

**VIRGINIA
STANDARDS OF LEARNING ASSESSMENTS**

Spring 2001 Released Test

**END OF COURSE
GEOMETRY**

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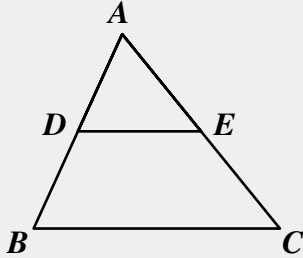
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Geometry

DIRECTIONS

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

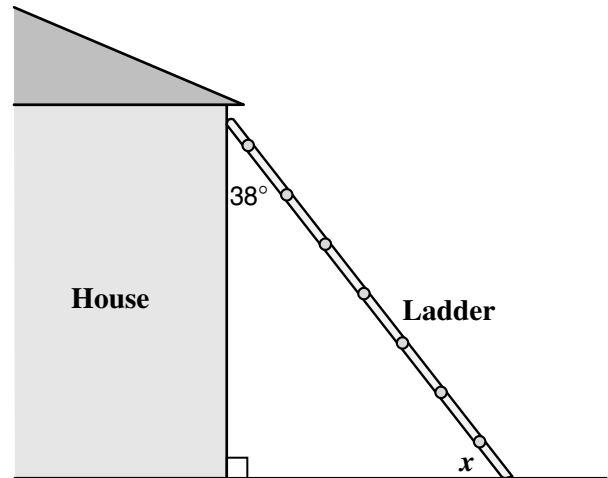
SAMPLE



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

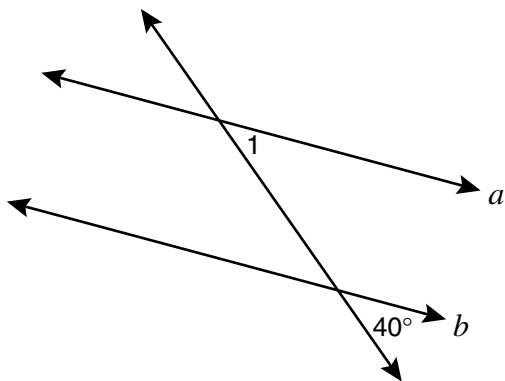
- 2 A ladder is leaning against a house at an angle of 38° as shown in the diagram.



What is the measure of the angle, x , between the ladder and the ground?

- F 38°
- G 42°
- H 52°
- J 142°

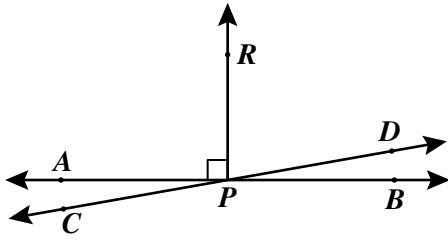
1



If line a is parallel to line b , what is $m\angle 1$?

- A 40°
- B 50°
- C 90°
- D 140°

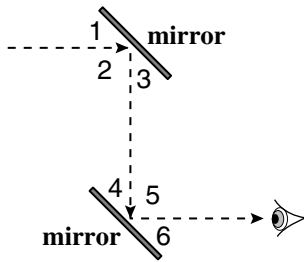
- 3 Lines AB and CD intersect at P . \overrightarrow{PR} is perpendicular to \overleftrightarrow{AB} , and $m\angle APD = 170^\circ$.



What is the measure $\angle DPB$?

- A 10°
- B 20°
- C 30°
- D 40°

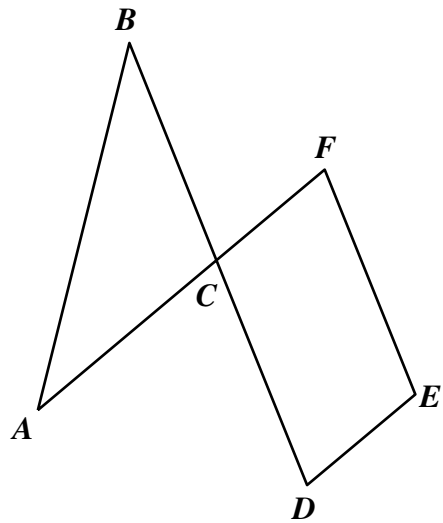
4



This diagram shows how a periscope works. If the two mirrors are parallel and $\angle 1 \cong \angle 3$, what is $m\angle 6$ when $m\angle 2 = 90^\circ$?

