

**VIRGINIA STANDARDS OF LEARNING**

**Spring 2005 Released Test**

**END OF COURSE  
GEOMETRY**

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**CORE 1**

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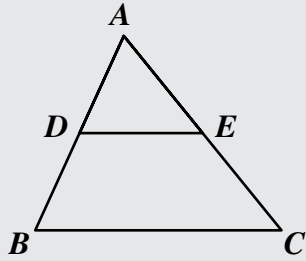
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Geometry

**DIRECTIONS**

Read and solve each question. Then mark the space on the answer sheet for the best answer.

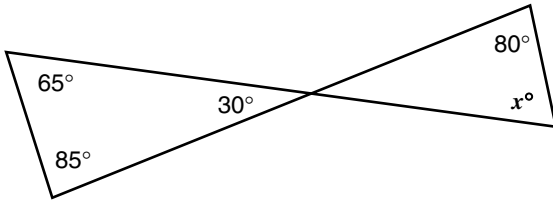
**SAMPLE**



If  $\triangle ABC$  is similar to  $\triangle ADE$ , then  $AB : AD = ? : AE$ . Which replaces the “?” to make the statement true?

- A AC
- B AE
- C DE
- D BC

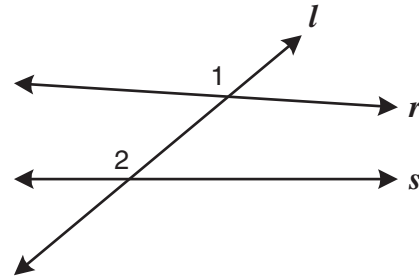
1 The measures of some angles are given in the figure.



What is the value of  $x$ ?

- A 65
- B 70
- C 80
- D 85

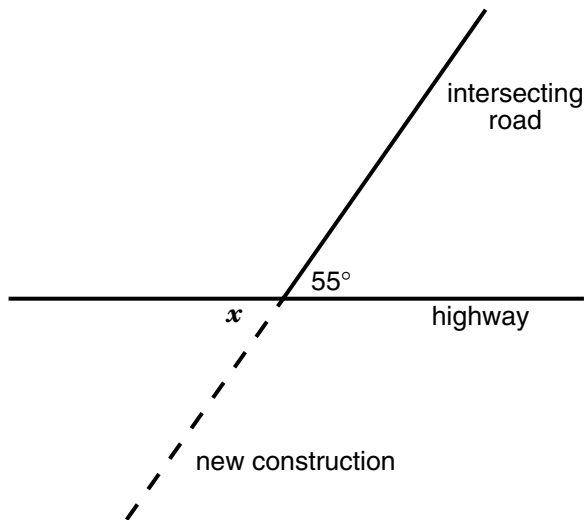
2 The figure shows line  $l$  intersecting lines  $r$  and  $s$ .



In the figure,  $\angle 1$  and  $\angle 2$  are —

- F alternate interior angles
- G alternate exterior angles
- H corresponding angles
- J consecutive interior angles

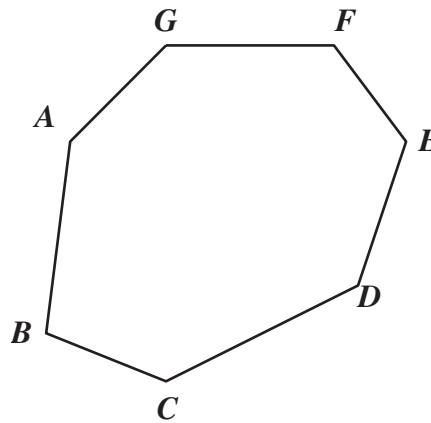
- 3 The Department of Transportation wants to extend the intersecting road across the highway, as indicated by the dotted line.



What should  $x$  be to ensure that the intersecting road and the new construction form a straight line?

- A  $35^\circ$
- B  $55^\circ$
- C  $105^\circ$
- D  $125^\circ$

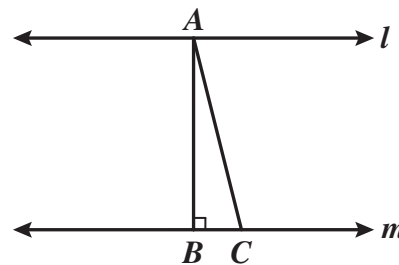
- 4 The polygon shown is convex.



