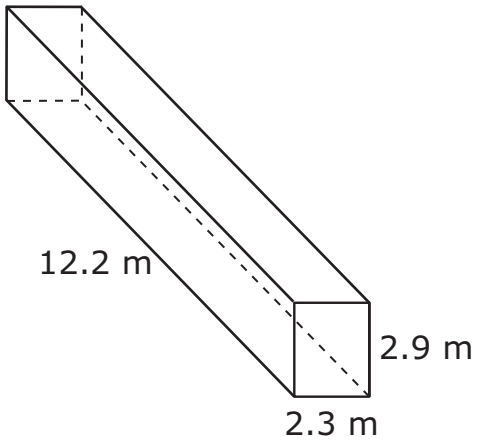
A $d = \frac{35}{8}(7)$

B $d = \frac{35}{7(8)}$

C $d = \frac{35}{7}(8)$

GO ON

20 A container in the shape of a rectangular prism is shown below. It is 12.2 meters long, 2.3 meters wide, and 2.9 meters (m) high.



$$V = Bh$$

Volume of a rectangular prism = length · width · height

Which value is the best estimate of the volume of this container?

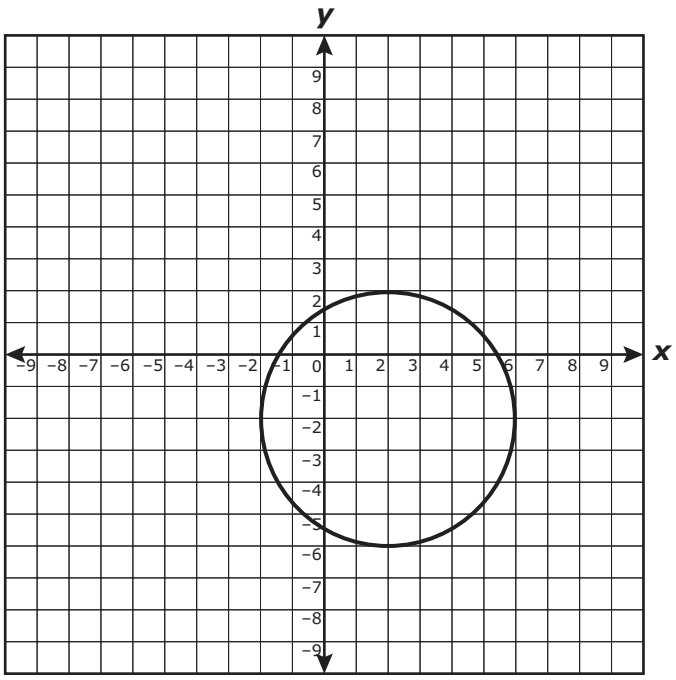
F 72 cubic meters

G 117 cubic meters

H 48 cubic meters

GO ON

21 A circle is shown on the grid below.



Which ordered pair describes a location inside the circle?

A (1.5, 3.5)

B (–3.5, –3.5)

C (1.5, –5.0)

GO ON

22 In 2007 the world population was about 6,602,000,000. How is this number written in scientific notation?

F 6.602×10^{9}

G 6.602×10^{6}

H 6.602×10^{10}

---

23 Carlos recorded the time in seconds that it took a ball to roll down three ramps. His results are shown below.

5.14, 5.2, 5.17

Which list shows these numbers in order from greatest to least?

