

VIRGINIA STANDARDS OF LEARNING

Spring 2005 Released Test

**END OF COURSE
GEOMETRY**

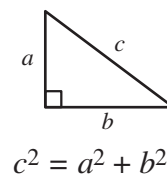
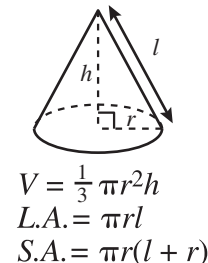
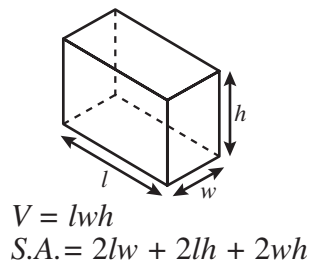
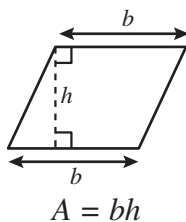
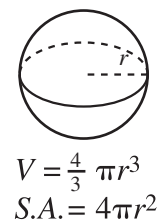
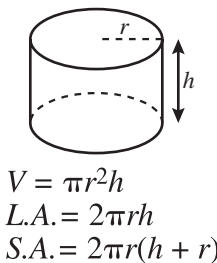
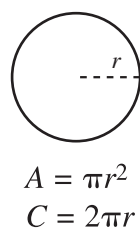
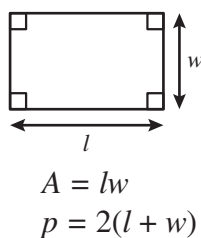
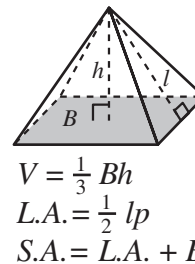
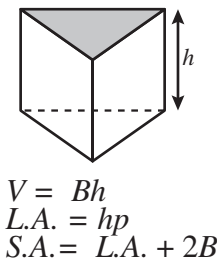
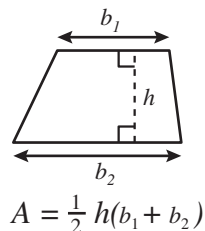
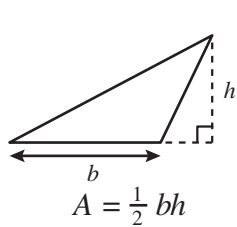
CORE 1

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Geometry Formula Sheet

Geometric Formulas



Geometric Symbols

| Example | Meaning | Example | Meaning |
|---------------------------|----------------------------|---|--|
| $\angle A$ | angle A | \overrightarrow{AB} | vector AB |
| $m\angle A$ | measure of angle A | \perp | right angle |
| \overline{AB} | line segment AB | $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$ | Line AB is parallel to line CD. |
| AB | measure of line segment AB | $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$ | Line AB is perpendicular to line CD. |
| \overleftrightarrow{AB} | line AB | $\angle A \cong \angle B$ | Angle A is congruent to angle B. |
| $\triangle ABC$ | triangle ABC | $\triangle A \sim \triangle B$ | Triangle A is similar to triangle B. |
| $\square ABCD$ | rectangle ABCD | | Similarly marked segments are congruent. |
| $\parallel\!/\! ABCD$ | parallelogram ABCD | | Similarly marked angles are congruent. |

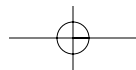
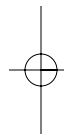
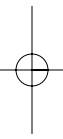
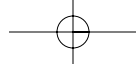
Abbreviations

| | |
|--------------------|--------|
| Volume | V |
| Lateral Area | $L.A.$ |
| Total Surface Area | $S.A.$ |
| Area of Base | B |