- F 30°
- G 45°
- H 50°
- J 60°

5

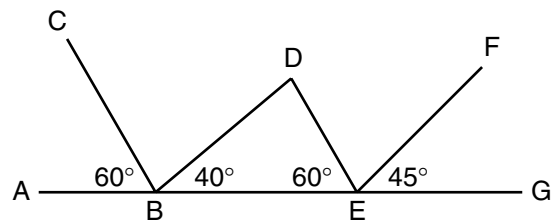


Sides \overline{BC} and \overline{AC} of $\triangle ABC$ are extended to form 2 sides of parallelogram $CDEF$. $\angle CAB$ and $\angle CBA$ each measure 36° .

What is the measure of $\angle CFE$?

- A 36°
- B 54°
- C 72°
- D 108°

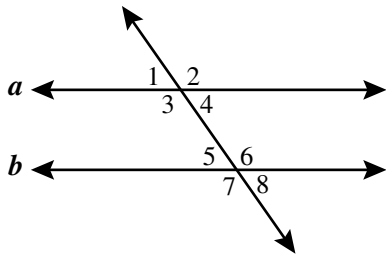
6



Using the information on the diagram, which is true?

- F $\overline{BD} \parallel \overline{EF}$
- G $\overline{BD} \parallel \overline{DE}$
- H $\overline{CB} \parallel \overline{BD}$
- J $\overline{CB} \parallel \overline{DE}$

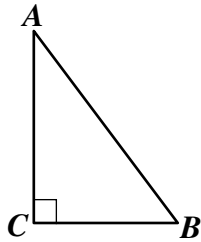
7



Line a is parallel to line b if —

- A $m\angle 4 = m\angle 2$
- B $m\angle 3 = m\angle 5$
- C $m\angle 4 = m\angle 5$
- D $m\angle 3 = m\angle 2$

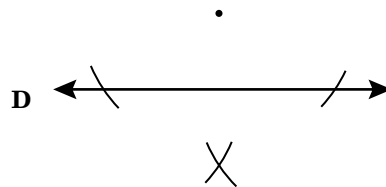
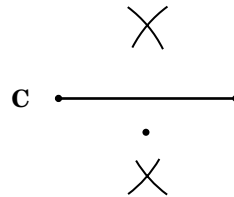
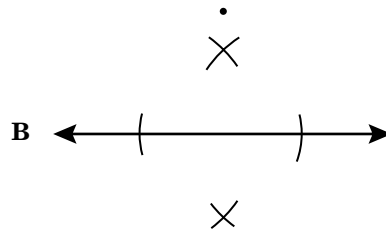
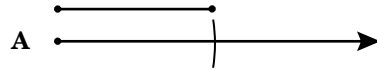
8



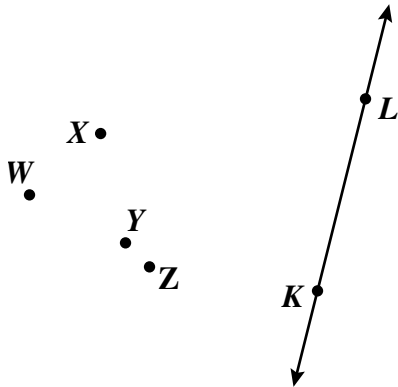
Triangle ABC is a right triangle with the right angle at C . Which are possible measures for angle A and angle B ?

- F 48° and 50°
- G 38° and 32°
- H 52° and 38°
- J 52° and 128°

9 Which drawing shows the arcs for a construction of a perpendicular to a line from a point not on the line?

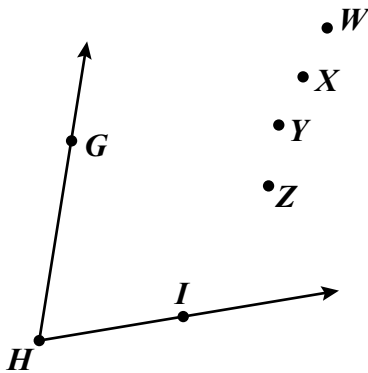


- 10 Use your compass and straightedge to construct a line that is perpendicular to \overleftrightarrow{KL} and passes through point K .