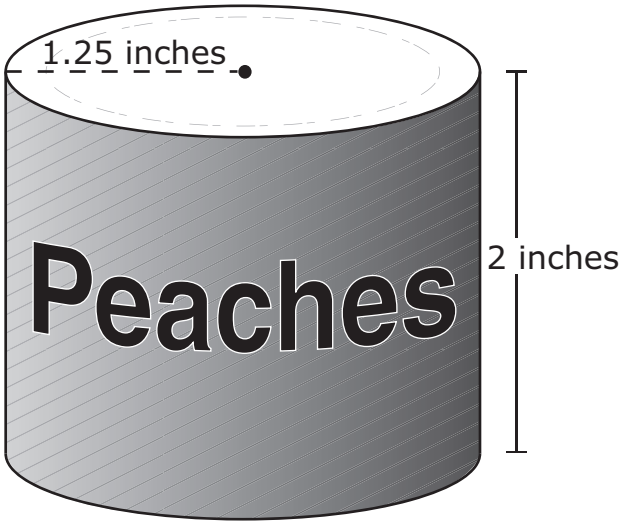
A 5.17, 5.14, 5.2

B 5.2, 5.17, 5.14

C 5.14, 5.17, 5.2

GO ON

24 A can of peaches is shown below. The can has a radius of 1.25 inches and a height of 2 inches.



$S = 2\pi rh$

Lateral surface area of a cylinder = 2 · π · radius · height

Which value is closest to the area of the label around this can?

F 8 square inches

G 16 square inches

H 5 square inches

GO ON

25 A math club wants to order T-shirts that have a special design. The cost for each T-shirt is $12. The cost of having a design made is $40. In the equation below, c represents the total cost of buying the T-shirts and n represents the number of T-shirts bought.

$$c = 12n + 40$$

What is the total cost of 30 T-shirts?

A $400

B $360

C $1,560

---

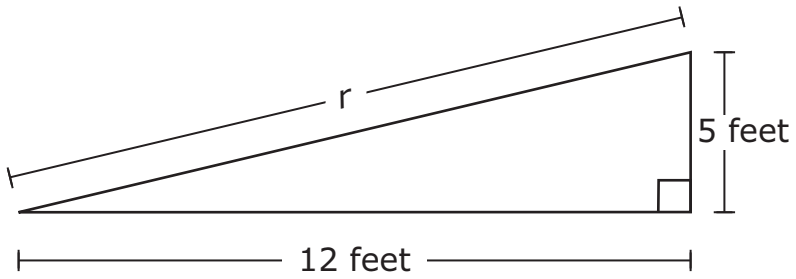
26 The dimensions of a parallelogram are dilated by a scale factor of 4 to create a new parallelogram. How does the perimeter of the new parallelogram compare to the perimeter of the original parallelogram?

F It is 16 times the perimeter of the original parallelogram.

G It is 8 times the perimeter of the original parallelogram.

H It is 4 times the perimeter of the original parallelogram.

27 Look at the drawing of a ramp below.



Pythagorean theorem

$a^2 + b^2 = c^2$

Based on the drawing, which measurement is closest to *r*, the length of the incline of the ramp?

