

VIRGINIA STANDARDS OF LEARNING

Spring 2006 Released Test

# END OF COURSE GEOMETRY

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CORE 1

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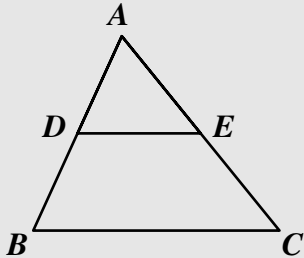
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# Geometry

## DIRECTIONS

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

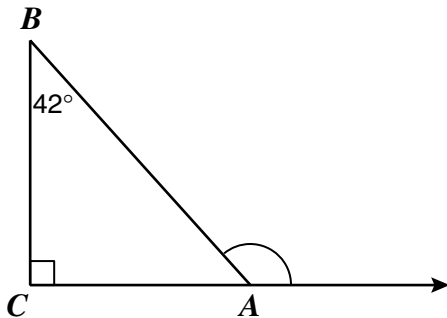
### SAMPLE



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

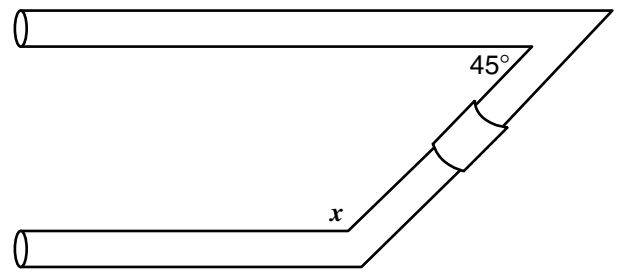
1



Which of the following is the measure of the supplement of  $\angle CAB$ ?

- A  $42^\circ$
- B  $90^\circ$
- C  $132^\circ$
- D  $142^\circ$

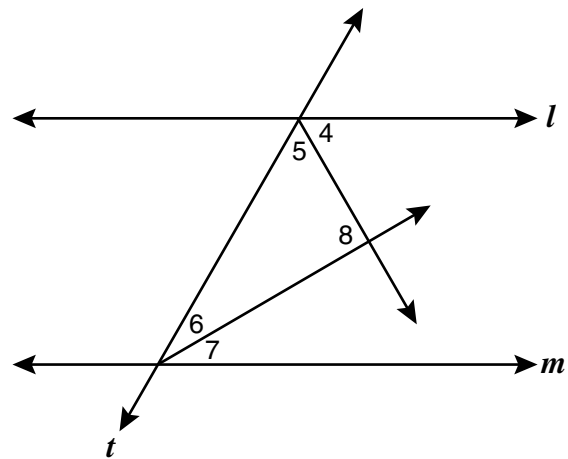
2



Two parallel sections of pipe are joined with a connecting pipe as shown. What is the value of  $x$ ?

- F  $90^\circ$
- G  $115^\circ$
- H  $135^\circ$
- J  $160^\circ$

3 Parallel lines  $l$  and  $m$  are cut by transversal  $t$ ,  $m\angle 4 = m\angle 5$ , and  $m\angle 6 = m\angle 7$ .



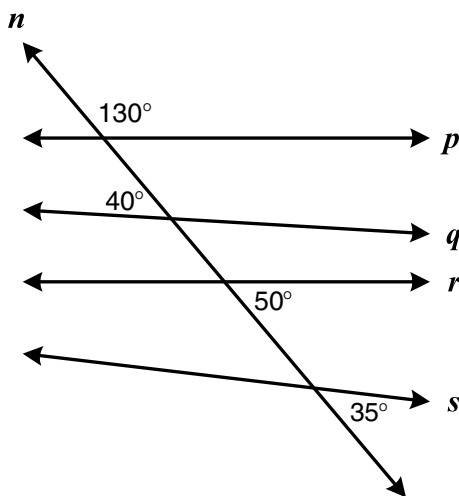
What is the measure of  $\angle 8$ ?

- A  $120^\circ$
- B  $90^\circ$
- C  $65^\circ$
- D  $45^\circ$

4 What are the measures of two complementary angles if the difference of their measures is  $18^\circ$ ?

- F  $36^\circ, 54^\circ$
- G  $41^\circ, 49^\circ$
- H  $81^\circ, 99^\circ$
- J  $86^\circ, 94^\circ$

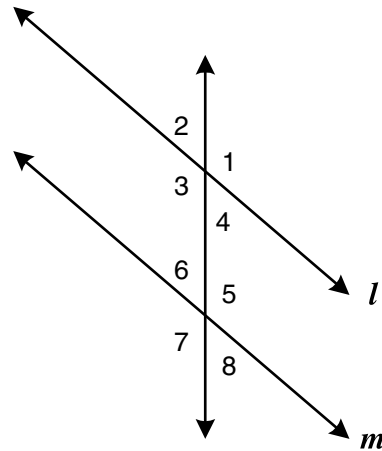
5 Line  $n$  intersects lines  $p, q, r,$  and  $s,$  forming the indicated angles.