The sum of its interior angle measures is —

- F  $900^\circ$
- G  $1,260^\circ$
- H  $1,620^\circ$
- J  $2,520^\circ$

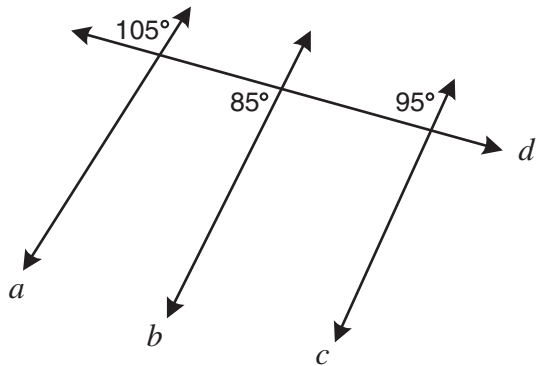
- 5



Which statement would be sufficient to prove that line  $l$  is parallel to line  $m$ ?

- A  $\overline{AC} \perp m$
- B  $\overline{AB} \perp l$
- C  $\overline{AC} \perp l$
- D  $\overline{AB} \perp \overline{AC}$

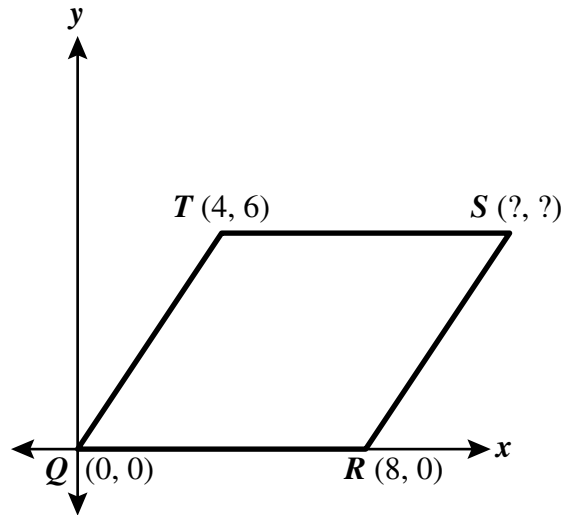
6 In this diagram, line  $d$  cuts three lines to form the angles shown.



Which two lines are parallel?

- F  $a$  and  $b$
- G  $a$  and  $c$
- H  $b$  and  $c$
- J No lines are parallel.

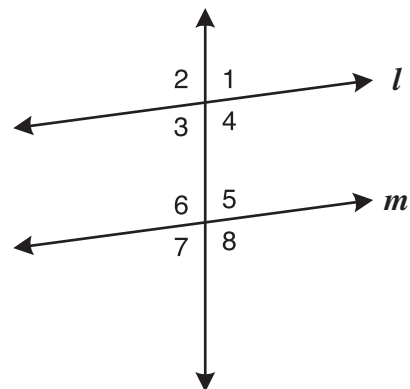
7 Quadrilateral  $QRST$  is placed on a coordinate grid as shown.



What coordinates for  $S$  make  $QRST$  a parallelogram?

- A (8, 6)
- B (8, 10)
- C (12, 6)
- D (12, 10)

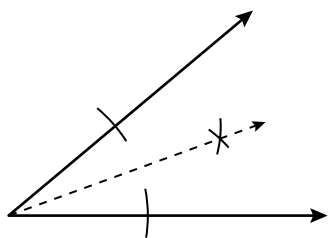
8



Which condition will guarantee that line  $l$  is parallel to line  $m$ ?

- F  $\angle 1 \cong \angle 3$
- G  $\angle 1 \cong \angle 6$
- H  $\angle 6 \cong \angle 5$
- J  $\angle 3 \cong \angle 5$

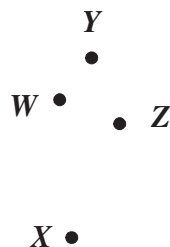
9



The drawing shows a compass and straightedge construction of —

- A a perpendicular to a given line from a point not on the line
- B a perpendicular to a given line at a point on the line
- C the bisector of a given angle
- D an angle congruent to a given angle

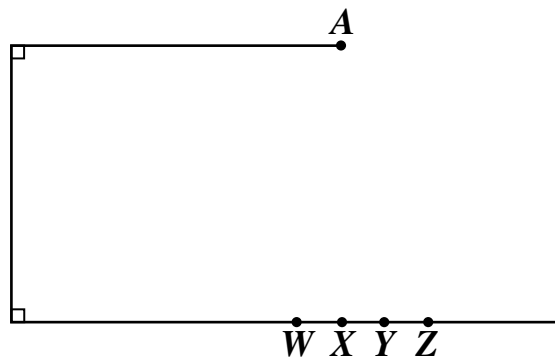
10



Which point would be on a line perpendicular to  $l$  through  $T$ ?