Which point lies on this perpendicular?

- F W
 - G X
 - H Y
 - J Z
- 11 Use your compass and straightedge to construct the bisector of $\angle GHI$.



Which point lies on this bisector?

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

- 12 Which conclusion logically follows the true statements?

“If negotiations fail, the baseball strike will not end.”

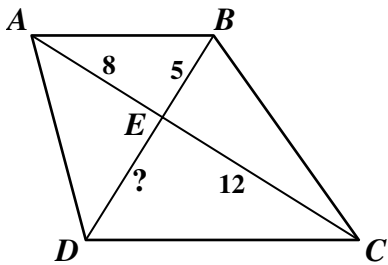
“If the baseball strike does not end, the World Series will not be played.”

- F If the baseball strike ends, the World Series will be played.
 - G If negotiations do not fail, the baseball strike will not end.
 - H If negotiations fail, the World Series will not be played.
 - J If negotiations fail, the World Series will be played.
- 13 Let a represent “ x is an odd number.”
Let b represent “ x is a multiple of 3.”

When x is 7, which of the following is true?

- A $a \wedge b$
- B $a \wedge \sim b$
- C $\sim a \wedge b$
- D $\sim a \wedge \sim b$

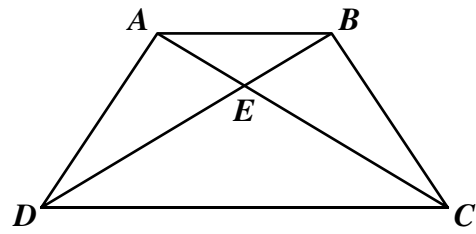
14



In the figure, $AE = 8$, $CE = 12$, and $BE = 5$. What value for the measure of \overline{DE} would make $\triangle ABE$ similar to $\triangle CDE$?

- F 3.3
- G 7.5
- H 8
- J 15

15

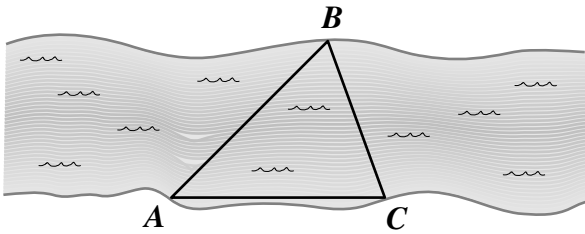


Given: $\overline{AC} \cong \overline{BD}$
 $\overline{AD} \cong \overline{BC}$

Which could be used to prove $\triangle DCA \cong \triangle CDB$?

- A (SSS) If 3 sides of one triangle are congruent to 3 sides of another triangle, then the triangles are congruent.
- B (SAS) If 2 sides and the angle between them in one triangle are congruent to 2 sides and the angle between them in another triangle, then the triangles are congruent.
- C (ASA) If 2 angles and the side between them of one triangle are congruent to 2 angles and the side between them of another triangle, then the triangles are congruent.
- D (AAS) If 2 angles and a side not between them are congruent to 2 angles and a side not between them of another triangle, then the triangles are congruent.

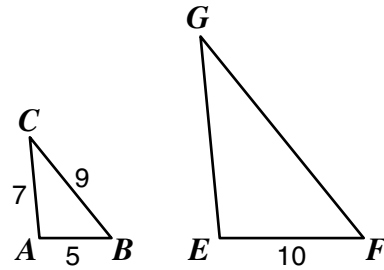
- 16 On the shores of a river, surveyors marked locations, A , B , and C . The measure of $\angle ACB = 70^\circ$, and the measure of $\angle ABC = 65^\circ$.



Which lists the distances between these locations in order, least to greatest?