Which two lines are parallel?

- A  $p$  and  $q$
- B  $p$  and  $r$
- C  $q$  and  $r$
- D  $r$  and  $s$

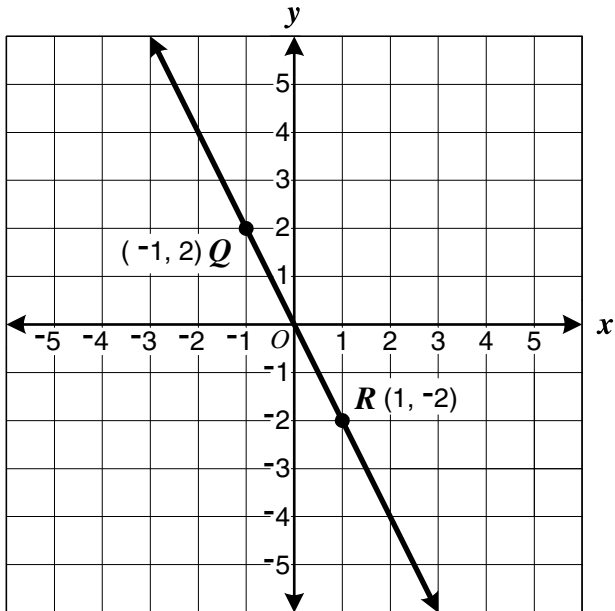
6



Which will prove that line  $l$  is parallel to line  $m$ ?

- F  $\angle 2 \cong \angle 7$
- G  $\angle 3 \cong \angle 6$
- H  $\angle 5 \cong \angle 2$
- J  $\angle 7 \cong \angle 1$

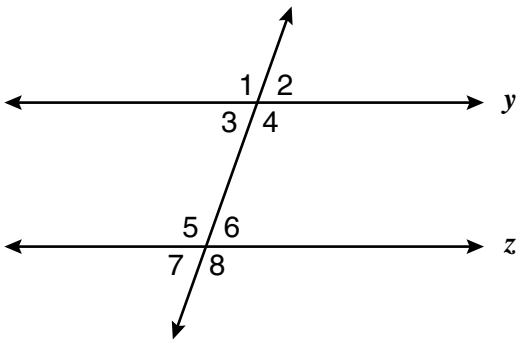
7



Which two points determine a line parallel to  $\overleftrightarrow{QR}$ ?

- A (1, 1) and (2, -1)
- B (-1, -1) and (-2, -3)
- C (1, 4) and (5, 2)
- D (2, 1) and (-2, -1)

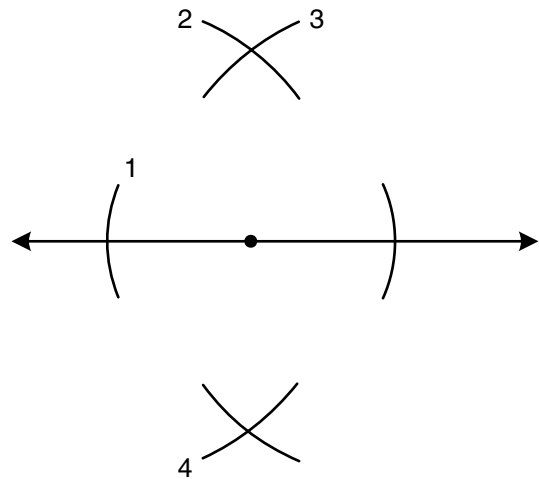
8 Given:  $m\angle 1 = 110^\circ$



Which must be true if  $y \parallel z$ ?

- F  $m\angle 8 = 100^\circ$
- G  $m\angle 7 = 110^\circ$
- H  $m\angle 6 = 80^\circ$
- J  $m\angle 5 = 110^\circ$

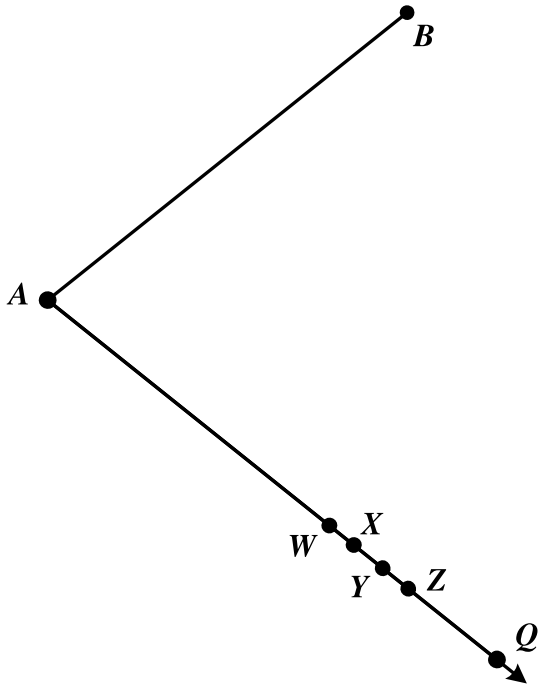
9



For the construction shown above, which of the following arcs must be drawn first?