- F W
- G X
- H Y
- J Z

11



To which point should a line segment from  $A$  be drawn so that the resulting figure is a rectangle?

- A W
- B X
- C Y
- D Z

12  $\triangle XYZ$  is similar to  $\triangle STR$ .  $XY = 6$  and  $ST = 12$ . If the perimeter of  $\triangle STR$  is 38, then what is the perimeter of  $\triangle XYZ$ ?

- F 19
- G 38
- H 52
- J 76

13 Let  $p$  represent

$$\sqrt{11} = z,$$

and let  $q$  represent

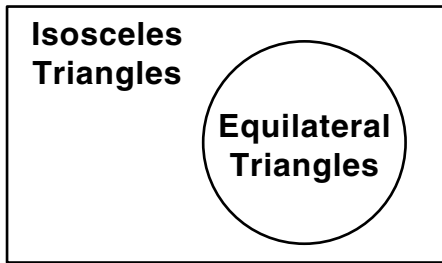
$z$  is a rational number.

Which is a representation of the statement below?

If  $\sqrt{11} = z$ , then  $z$  is not a rational number.

- A  $\sim p \rightarrow \sim q$
- B  $p \rightarrow q$
- C  $p \rightarrow \sim q$
- D  $\sim q \rightarrow \sim p$

14



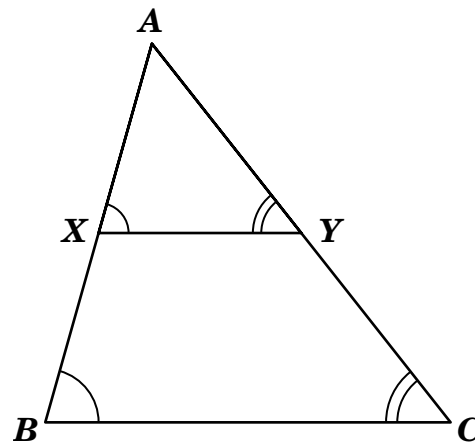
According to the Venn diagram, which statement is true?

- F All isosceles triangles are also equilateral triangles.
- G All equilateral triangles are also isosceles triangles.
- H Some equilateral triangles are also isosceles triangles.
- J No isosceles triangles are equilateral triangles.

15 Which of the following statements represents a valid argument?

- A If  $a > b$  and  $a > c$ , then  $b > c$ .
- B If  $a > b$  and  $b > c$ , then  $a > c$ .
- C If  $a < b$  and  $a < c$ , then  $c < b$ .
- D If  $a > b$  and  $a > c$ , then  $a > b + c$ .

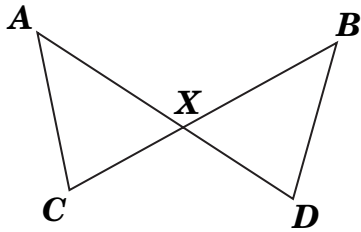
16 Given:  $\angle AXY \cong \angle ABC$   
 $\angle AYX \cong \angle ACB$



Which is a true proportion?

- F  $\frac{AX}{AB} = \frac{AY}{AC} = \frac{XY}{BC}$
- G  $\frac{AX}{XB} = \frac{AY}{YC} = \frac{XY}{BC}$
- H  $\frac{XB}{AX} = \frac{YC}{AY} = \frac{BC}{XY}$
- J  $\frac{AX}{AB} = \frac{AC}{AY} = \frac{XY}{BC}$

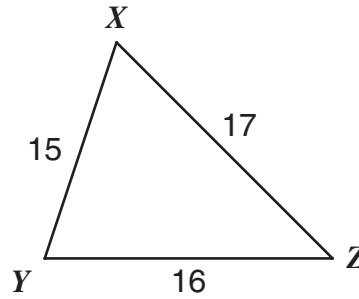
- 17 Given:  $\overline{AD}$  and  $\overline{BC}$  intersect at  $X$   
 $AX = XB$   
 $CX = XD$



Which congruency statement is true?