- F A to B, B to C, A to C
- G B to C, A to B, A to C
- H B to C, A to C, A to B
- J A to C, A to B, B to C

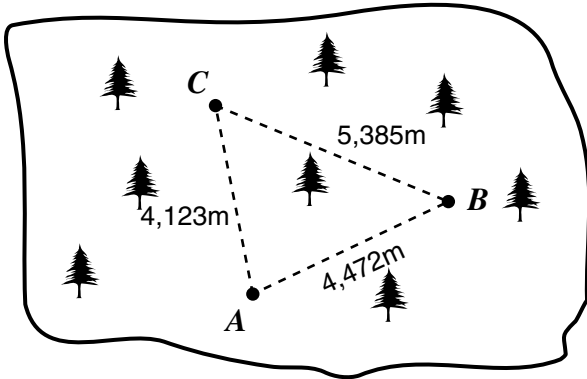
- 17 Triangles ABC and EFG are similar with measurements as shown.



What is the ratio $\frac{AC}{EG}$?

- A $\frac{1}{2}$
 - B $\frac{5}{7}$
 - C $\frac{7}{10}$
 - D $\frac{7}{9}$
- 18 Which of the following could be the lengths of the sides of $\triangle ABC$?
- F $AB = 12, BC = 15, AC = 2$
 - G $AB = 9, BC = 15, CA = 4$
 - H $AB = 150, BC = 100, CA = 50$
 - J $AB = 10, BC = 8, AC = 12$

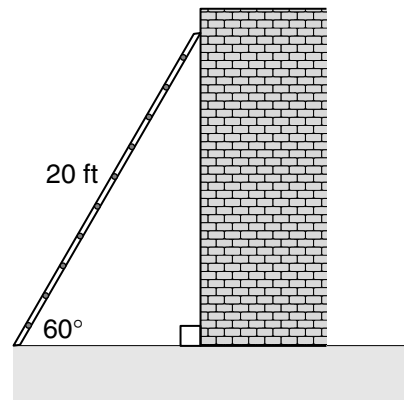
- 19 Three lookout towers are located at points A , B , and C on the section of a national forest shown in the drawing.



Which of the following statements is true concerning $\triangle ABC$ formed by the towers?

- A $m\angle A$ is greatest.
- B $m\angle C$ is greatest.
- C $m\angle A$ is least.
- D $m\angle C$ is least.

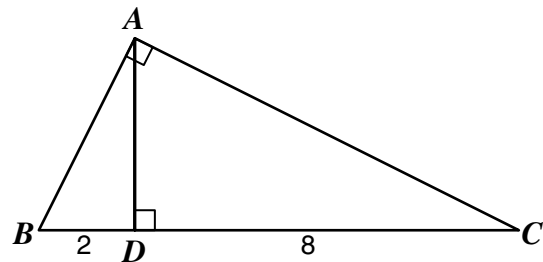
20



A 20-foot ladder leaning against a building makes an angle of 60° with the ground. How far from the base of the building is the foot of the ladder?

- F 5 ft
- G 8.2 ft
- H 10 ft
- J 17.3 ft

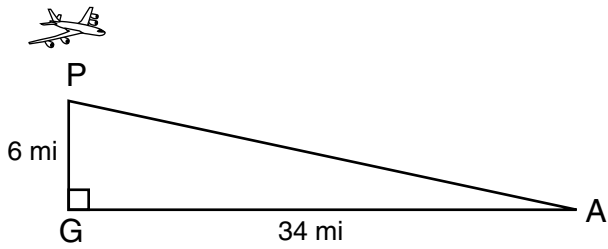
21



In the figure, $\triangle ABC$ is a right triangle. AD is perpendicular to BC , and the measure of $BD = 2$ meters and $DC = 8$ meters. What is the measure of AC ?

- A 2.8 m
- B 4.5 m
- C 8.9 m
- D 10.0 m

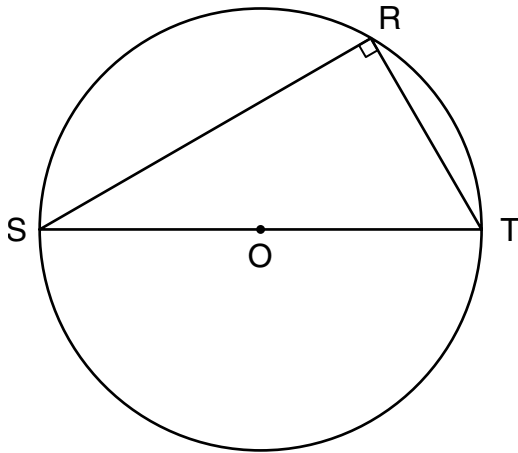
22



An airplane is 34 ground miles from the end of the runway (GA) and 6 miles high (PG) when it begins its approach to the airport. To the nearest mile, what is the distance (PA) from the airplane to the end of the runway?