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

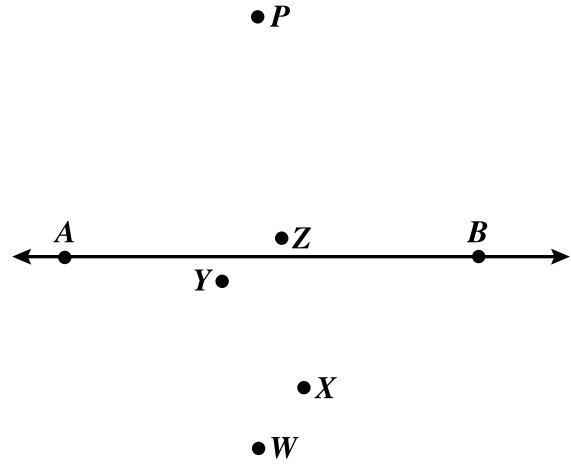
10



Which segment is apparently congruent to  $\overline{AB}$ ?

- F  $\overline{AW}$
- G  $\overline{AX}$
- H  $\overline{AY}$
- J  $\overline{AZ}$

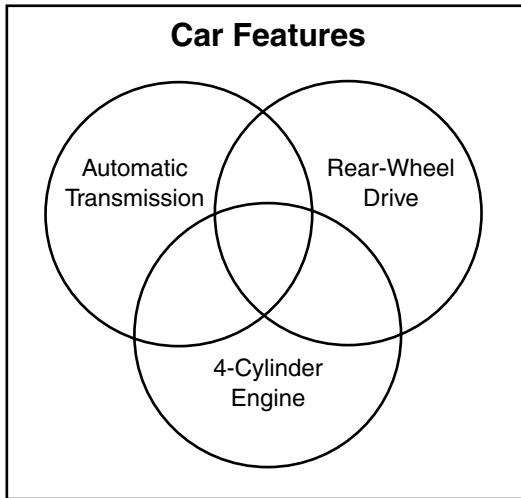
11



Which line is apparently perpendicular to  $\overleftrightarrow{AB}$ ?

- A  $\overleftrightarrow{PW}$
- B  $\overleftrightarrow{PX}$
- C  $\overleftrightarrow{PY}$
- D  $\overleftrightarrow{PZ}$

12



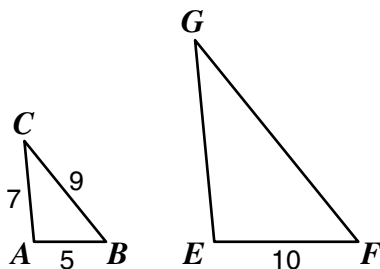
**According to the Venn diagram above, which is true?**

- F** All cars have automatic transmissions and rear-wheel drive.
- G** No cars have 4 cylinders and rear-wheel drive.
- H** All cars have rear-wheel drive.
- J** Some cars have automatic transmissions and 4 cylinders.

13 **Which set of statements represents an *invalid* argument?**

- A** If I work, then I will make money.  
If I make money, then I will buy clothes.  
If I work, then I will buy clothes.
- B** If we pass Geometry, then we will play sports.  
If we play sports, then we will get a trophy.  
If we do not get a trophy, then we did not pass Geometry.
- C** If Mark goes camping, then he will go fishing.  
If Mark goes fishing, then he will buy bait.  
If Mark does not buy bait, then he will go camping.
- D** If it is your birthday, then you will get ice cream.  
If you get ice cream, then you will get cake.  
If it is your birthday, then you will get cake.

- 14 Triangles  $ABC$  and  $EFG$  are similar with measurements in centimeters as shown.



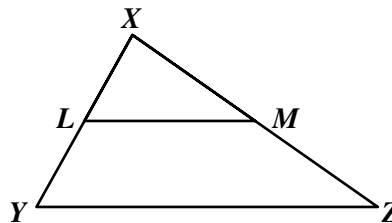
What is the perimeter of triangle  $EFG$ ?

- F 21 cm  
 G 24 cm  
 H 36 cm  
 J 42 cm
- 15 Which is the contrapositive of the statement below?

*If you do your homework, then you will be prepared for the test.*

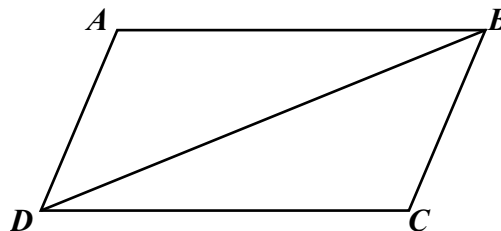
- A If you are prepared for the test, then you did your homework.  
 B If you are not prepared for the test, then you did not do your homework.  
 C If you do your homework, then you will be prepared for the test.  
 D If you do not do your homework, then you will not be prepared for the test.