- A  $\angle ACX \cong \angle BXD$   
 B  $\angle ACX \cong \angle DXB$   
 C  $\angle ACX \cong \angle BDX$   
 D  $\angle ACX \cong \angle DBX$
- 18 Which list could *not* be the measures of lengths of the three sides of a given triangle?
- F 5 cm, 12 cm, 15 cm  
 G 2 ft, 6 ft, 5 ft  
 H 11 mi, 4 mi, 12 mi  
 J 12 yd, 35 yd, 20 yd

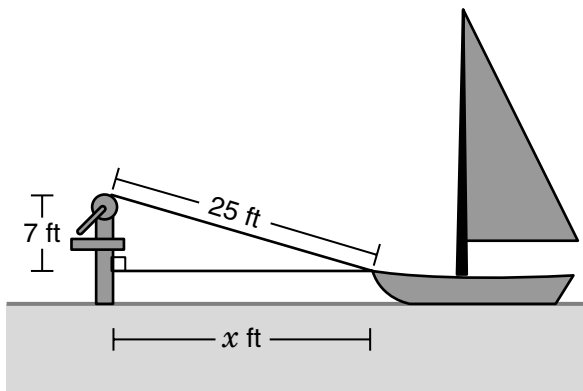
19



In the drawing of triangle  $XYZ$ , which angle has the least measure?

- A All angles have the same measure.  
 B  $\angle XYZ$   
 C  $\angle ZXY$   
 D  $\angle XZY$
- 20 If  $m\angle A = 65^\circ$ ,  $m\angle B = 15^\circ$ ,  $m\angle C = 100^\circ$ , which lists the sides of the triangle in order from shortest to longest?
- F  $\overline{AC}$ ,  $\overline{AB}$ ,  $\overline{BC}$   
 G  $\overline{BA}$ ,  $\overline{BC}$ ,  $\overline{AC}$   
 H  $\overline{BA}$ ,  $\overline{AC}$ ,  $\overline{BC}$   
 J  $\overline{AC}$ ,  $\overline{BC}$ ,  $\overline{BA}$

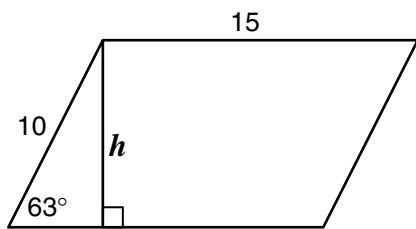
- 21 A windlass is used to pull a boat to the dock. The rope is attached to the boat at a point 7 feet below the level of the windlass.



What is the distance from the boat to the dock when the rope is 25 feet?

- A 25 ft
- B 24 ft
- C 18 ft
- D 7 ft

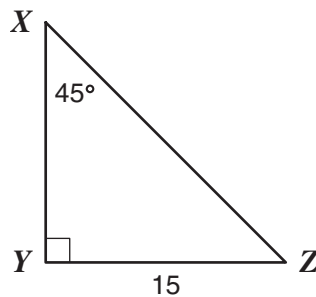
- 22 The parallelogram has the measurements shown.



Which is closest to the length of the altitude,  $h$ ?

- F 19.63
- G 8.91
- H 8.67
- J 6.81

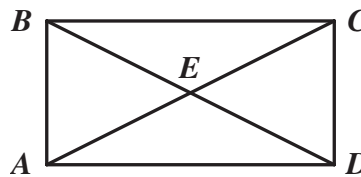
23



For the triangle represented by the above drawing, what is the length of  $\overline{XZ}$ ?

- A  $7.5\sqrt{2}$
- B  $7.5\sqrt{3}$
- C  $15\sqrt{2}$
- D  $15\sqrt{3}$

24

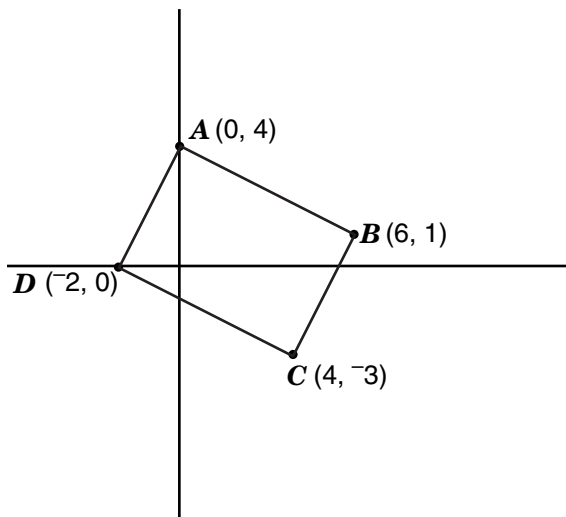


In rectangle  $ABCD$ , which of the following pairs of segments are *not* necessarily congruent?