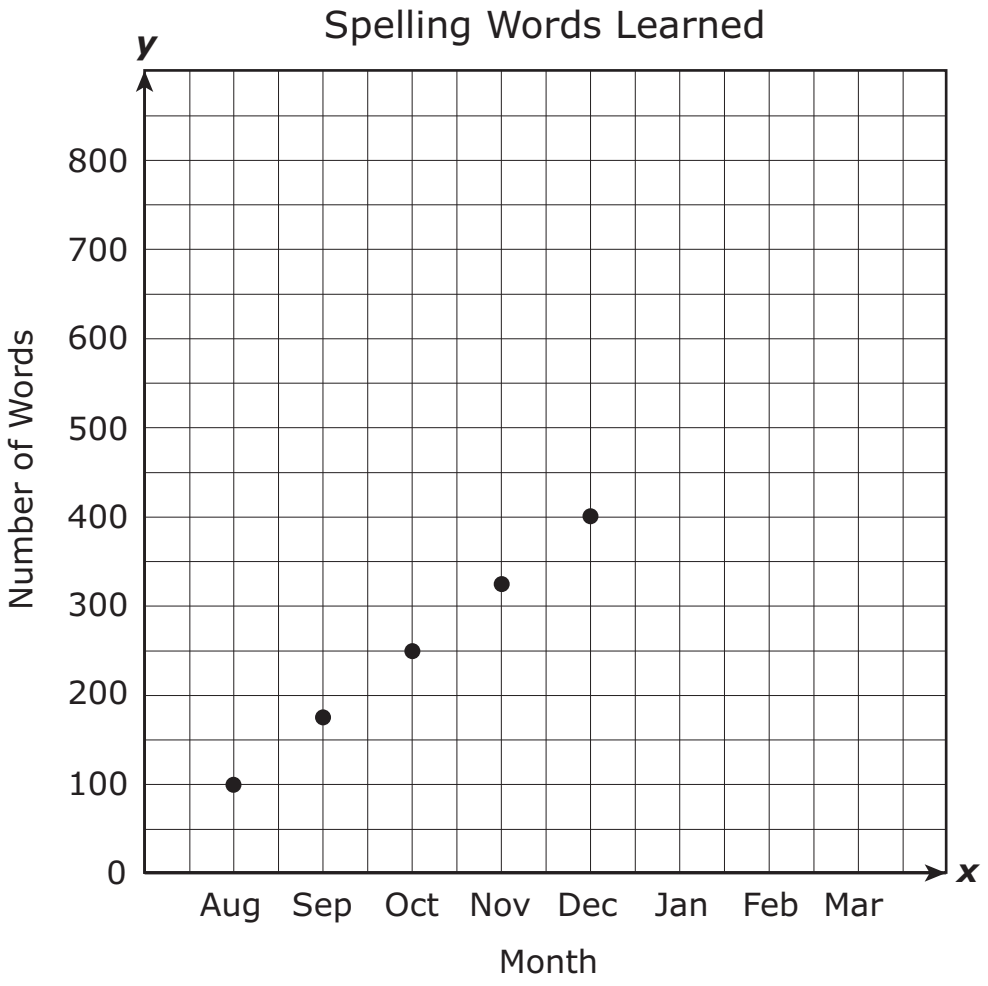
A 17 feet

B 13 feet

C 11 feet

GO ON

28 Letty has a list of 800 spelling words that she needs to learn. The graph below shows the total number of words from the list that Letty had learned by the end of December.



If the trend in this graph continues, which of these is closest to the number of words Letty will have learned by the end of March?

F 550

G 475

H 625

GO ON

29 There are 8 students in Mr. Reyna's class. Which statement about the students in the class could be true?

A Exactly $\frac{1}{5}$ of the students are girls.

B Exactly $\frac{1}{2}$ of the students are girls.

C Exactly $\frac{1}{3}$ of the students are girls.

GO ON

30 Look at the scatterplot below. It compares a person's age and the amount of money that person spent on lunch.

Based on the scatterplot, which statement is true?

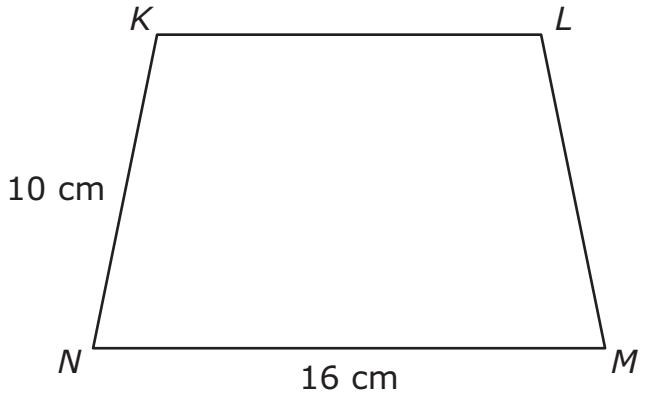
F There is no relationship between age and the amount spent on lunch.

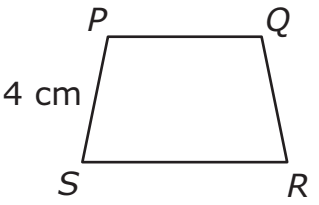
G The older a person is, the less that person spent on lunch.

H People of all ages spent the same amount on lunch.

GO ON

31 Look at the figures below. Trapezoid *KLMN* and trapezoid *PQRS* are similar. The given side lengths are shown in centimeters (cm).





What is the length of line segment *SR*?

A 2.5 cm

B 6.4 cm

C 5.3 cm

GO ON

32 Grover can text-message 30 words every 2 minutes on his cell phone. At this rate, how long would it take Grover to text-message 150 words?