16



If triangle  $XYZ$  is similar to triangle  $XLM$ , then —

- F  $XM : XZ = XL : XY$   
 G  $XM : XZ = XY : XL$   
 H  $XL : LM = YZ : XZ$   
 J  $XL : LY = XZ : MZ$
- 17 Given:  $ABCD$  is a parallelogram.



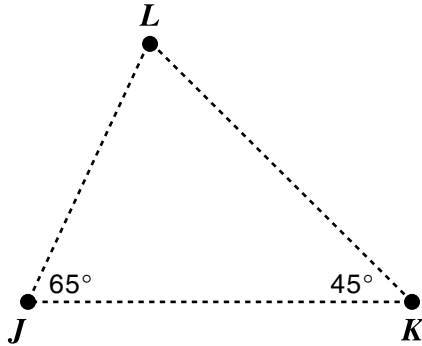
Prove:  $\triangle ABD \cong \triangle CDB$

$\angle A \cong \angle C$	Opposite angles of a parallelogram are congruent.
$\overline{AD} \cong \overline{BC}$	Opposite sides of a parallelogram are congruent.
$\overline{AB} \cong \overline{CD}$	Opposite sides of a parallelogram are congruent.

Therefore,  $\triangle ABD \cong \triangle CDB$  by which postulate/theorem?

- A SSA  
 B ASA  
 C SAS  
 D AAS

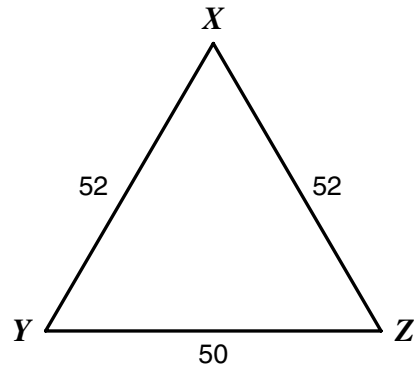
- 18 Three boys are in a field flying kites. Viewed from above, the angle at Kyle,  $K$ , measures  $45^\circ$ , and the angle at Jake,  $J$ , measures  $65^\circ$ .



Which shows the distances between the boys in order from least to greatest?

- F  $LJ, JK, KL$
- G  $KL, KJ, LJ$
- H  $KJ, LK, JL$
- J  $LJ, LK, JK$

19



Using the information in the drawing, which angle has the least measure?

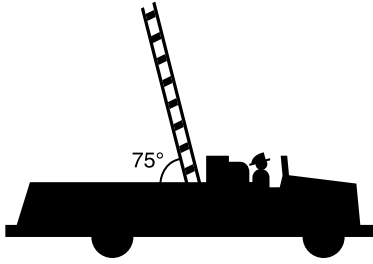
- A  $\angle XZY$
- B  $\angle XYZ$
- C  $\angle ZXY$
- D  $\angle YZX$

- 20 Which of the following could *not* be the lengths of the sides of a triangle?

- F 8 in., 19 in., 15 in.
- G 6 in., 3 in., 9 in.
- H 4 in., 5 in., 6 in.
- J 10 in., 8 in., 9 in.



21

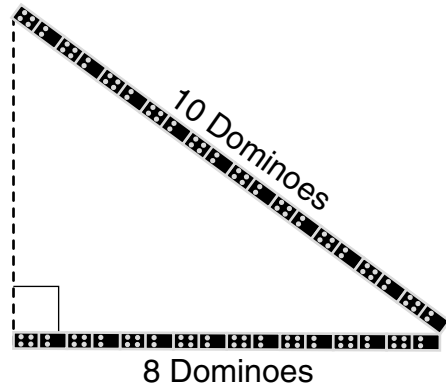


A fire truck has a ladder that can extend to 60 feet in length. The ladder can be safely raised to a maximum angle of 75° with the horizontal. Disregarding the height of the fire truck itself, which is closest to the maximum height that the ladder can safely reach?

$\sin 75^\circ \approx 0.966$ $\cos 75^\circ \approx 0.259$ $\tan 75^\circ \approx 3.73$
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- A 15.53 ft
- B 57.96 ft
- C 60.00 ft
- D 62.12 ft

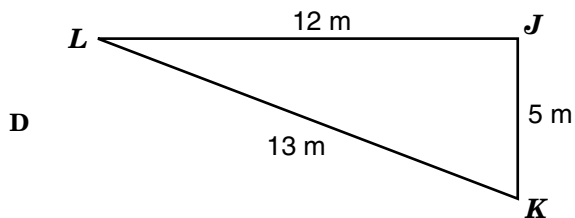
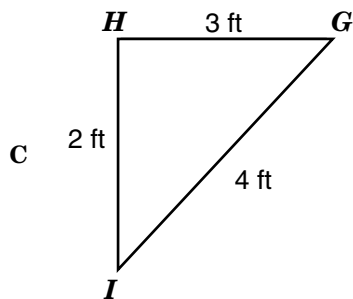
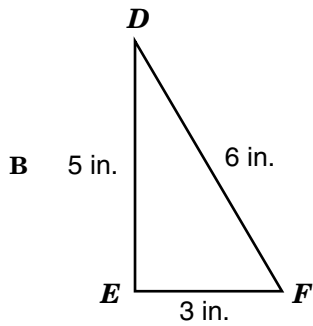
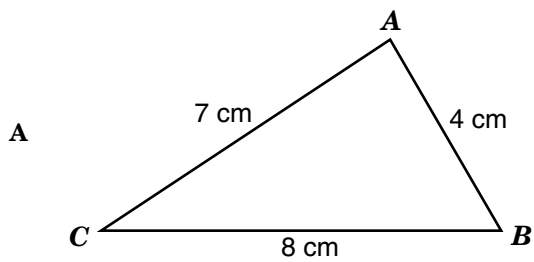
22 Scotty is making a train of dominoes on the floor.