Pi

$\pi \approx 3.14$

$\pi \approx \frac{22}{7}$

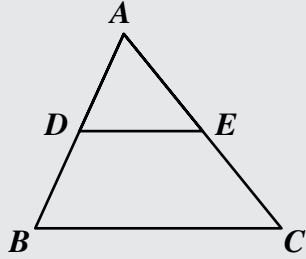


Geometry

DIRECTIONS

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

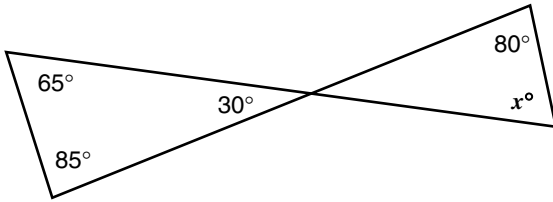
SAMPLE



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

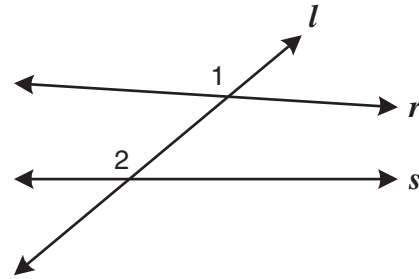
1 The measures of some angles are given in the figure.



What is the value of x ?

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

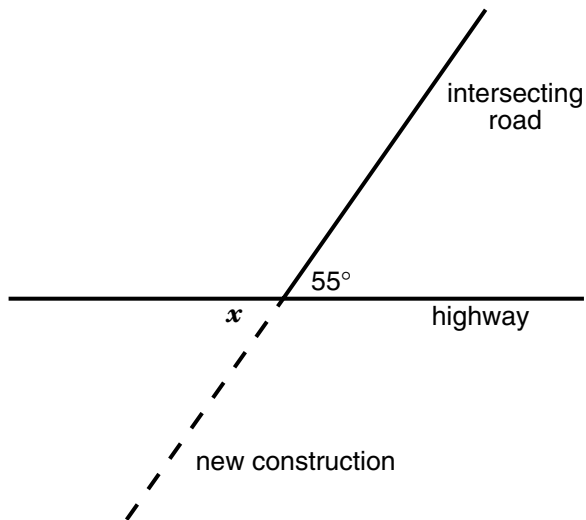
2 The figure shows line l intersecting lines r and s .



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

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

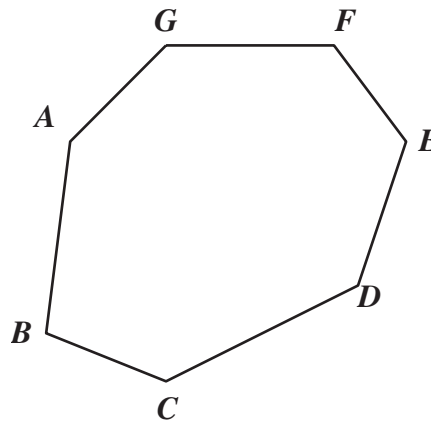
- 3 The Department of Transportation wants to extend the intersecting road across the highway, as indicated by the dotted line.



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

- A 35°
- B 55°
- C 105°
- D 125°

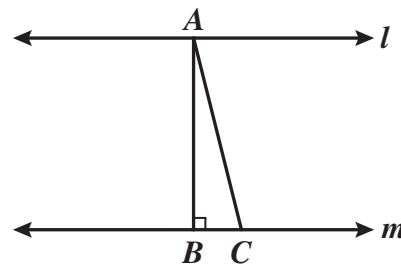
- 4 The polygon shown is convex.



The sum of its interior angle measures is —

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

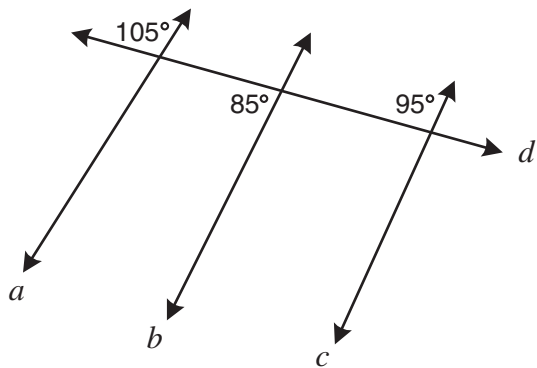
- 5



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 $\overline{AB} \perp \overline{AC}$