- F  $\overline{BD}$  and  $\overline{AC}$
- G  $\overline{AB}$  and  $\overline{CD}$
- H  $\overline{BC}$  and  $\overline{DC}$
- J  $\overline{BE}$  and  $\overline{CE}$



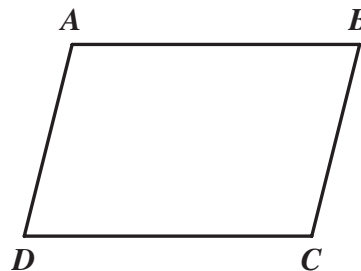
- 25 The town plaza in a certain town is a parallelogram. The town's planning committee has decided to build a fountain at the center of the plaza. This sketch shows the corner points when placed on a coordinate grid.



Which coordinates show where the fountain will be located?

- A (2, 0.5)
- B (0.5, 2)
- C (3, 1.5)
- D (1.5, 1)

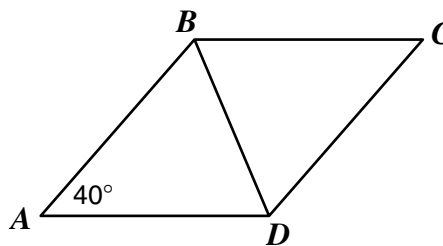
- 26 Quadrilateral  $ABCD$  is a parallelogram.



Which of the following *must* be true?

- F  $\overline{AB} \cong \overline{AD}$
- G  $\overline{AC} \cong \overline{BD}$
- H  $\angle A \cong \angle D$
- J  $\angle B \cong \angle D$

- 27  $ABCD$  is a rhombus.



What is the measure of  $\angle CBD$ ?

- A  $50^\circ$
- B  $60^\circ$
- C  $70^\circ$
- D  $75^\circ$

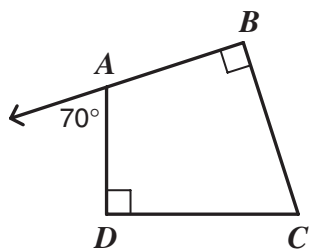
28 If each interior angle of a regular polygon measures  $120^\circ$ , how many sides does the polygon have?

- F 14
- G 12
- H 8
- J 6

29 Which angle measure below is *not* a possible measure of an exterior angle of a regular polygon?

- A  $36^\circ$
- B  $40^\circ$
- C  $45^\circ$
- D  $54^\circ$

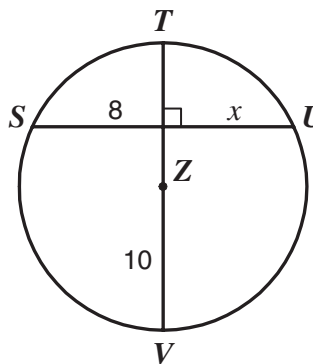
30



In the figure, what is the measure of  $\angle C$ ?

- F  $70^\circ$
- G  $90^\circ$
- H  $100^\circ$
- J  $110^\circ$

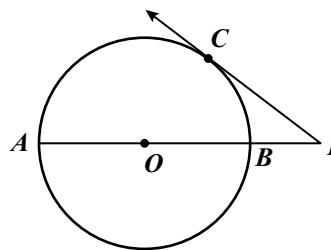
31  $\overline{TV}$  is a diameter of circle Z.



What is the value of  $x$ ?

- A 4
- B 6
- C 8
- D 10

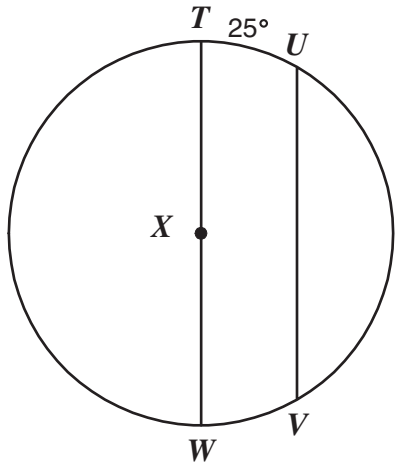
32



If  $AP = 8$  and  $PC = 4$ , what is the measure of  $\overline{AB}$ , the *diameter* of this circle?