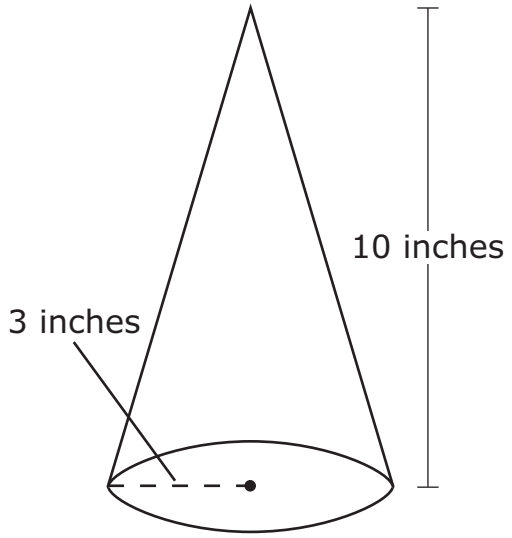
F 5 minutes

G 60 minutes

H 10 minutes

GO ON

33 A solid glass cone is shown below. It has a radius of 3 inches and a height of 10 inches.



$$V = \frac{1}{3}Bh$$

Volume of a cone $= \frac{1}{3} \cdot \pi \cdot$ radius $\cdot$ radius $\cdot$ height

What is the approximate volume of glass needed to make this cone?

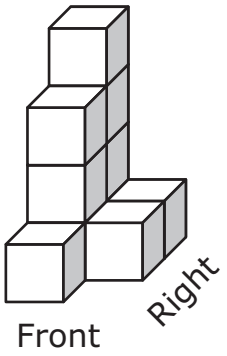
A 282.6 cubic inches

B 62.8 cubic inches

C 94.2 cubic inches

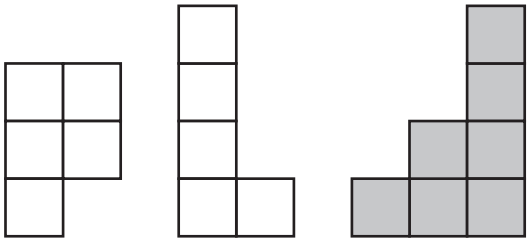
GO ON

34 Look at the drawing below. It shows a three-dimensional figure made of identical cubes.



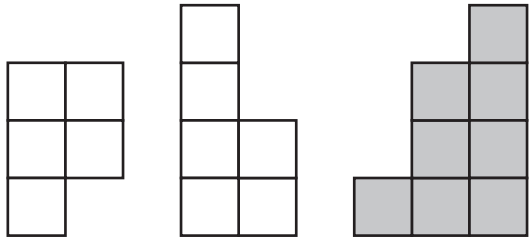
Which diagram best represents the top, front, and right-side views of this figure?

F



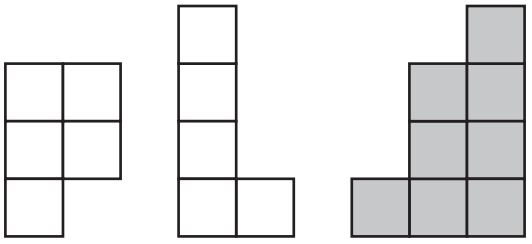
Top view | Front view | Right-side view

H



Top view | Front view | Right-side view

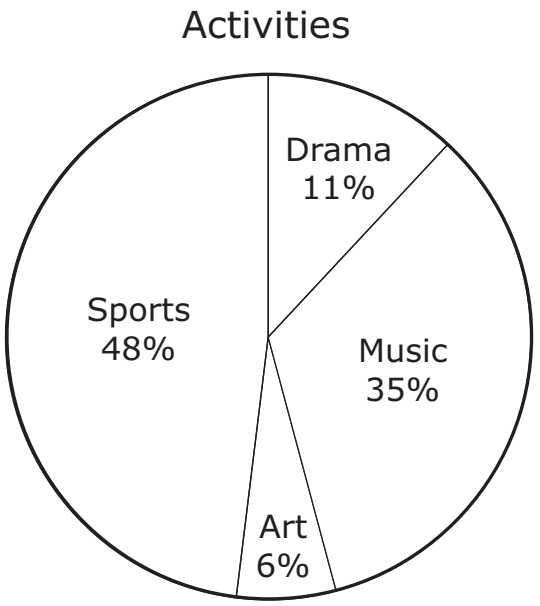
G



Top view | Front view | Right-side view

GO ON

35 Look at the graph below. It shows the percentages of students who participate in activities at a school.



At this school, 400 students participate in activities. Based on the graph, how many students participate in music?