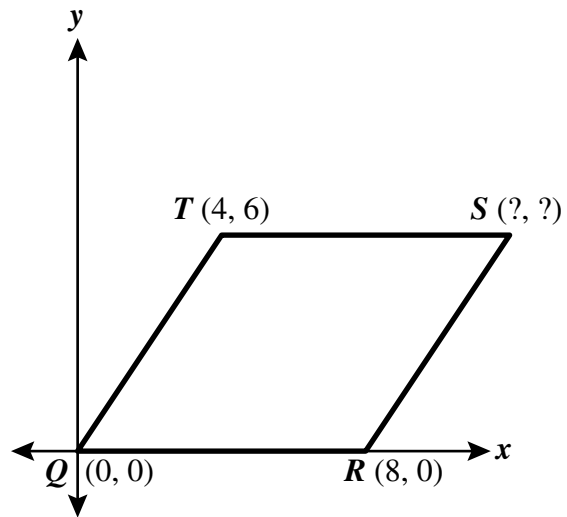
6 In this diagram, line d cuts three lines to form the angles shown.



Which two lines are parallel?

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

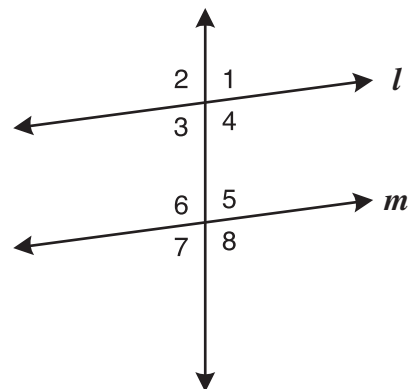
7 Quadrilateral $QRST$ is placed on a coordinate grid as shown.



What coordinates for S make $QRST$ a parallelogram?

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

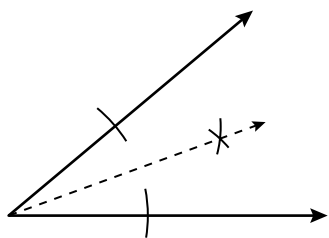
8



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 $\angle 3 \cong \angle 5$

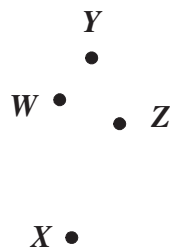
9



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

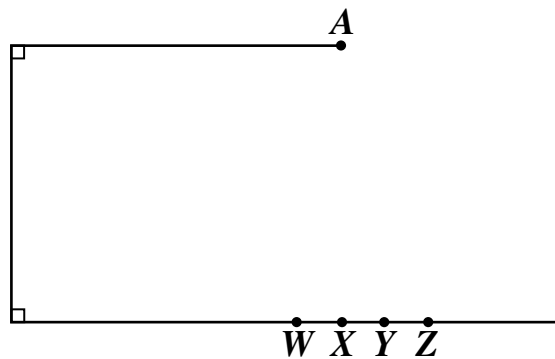
10



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

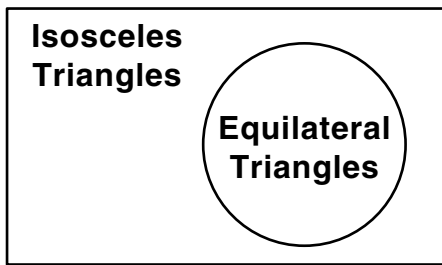
z is a rational number.

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



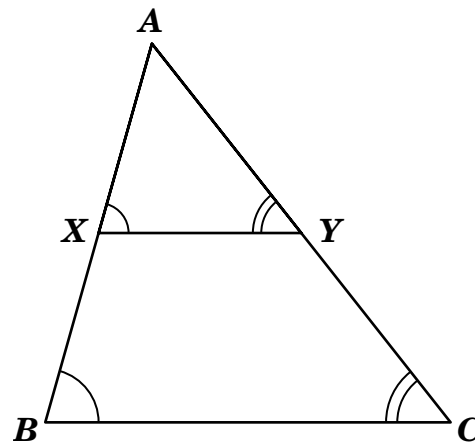
According to the Venn diagram, which statement is true?

- 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 $a > b + c$.