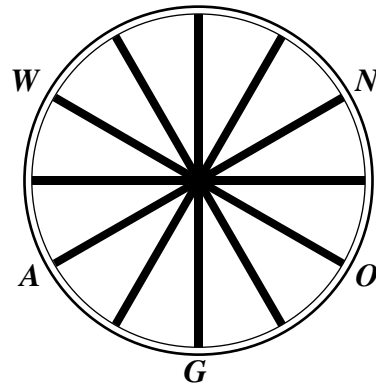
How many dominoes are needed to complete the triangle?

- F 6
- G 12
- H 18
- J 36

23 Using the measures shown, which triangle must be a right triangle?



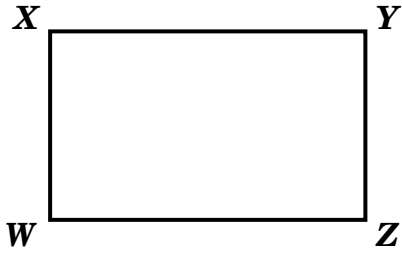
24 The spokes on a wagon wheel form twelve congruent central angles.



What is the degree measure of  $\widehat{WG}$ ?

- F  $30^\circ$
- G  $90^\circ$
- H  $120^\circ$
- J  $150^\circ$

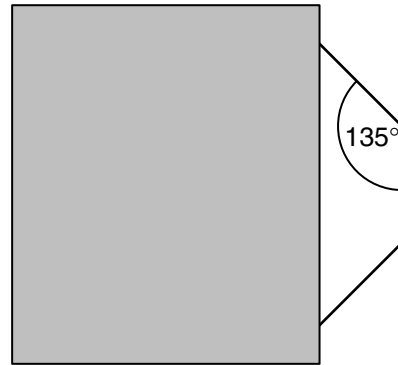
25  $XYZW$  is a rectangle.



Which of the following is *not necessarily* true?

- A  $XY = WZ$
- B  $\overline{YZ} \perp \overline{WZ}$
- C  $XZ = WY$
- D  $XY = XW$

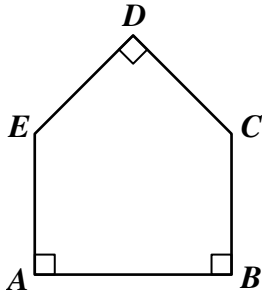
26 In the drawing, a *regular* polygon is partially covered by a rectangle.



What is the number of sides of this polygon?

- F 12
- G 10
- H 8
- J 6

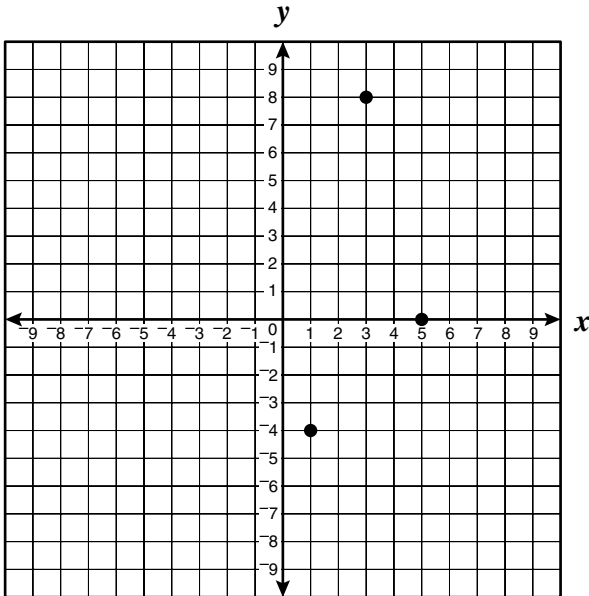
27



If  $\angle E \cong \angle C$ , what is  $m\angle E$ ?