- F 2
- G 4
- H 6
- J 8

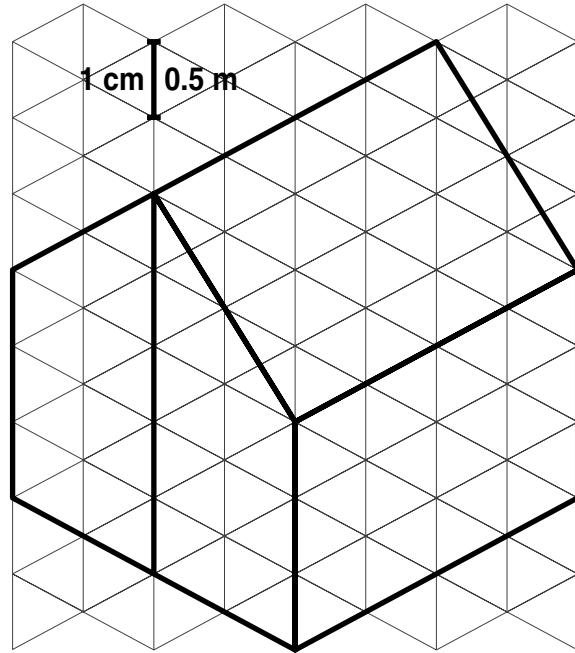
- 33  $\overline{TW}$  is a diameter of circle  $X$ , and  $\overline{TW}$  is parallel to  $\overline{UV}$ .



If the measure of  $\widehat{TU}$  is  $25^\circ$ , what is the degree measure of  $\widehat{UV}$ ?

- A  $115^\circ$
- B  $130^\circ$
- C  $155^\circ$
- D  $210^\circ$

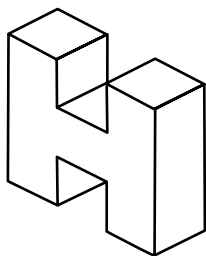
- 34 This is a scale drawing of a tent where 1 centimeter represents 0.5 meter.



What is the height of the tent at its highest point?

- F 10 m
- G 5 m
- H 3 m
- J 2.5 m

35



Which represents a two-dimensional view from directly above the figure?

- A
- B
- C
- D

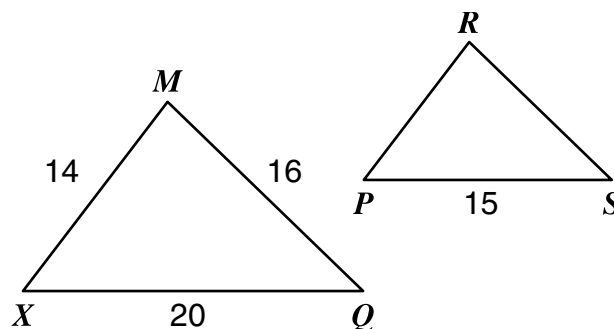
36 To the nearest gallon, what is the volume of a cylindrical water heater 1.4 feet in diameter and 4 feet tall? (1 cubic foot = 7.48 gallons)

- F 34 gal
- G 46 gal
- H 59 gal
- J 132 gal

37 A spherical paintball measures 1.5 centimeters in diameter. Approximately how much paint is in it?

- A 1.77 cm<sup>3</sup>
- B 7.07 cm<sup>3</sup>
- C 9.42 cm<sup>3</sup>
- D 14.13 cm<sup>3</sup>

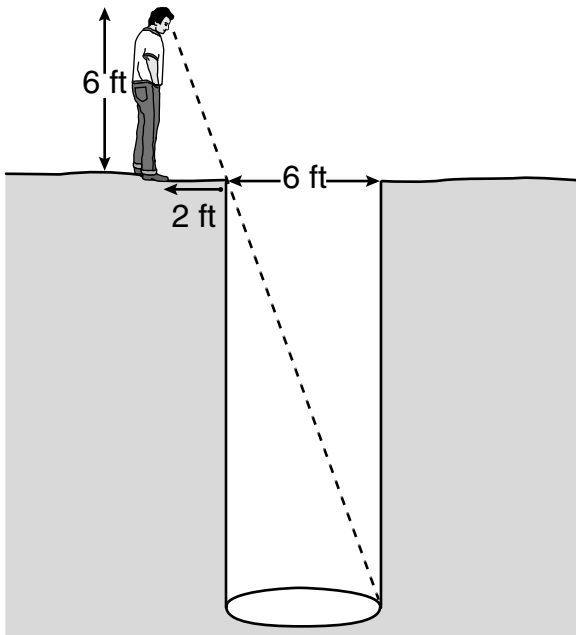
38



Which proportion can be used to find the value of  $\overline{PR}$  if  $\triangle XMQ$  is similar to  $\triangle PRS$ ?