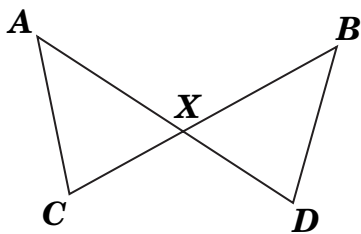
16 Given: $\angle AXY \cong \angle ABC$
 $\angle AYX \cong \angle ACB$



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 $\frac{AX}{AB} = \frac{AC}{AY} = \frac{XY}{BC}$

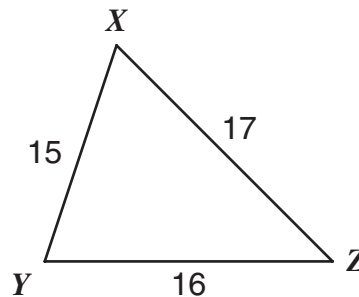
- 17 Given: \overline{AD} and \overline{BC} intersect at X
 $AX = XB$
 $CX = XD$



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

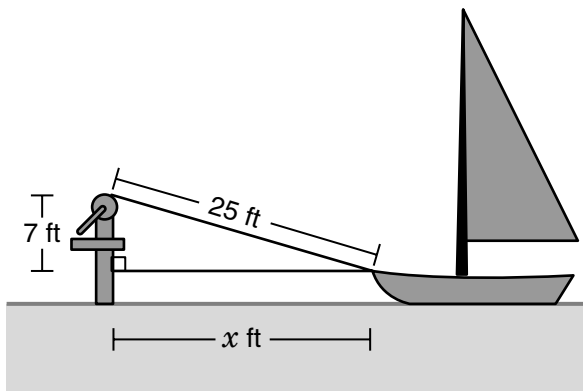
19



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}

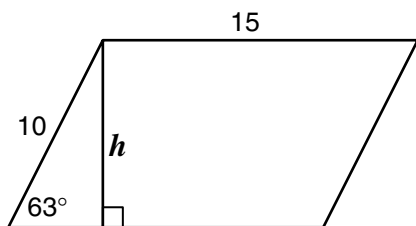
- 21 A windlass is used to pull a boat to the dock. The rope is attached to the boat at a point 7 feet below the level of the windlass.



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

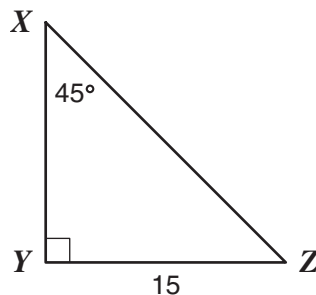
- 22 The parallelogram has the measurements shown.



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

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

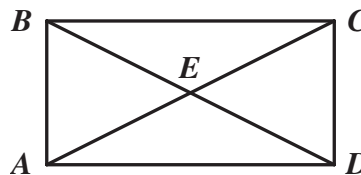
23



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 $15\sqrt{3}$

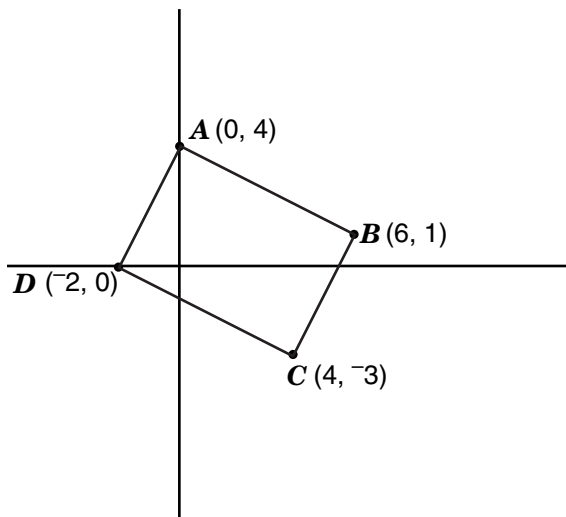
24



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}

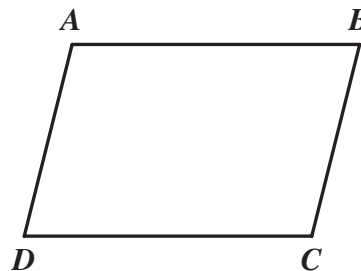
- 25 The town plaza in a certain town is a parallelogram. The town's planning committee has decided to build a fountain at the center of the plaza. This sketch shows the corner points when placed on a coordinate grid.