- F 41 mi
- G 39 mi
- H 37 mi
- J 35 mi

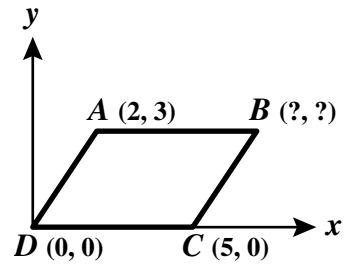
23



In circle O , $\angle RST$ formed by chord \overline{RS} and diameter \overline{ST} has a measure of 30° . If the diameter is 12 centimeters, what is the length of chord \overline{SR} ?

- A $12\sqrt{3}$ cm
- B $12\sqrt{2}$ cm
- C $6\sqrt{3}$ cm
- D $6\sqrt{2}$ cm

24



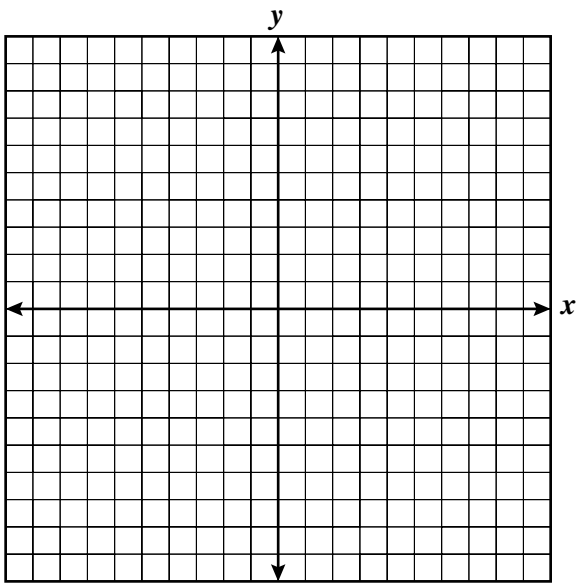
If $ABCD$ is a parallelogram, what are the coordinates of B ?

- F (3, 7)
- G (5, 5)
- H (7, 8)
- J (7, 3)

25 Which of the following quadrilaterals could have diagonals that are congruent but do *not* bisect each other?

- A A rhombus
- B A rectangle
- C A parallelogram
- D A trapezoid

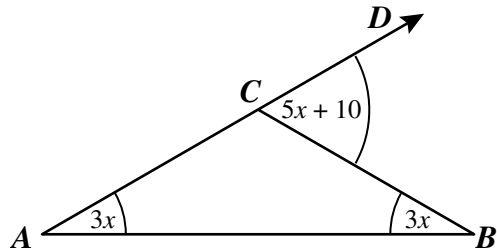
- 26 Three vertices of a square have coordinates $(5, 1)$, $(2, -2)$, and $(-1, 1)$. You may want to plot the points on this grid.



What are the coordinates of the fourth vertex?

- F $(-2, 2)$
- G $(2, -2)$
- H $(2, 4)$
- J $(4, 2)$

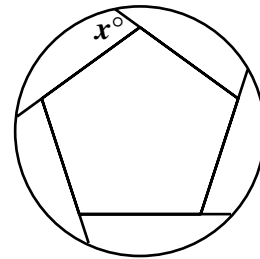
- 27 The figure has angle measures as shown.



What is the measure of $\angle BCD$?

- A 120°
- B 80°
- C 60°
- D 30°

- 28



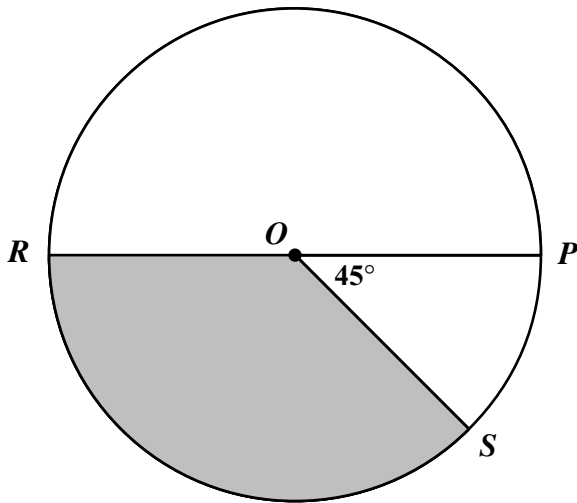
A floor tile is designed with a regular pentagon in the center of the tile with its sides extended. What is the value of x ?