- A  $110^\circ$
- B  $120^\circ$
- C  $135^\circ$
- D  $150^\circ$

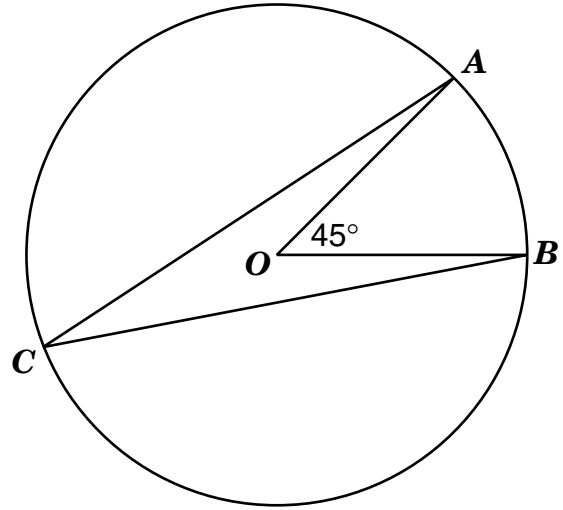
28 Three vertices of a parallelogram have coordinates  $(1, -4)$ ,  $(3, 8)$ , and  $(5, 0)$ .



What are the coordinates of the second-quadrant vertex?

- F  $(-3, 12)$
- G  $(-1, 4)$
- H  $(1, -4)$
- J  $(9, 4)$

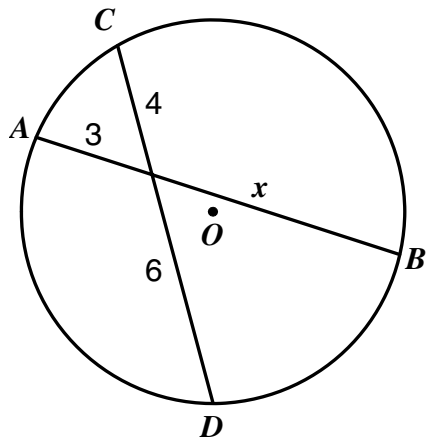
29



If  $m\angle AOB = 45^\circ$  in circle  $O$ , what is  $m\angle ACB$ ?

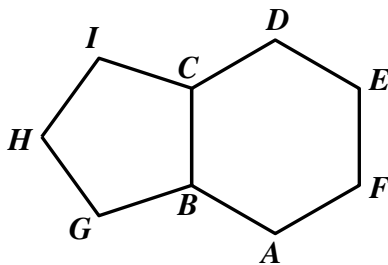
- A  $22.5^\circ$
- B  $45^\circ$
- C  $67.5^\circ$
- D  $90^\circ$

- 30 Chords  $\overline{AB}$  and  $\overline{CD}$  intersect, forming segments with the measures shown.



What is the value of  $x$ ?

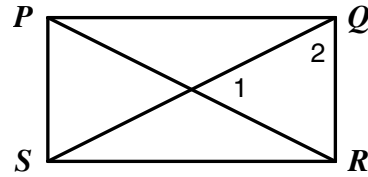
- F 5  
 G 8  
 H 10  
 J 24
- 31 A regular pentagon and a regular hexagon share a side as shown in the figure.



What is the measure of  $\angle ABG$ ?

- A  $108^\circ$   
 B  $120^\circ$   
 C  $132^\circ$   
 D  $144^\circ$

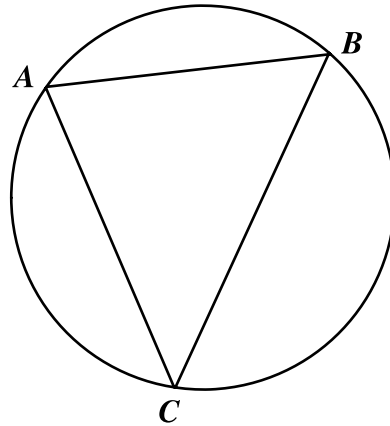
- 32 In the rectangle  $PQRS$ ,  $m\angle 1 = 50^\circ$ .



What is  $m\angle 2$ ?

- F  $130^\circ$   
 G  $85^\circ$   
 H  $70^\circ$   
 J  $65^\circ$

- 33



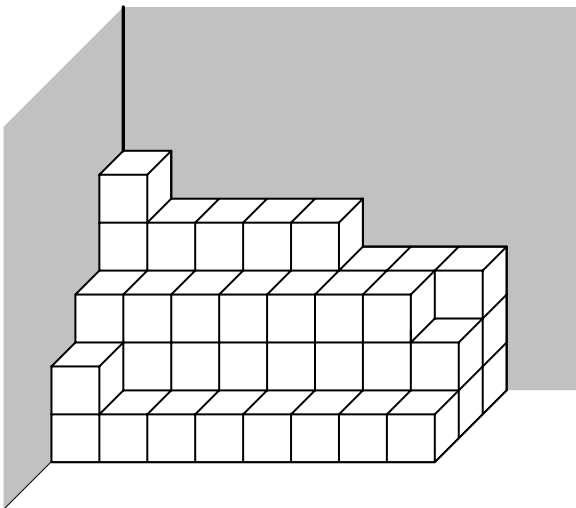
The sum of  $m\widehat{AB}$  and  $m\widehat{BC}$  is equal to —

- A  $360^\circ - m\widehat{AC}$   
 B  $240^\circ - m\widehat{AC}$   
 C  $180^\circ - m\widehat{AC}$   
 D  $120^\circ$

34 A swimming pool is being filled at the rate of 12 cubic yards per minute. If the pool is 18 yards long, 10 yards wide, and 3 yards deep, how many minutes will it take to fill the pool?