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)

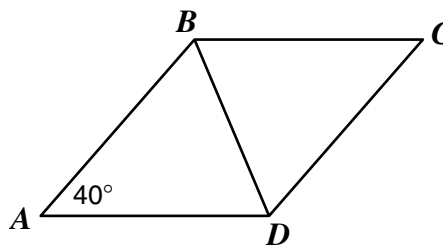
- 26 Quadrilateral $ABCD$ is a parallelogram.



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°
- B 60°
- C 70°
- D 75°

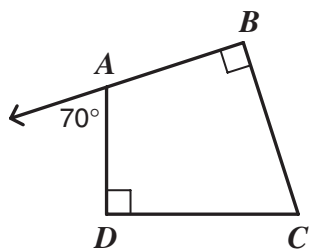
28 If each interior angle of a regular polygon measures 120° , how many sides does the polygon have?

- 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°
- B 40°
- C 45°
- D 54°

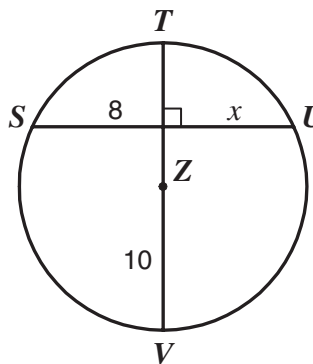
30



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

- F 70°
- G 90°
- H 100°
- J 110°

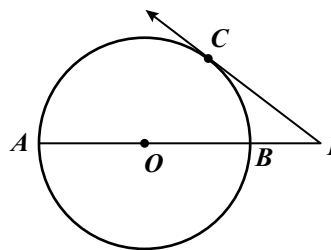
31 \overline{TV} is a diameter of circle Z.



What is the value of x ?

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

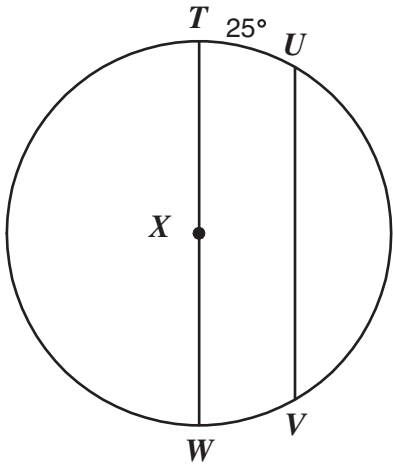
32



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

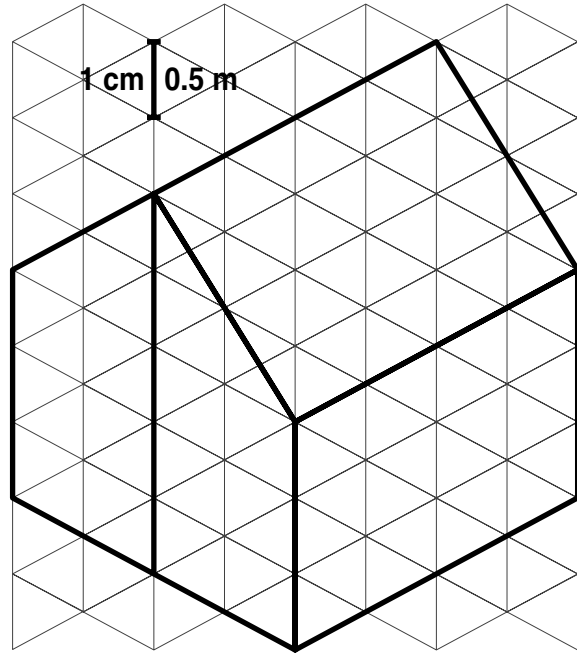
- 33 \overline{TW} is a diameter of circle X , and \overline{TW} is parallel to \overline{UV} .



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

- A 115°
- B 130°
- C 155°
- D 210°

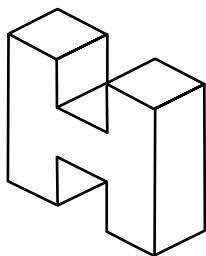
- 34 This is a scale drawing of a tent where 1 centimeter represents 0.5 meter.