- F 72°
- G 90°
- H 110°
- J 120°

29 Each exterior angle of a certain regular polygon measures 30° . How many sides does the polygon have?

- A 6
- B 9
- C 10
- D 12

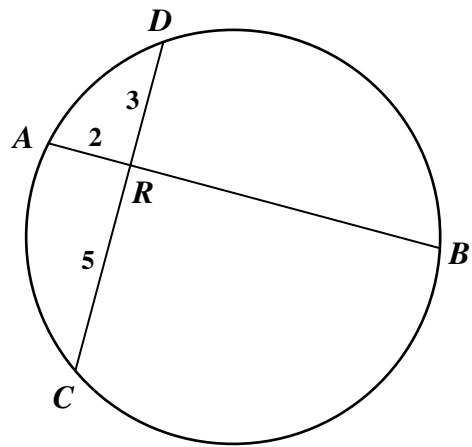
30



A circle for a game spinner is divided into 3 regions as shown. \overline{RP} is a diameter. What is the area of the shaded sector ROS if $RP = 8$?

- F 1.5π
- G 6π
- H 24π
- J 72π

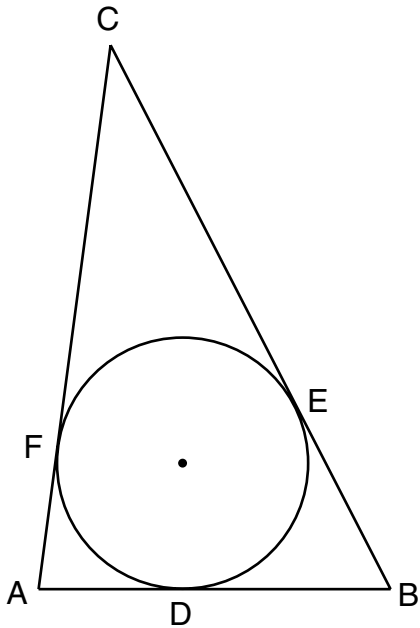
31



Chords \overline{AB} and \overline{CD} intersect at R . Using the values shown in the diagram, what is the measure of \overline{RB} ?

- A 6
- B 7.5
- C 8
- D 9.5

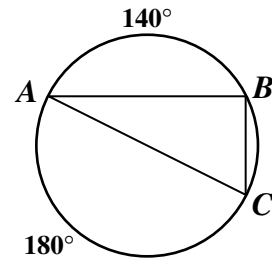
- 32 The logo of an airline is a circle inscribed in a triangle.



If $AF = 3$ and $AB = 11$, then $BD = \underline{\hspace{1cm}}$?

- F 8
- G 10
- H 11
- J 12

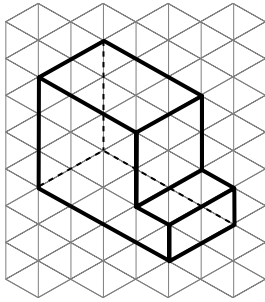
33



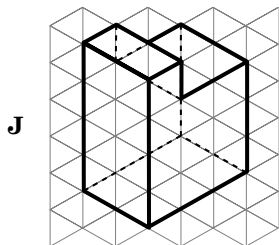
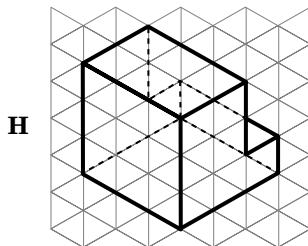
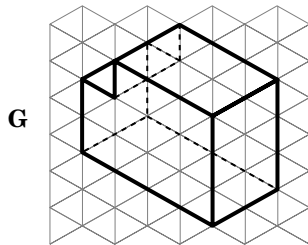
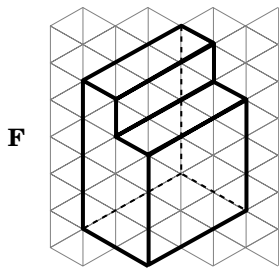
When inscribed in a certain circle, $\triangle ABC$ intercepts arcs as shown in the diagram. What is the measure of $\angle BAC$?