- F  $\frac{20}{15} = \frac{14}{PR}$
- G  $\frac{10}{5} = \frac{7}{PR}$
- H  $\frac{14}{20} = \frac{15}{PR}$
- J  $\frac{15}{20} = \frac{14}{PR}$

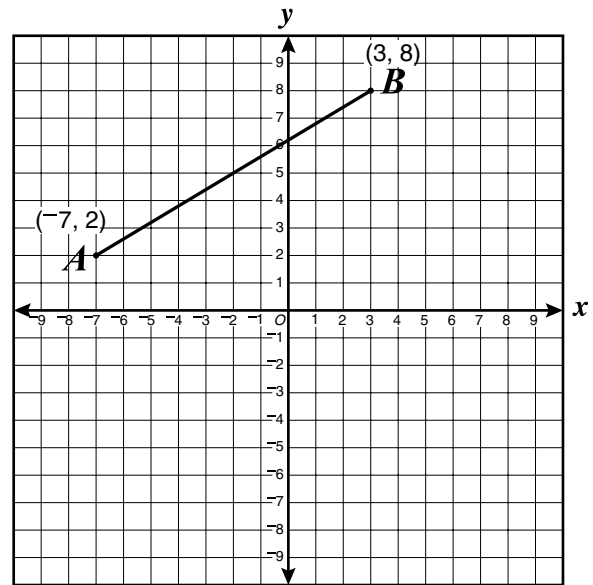
- 39 When standing upright, Gary knows his eyes are 6 feet above ground level. To determine the depth of a well, he stands in the position shown.



Using the given measures, how deep is the well?

- A 12 ft
- B 14 ft
- C 16 ft
- D 18 ft

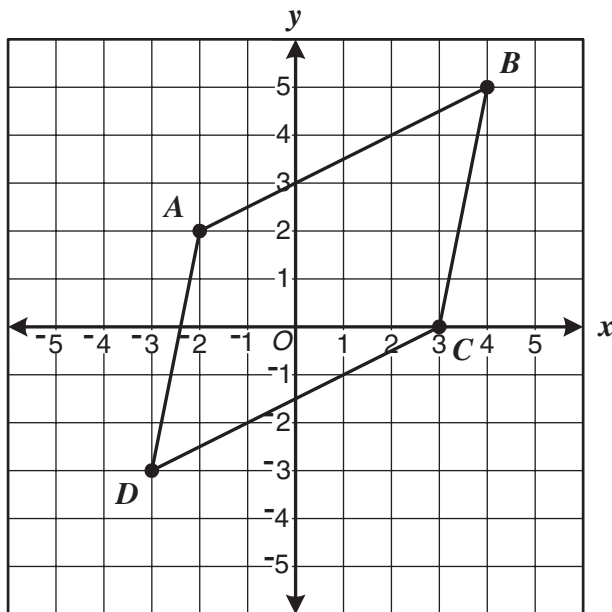
40



The coordinates of the midpoint of  $\overline{AB}$  are —

- F  $(5, 3)$
- G  $(-5, 3)$
- H  $(2, 5)$
- J  $(-2, 5)$

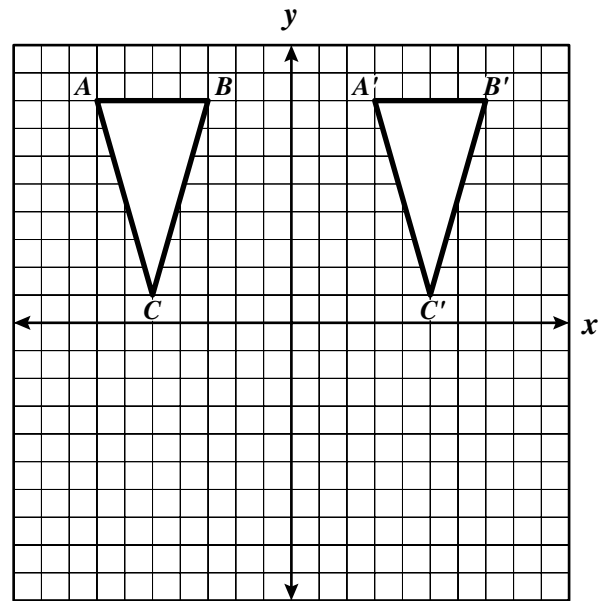
- 41 Parallelogram  $ABCD$  is placed on a coordinate grid as shown.



What is the approximate length of diagonal  $\overline{AC}$ ?