- F 45 minutes
- G 101 minutes
- H 540 minutes
- J 1,233 minutes

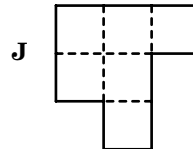
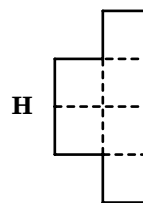
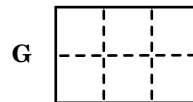
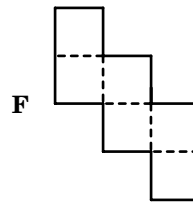
35 This drawing shows cubic boxes stacked in the corner of a warehouse.



If each box will hold 8 cubic feet, what is the total capacity of the stack of boxes?

- A 488 cubic feet
- B 496 cubic feet
- C 504 cubic feet
- D 512 cubic feet

36 Which of the following nets can be folded along the dashed lines to form a cube?



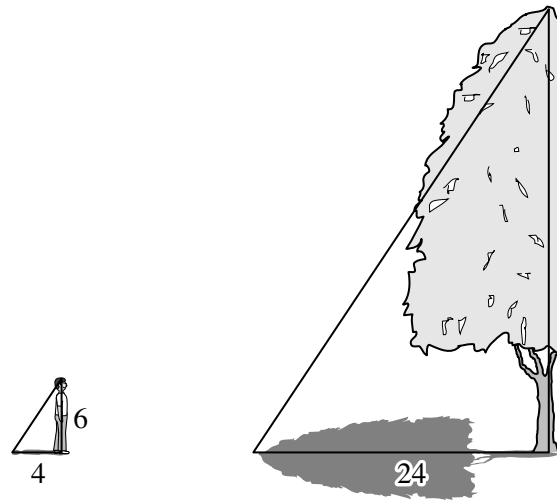
- 37 A machine for baling hay produces cylindrical bales that are 6 feet in diameter and  $5\frac{1}{3}$  feet in height.



Which is closest to the number of cubic feet in each bale of hay the machine produces?

- A 100
- B 151
- C 301
- D 603

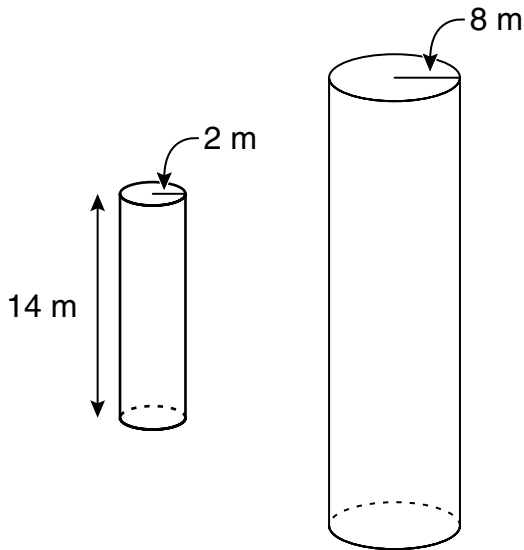
- 38 A boy knows that his height is 6 feet. At the time of day when his shadow is 4 feet, a tree's shadow is 24 feet.



What is the height of the tree?

- F 36 ft
- G 24 ft
- H 18 ft
- J 12 ft

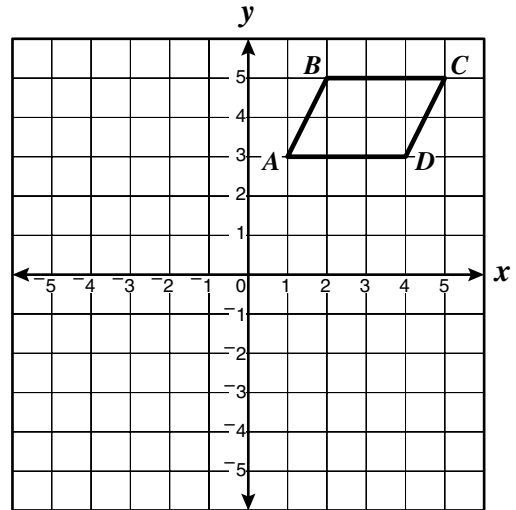
39 The cylinders shown are similar.



What is the volume of the larger cylinder?