- A 90°
- B 70°
- C 40°
- D 20°

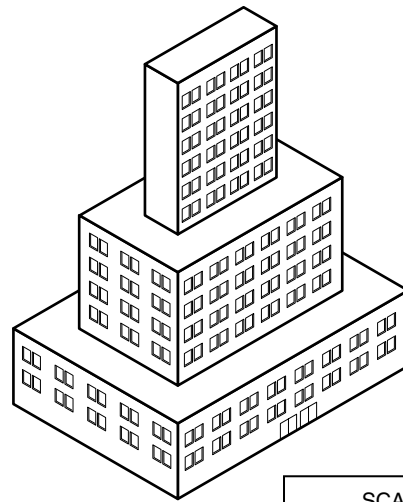
34 This is one view of a 3-dimensional object.



Which is a different view of the same object?



35



SCALE
1 cm Represents 13 m

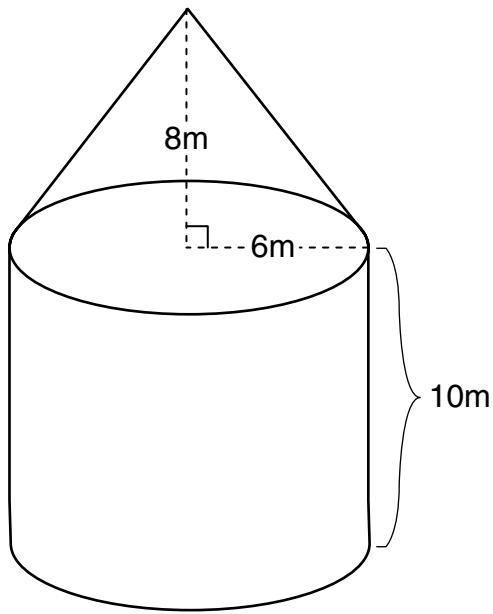
This is a scale drawing of a building. What is the actual height of the building?

- A 58.5 m
- B 71.5 m
- C 78 m
- D 84.5 m

36 What is the volume in cubic feet of a refrigerator whose interior is 4.5 feet tall, 2.5 feet wide, and 2 feet deep?

- F 15 cu ft
- G 19 cu ft
- H 22.5 cu ft
- J 25 cu ft

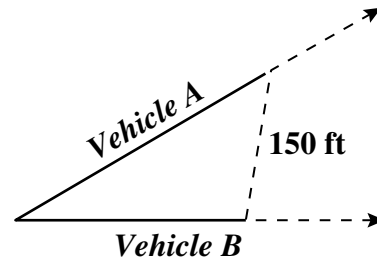
37



Rounded to the nearest hundred cubic meters, what is the total capacity (cone and cylinder) of the storage container?

- A 1,400
- B 2,000
- C 5,700
- D 8,100

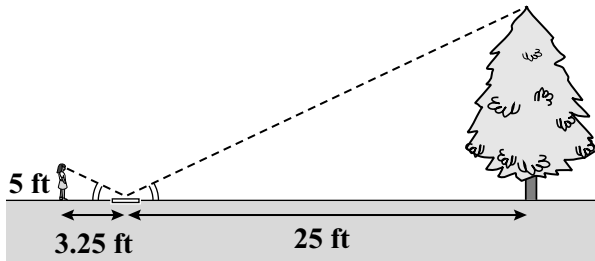
- 38 Two vehicles, each moving from a point in a straight line away from each other at an angle, are 150 feet apart after 6 seconds. Both are moving at a constant rate, vehicle A at 50 feet per second and vehicle B at 40 feet per second.



How far apart are they after 15 seconds?