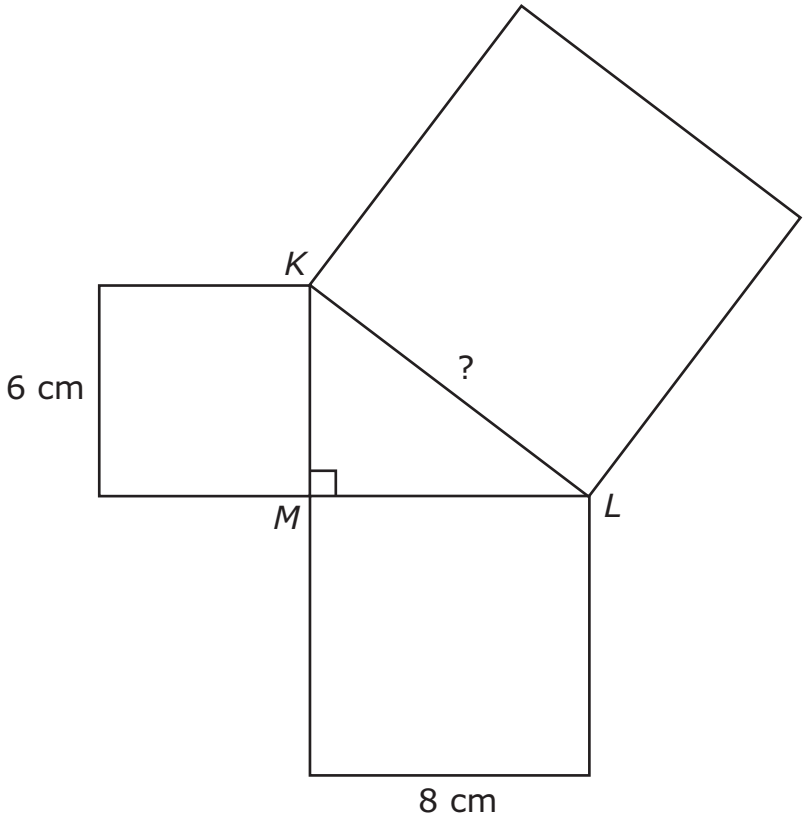
A 352

B 208

C 140

GO ON

36 Look at right triangle *KLM* below. It is formed by joining three squares at their vertices. The side lengths for two of the squares are shown in centimeters (cm).



Pythagorean theorem

$a^2 + b^2 = c^2$

What is the length of line segment *KL*?

F 28 cm

G 10 cm

H 20 cm

GO ON

37 Which equation best describes a relationship between x and y in the table below?

x	y
2	3
4	7
6	11

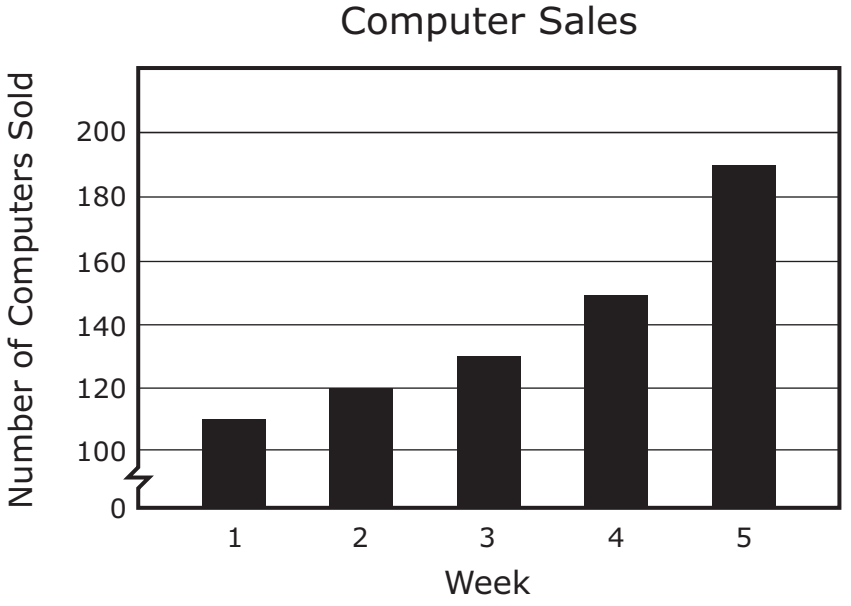
A $y = 2x - 1$

B $y = \frac{1}{2}x + 2$

C $y = x + 5$

GO ON

38 Look at the bar graph below. It shows information about computer sales at a store over a 5-week period.



Which statement is supported by the information given in the graph above?