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

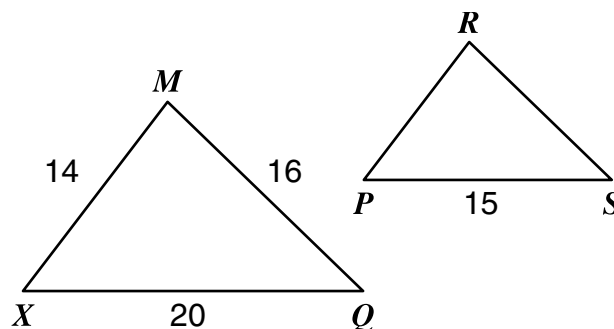
36 To the nearest gallon, what is the volume of a cylindrical water heater 1.4 feet in diameter and 4 feet tall? (1 cubic foot = 7.48 gallons)

- 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 cm³
- B 7.07 cm³
- C 9.42 cm³
- D 14.13 cm³

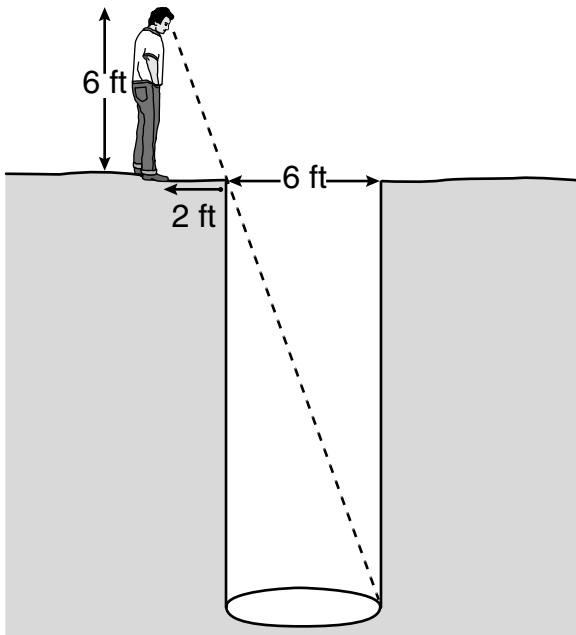
38



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 $\frac{15}{20} = \frac{14}{PR}$

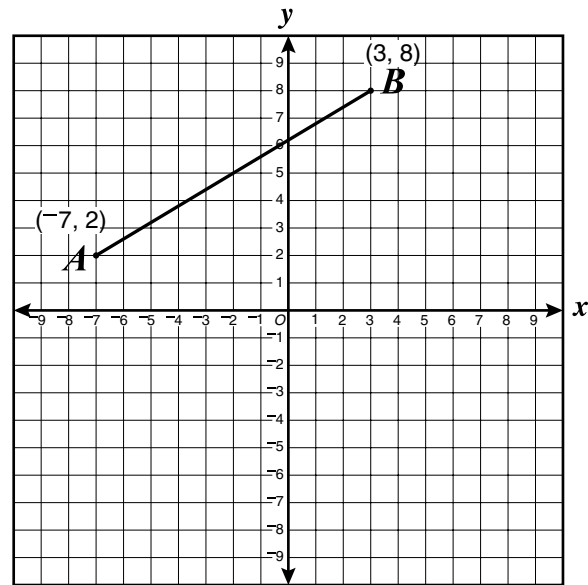
- 39 When standing upright, Gary knows his eyes are 6 feet above ground level. To determine the depth of a well, he stands in the position shown.



Using the given measures, how deep is the well?