- F 150 ft
- G 375 ft
- H 600 ft
- J 750 ft

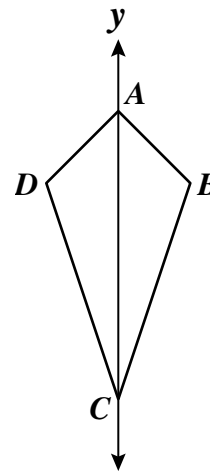
- 39 In order to determine the height of a tree, María places a mirror flat on the ground 25 feet from the base. After backing 3.25 feet, she can just see the top of the tree in the mirror.



María knows that her eyes are exactly 5 feet above ground level and that the angle between her eyes, the mirror, and the ground is the same as the angle between the tree top, the mirror, and the ground. Which is closest to the height of the tree?

- A 24 ft
- B 28 ft 4 in.
- C 38 ft 6 in.
- D 40 ft

40

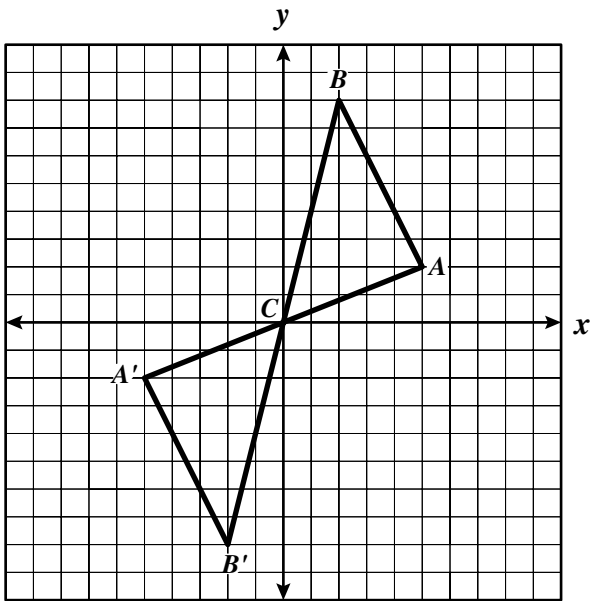


Quadrilateral $ABCD$ is symmetric with respect to the y axis. If the coordinates of B are $(2, 1)$, what are the coordinates of D ?

- F $(-2, -1)$
- G $(-1, -2)$
- H $(-2, 1)$
- J $(-1, 2)$

- 41 If $\overrightarrow{RS} = (3, -2)$ and $\overrightarrow{TV} = (-1, -4)$, which column matrix shows the resultant $\overrightarrow{RS} + \overrightarrow{TV}$?

- A $\begin{bmatrix} 2 \\ -6 \end{bmatrix}$
- B $\begin{bmatrix} 4 \\ 2 \end{bmatrix}$
- C $\begin{bmatrix} -4 \\ -2 \end{bmatrix}$
- D $\begin{bmatrix} -6 \\ 2 \end{bmatrix}$



Triangle $A'B'C$ is —

- F a translation of triangle ABC across the y -axis
- G a 180° rotation of triangle ABC about the origin
- H a reflection of triangle ABC across the y -axis only
- J a reflection of triangle ABC across the x -axis only
- 43 A circle whose center is at $(1, -3)$ passes through $(7, 5)$. What is the length of the radius of the circle?
- A 10
- B $\sqrt{40}$
- C $\sqrt{68}$
- D 14

44 $\overrightarrow{AB} = (4, -3)$
 $\overrightarrow{BC} = (2, 4)$
 $\overrightarrow{CD} = (-1, 1)$

Which matrix gives the resultant \overrightarrow{AD} of the vector sum $\overrightarrow{AB} + \overrightarrow{BC} + \overrightarrow{CD}$?

- F $\begin{bmatrix} 5 \\ 2 \end{bmatrix}$
- G $\begin{bmatrix} 3 \\ -2 \end{bmatrix}$
- H $\begin{bmatrix} 5 \\ 8 \end{bmatrix}$
- J $\begin{bmatrix} -5 \\ 4 \end{bmatrix}$

- 45 Joan drives 3 miles north, turns east for 2 miles, then north again for 4 miles, and finally 5 miles east. Which vector could be used to describe the resultant of her drive?
- A $(5, 9)$
- B $(5, 10)$
- C $(7, 7)$
- D $(7, 10)$

Answer Key

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