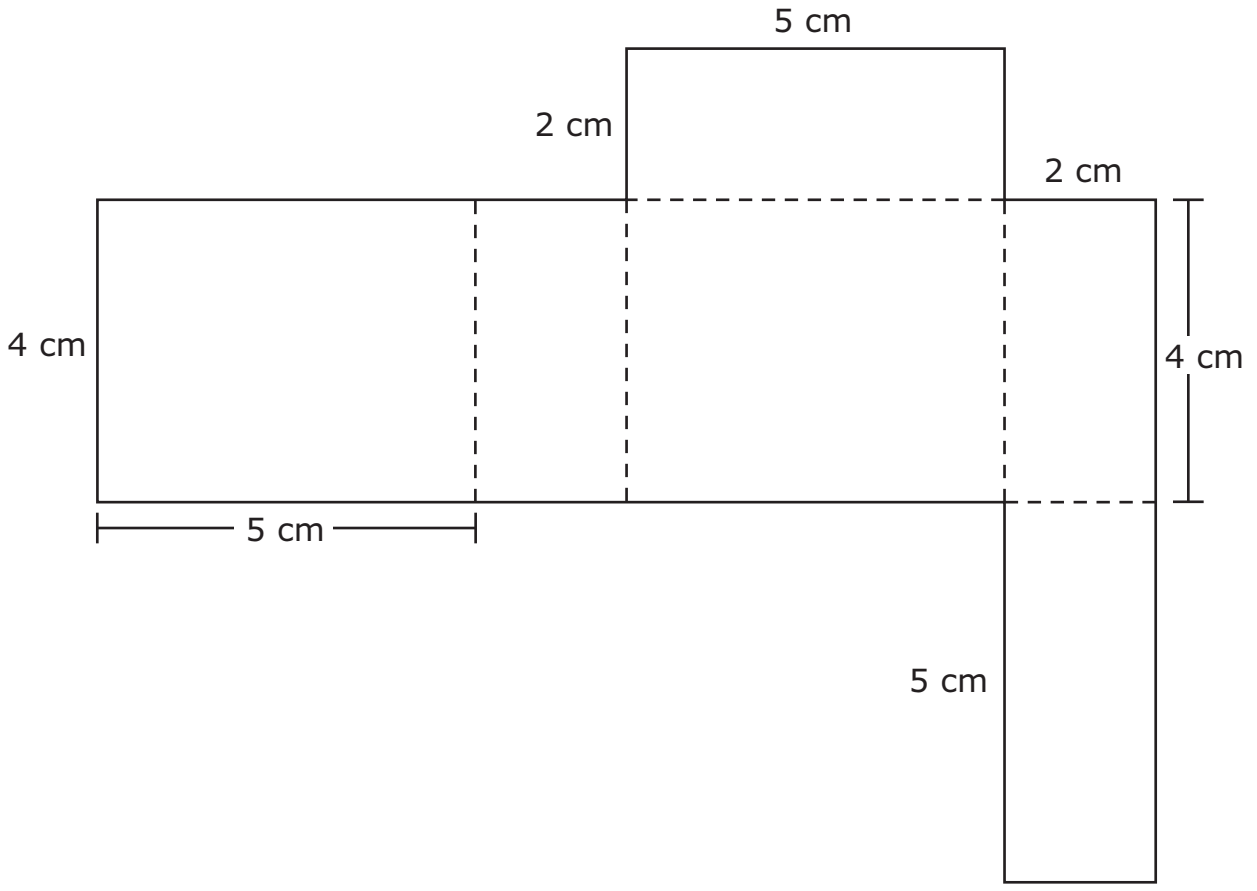
F The number of computers sold increased by at least 20 each week.