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

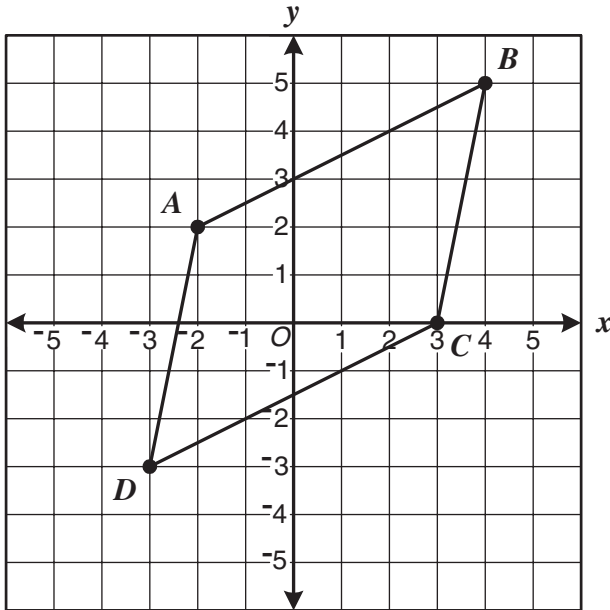
40



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

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

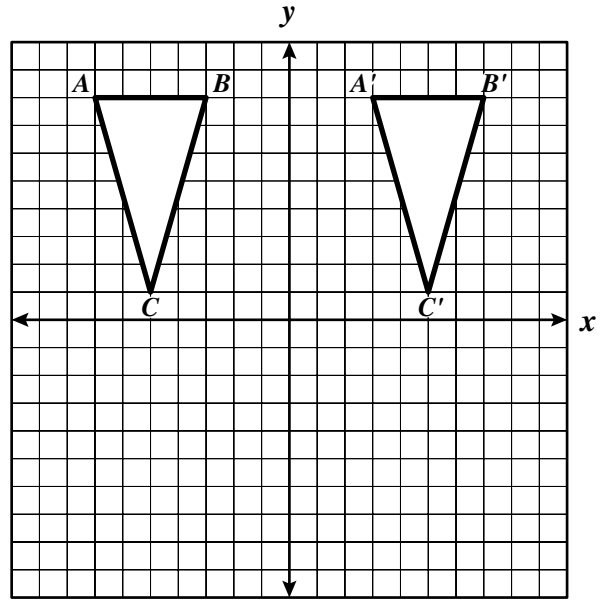
- 41 Parallelogram $ABCD$ is placed on a coordinate grid as shown.



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



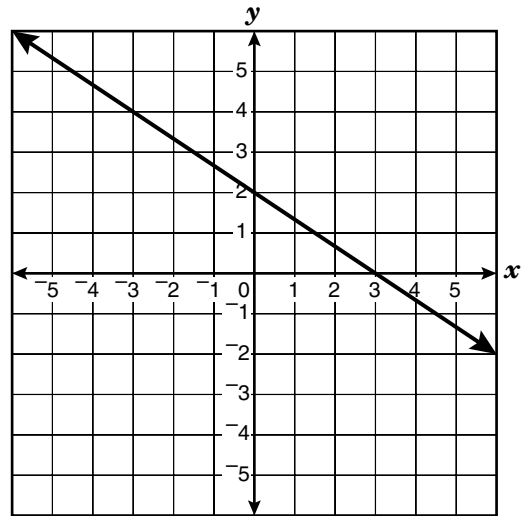
Triangle $A'B'C'$ is —

- F a translation of triangle ABC across the y -axis
- G a 90° 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



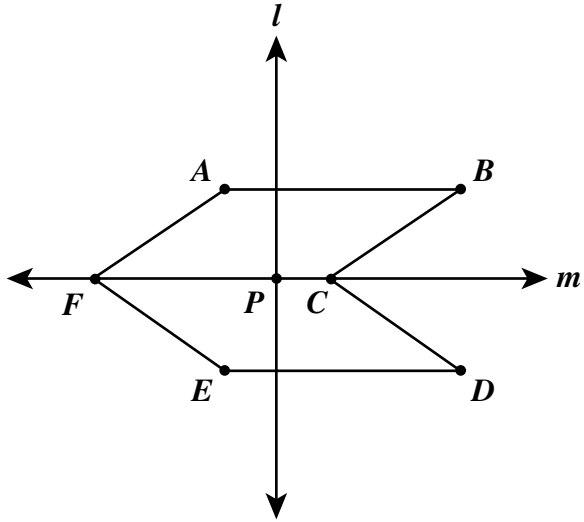
Which is most likely the slope of the line graphed?

F -4

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

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

J 4



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 |
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| 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 |