- A 3.0 units
- B 5.4 units
- C 9.0 units
- D 10.6 units

- 42



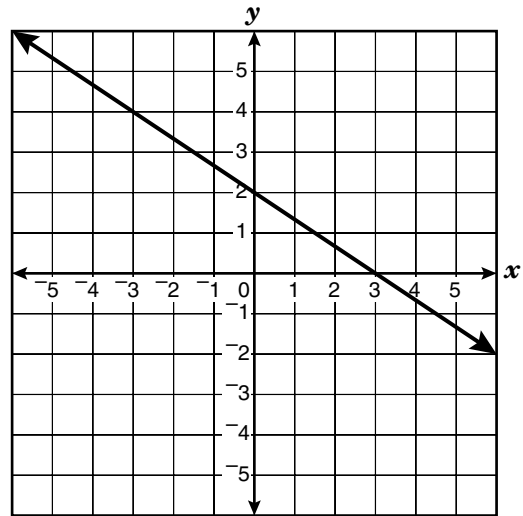
Triangle  $A'B'C'$  is —

- F a translation of triangle  $ABC$  across the  $y$ -axis
- G a  $90^\circ$  clockwise rotation of triangle  $ABC$  about the origin
- H a reflection of triangle  $ABC$  across the  $y$ -axis
- J a reflection of triangle  $ABC$  across the  $x$ -axis

43 How many different lines of symmetry does a square have?

- A 1
- B 2
- C 3
- D 4

44



Which is most likely the slope of the line graphed?

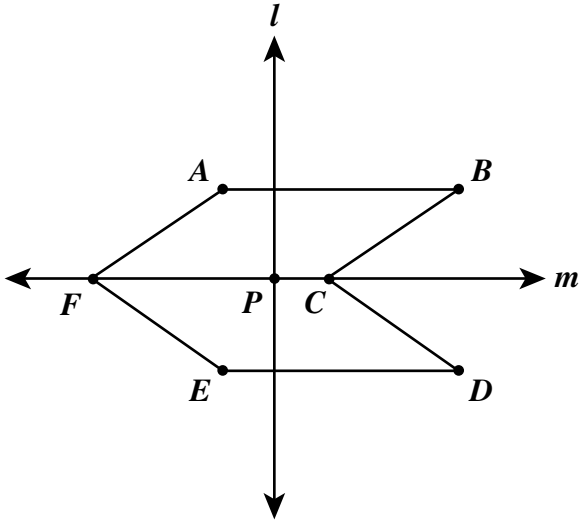
F  $-4$

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

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

J 4

45



**Hexagon  $ABCDEF$  is apparently symmetric with respect to —**

- A point  $P$  only
- B line  $m$  only
- C line  $l$  only
- D both lines  $l$  and  $m$  only





### Answer Key

Test Sequence Number	Correct Answer	Reporting Category	Reporting Category Description
1	B	001	Lines and Angles
2	H	001	Lines and Angles
3	B	001	Lines and Angles
4	F	001	Lines and Angles
5	B	001	Lines and Angles
6	H	001	Lines and Angles
7	C	001	Lines and Angles
8	J	001	Lines and Angles
9	C	001	Lines and Angles
10	H	001	Lines and Angles
11	B	001	Lines and Angles
12	F	002	Triangles and Logic
13	C	002	Triangles and Logic
14	G	002	Triangles and Logic
15	B	002	Triangles and Logic
16	F	002	Triangles and Logic
17	C	002	Triangles and Logic
18	J	002	Triangles and Logic
19	D	002	Triangles and Logic
20	J	002	Triangles and Logic
21	B	002	Triangles and Logic
22	G	002	Triangles and Logic
23	C	002	Triangles and Logic
24	H	003	Polygons and Circles
25	A	003	Polygons and Circles
26	J	003	Polygons and Circles
27	C	003	Polygons and Circles
28	J	003	Polygons and Circles
29	D	003	Polygons and Circles
30	F	003	Polygons and Circles
31	C	003	Polygons and Circles
32	H	003	Polygons and Circles
33	B	003	Polygons and Circles
34	J	004	Three-Dimensional Figures
35	B	004	Three-Dimensional Figures
36	G	004	Three-Dimensional Figures
37	A	004	Three-Dimensional Figures
38	F	004	Three-Dimensional Figures
39	D	004	Three-Dimensional Figures
40	J	005	Coordinate Relations and Transformations
41	B	005	Coordinate Relations and Transformations
42	F	005	Coordinate Relations and Transformations
43	D	005	Coordinate Relations and Transformations
44	H	005	Coordinate Relations and Transformations
45	B	005	Coordinate Relations and Transformations