- A  $56\pi \text{ m}^3$
- B  $224\pi \text{ m}^3$
- C  $896\pi \text{ m}^3$
- D  $3,584\pi \text{ m}^3$

40

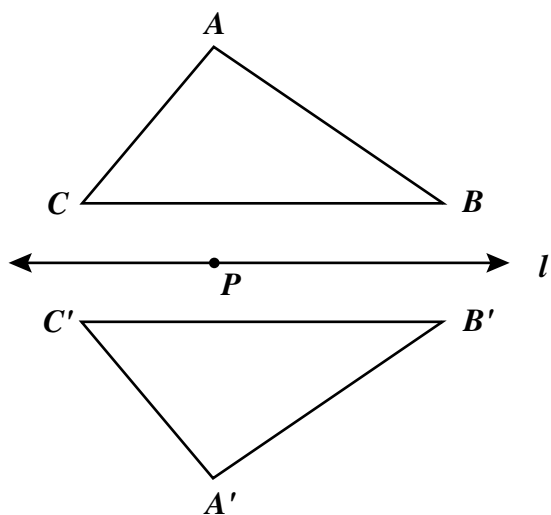


If parallelogram  $ABCD$  is translated so that the new location of point  $D$  is  $(-1, 2)$ , what would be the new location of point  $B$ ?

- F  $(-5, 0)$
- G  $(-3, 4)$
- H  $(-2, 5)$
- J  $(1, 4)$



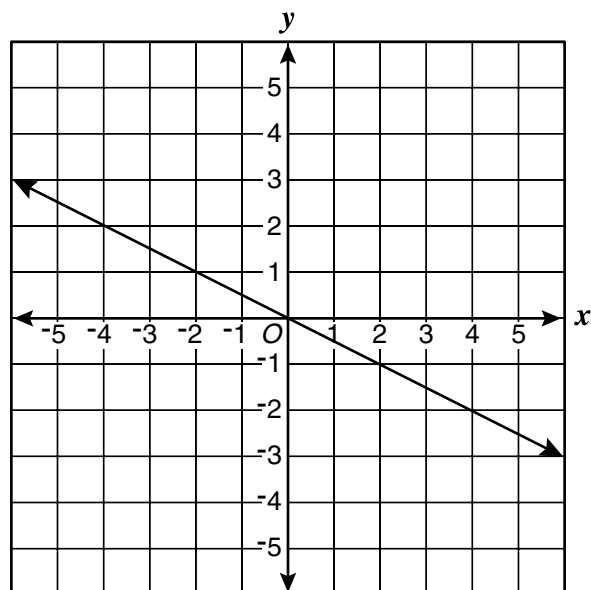
- 41 Triangle  $A'B'C'$  is a transformation of triangle  $ABC$ .



If  $A \rightarrow A'$ ,  $B \rightarrow B'$ , and  $C \rightarrow C'$ ,  $A'B'C'$  is a —

- A reflection of triangle  $ABC$  across line  $l$
- B  $180^\circ$  rotation of triangle  $ABC$  about Point  $P$
- C translation of triangle  $ABC$  across the line  $l$
- D  $90^\circ$  rotation of triangle  $ABC$  across the line  $l$

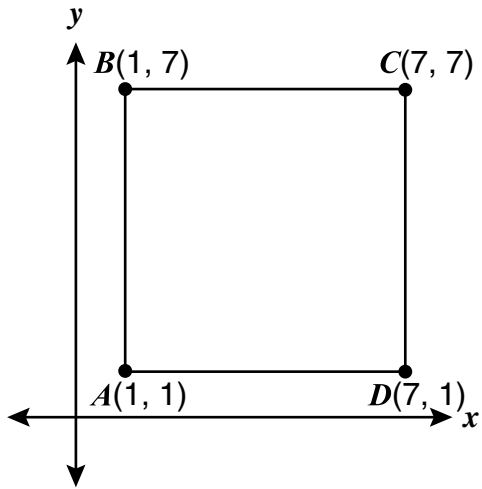
42



What is most likely the slope of the line graphed above?

- F  $-1$
- G  $-\frac{1}{2}$
- H  $\frac{1}{2}$
- J  $1$

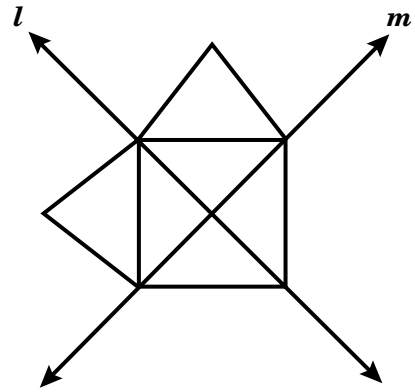
43



What is the point of intersection of  $\overline{BD}$  and  $\overline{AC}$ ?

- A (3, 3)
- B (3, 4)
- C (4, 4)
- D (4, 3)

44



The figure shown is apparently symmetric with respect to —

- F line  $l$  only
- G line  $m$  only
- H both lines  $l$  and  $m$
- J neither line  $l$  nor line  $m$

45 What is the midpoint of the segment joining (12, 2) and (-5, -7)?

- A (9, 17)
- B (5, -3)
- C (8.5, 4.5)
- D (3.5, -2.5)

**Answer Key - 2A27M**

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