G The number of computers sold increased by 4 from Week 4 to Week 5.

H The number of computers sold will most likely be 200 or more in Week 6.

GO ON

39 The net of a rectangular prism is shown below. Each dimension is shown in centimeters (cm).



What is the total surface area of this prism?

A 40 cm^2

B 96 cm^2

C 76 cm^2

GO ON

40 Bananas cost $1.35 for 3 pounds. At this rate, how much will 5 pounds of bananas cost?

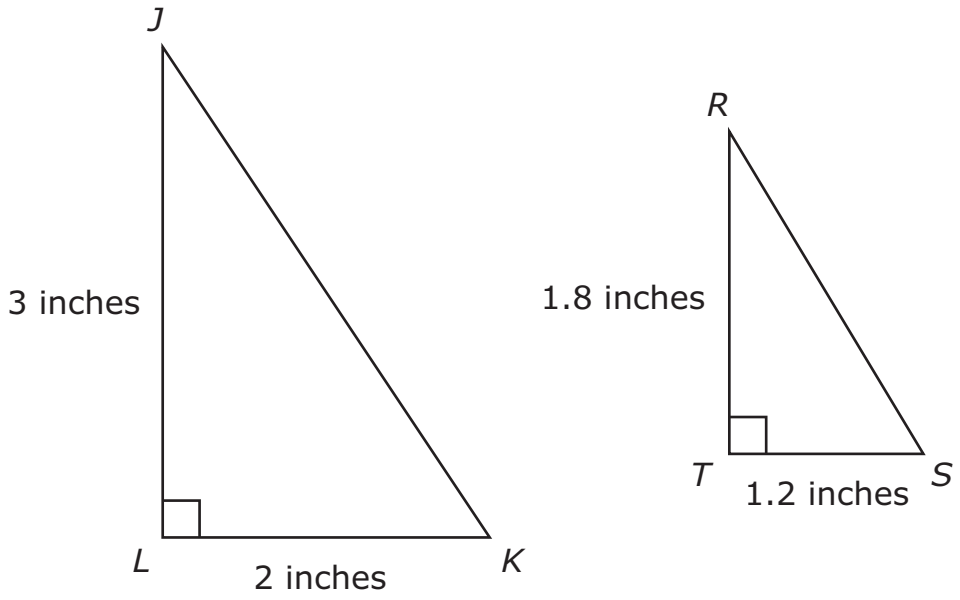
F $2.25

G $3.35

H $0.81

GO ON

41 In the diagram below, ΔJKL is similar to ΔRST.



By what scale factor was ΔJKL dilated to create ΔRST?

A 2.4

B 0.4

C 0.6

GO ON

42 Look at the pattern below.

$$\frac{1}{8}, \frac{2}{8}, \frac{4}{8}, \frac{8}{8}, \ldots$$

Which statement best describes this pattern?

F The numerators increase by adding 2.

G The numerators increase by multiplying by 2.

H The denominators increase by powers of 2.

---

43 Ross has a number cube labeled 1 through 6 and a coin. He rolls the number cube once and tosses the coin once. What is the probability that Ross rolls a 5 on the cube and the coin lands tails up?

A $\frac{1}{4}$

B $\frac{2}{3}$

C $\frac{1}{12}$

GO ON

44 A box has a total of 450 colored pencils. If 8% of the pencils are red, which proportion can be used to find n, the number of red pencils in the box?

F $\frac{8}{450} = \frac{n}{450}$

G $\frac{8}{100} = \frac{450}{n}$

H $\frac{8}{100} = \frac{n}{450}$

GO ON

45 Look at the table below. It shows the cost of renting a music studio.

Music-Studio Rental

Rental Days	Cost per Hour
Monday, Tuesday, or Wednesday	$65
Thursday or Friday	$80
Saturday or Sunday	$100

Based on the information in the table, how much does it cost to rent this studio for 8 hours on a Thursday?

A $800

B $640

C $520

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS ON THE ANSWER DOCUMENT.

STAAR MODIFIED
GRADE 8
Mathematics
April 2014

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