

VIRGINIA STANDARDS OF LEARNING

Spring 2007 Released Test

# END OF COURSE GEOMETRY

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CORE 1

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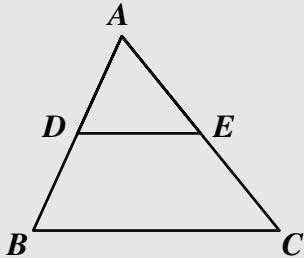


# Geometry

## DIRECTIONS

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

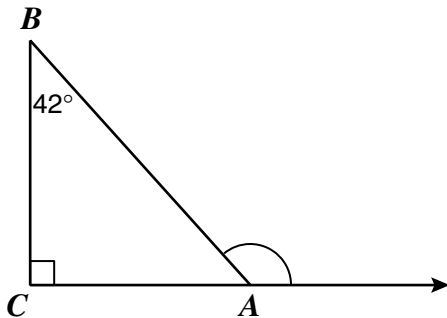
### SAMPLE



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

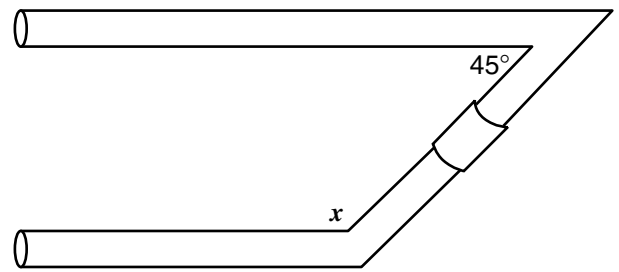
1



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

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

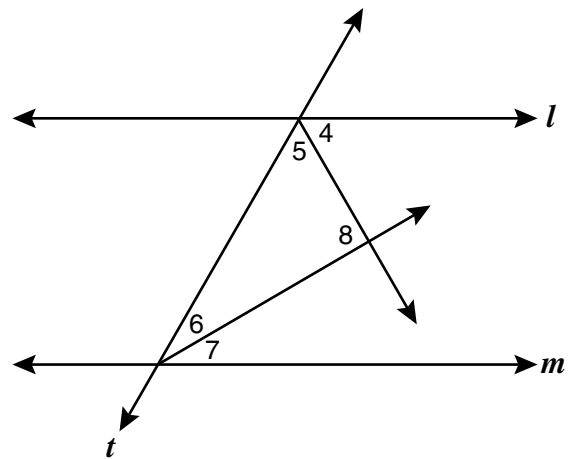
2



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  $m\angle 6 = m\angle 7$ .



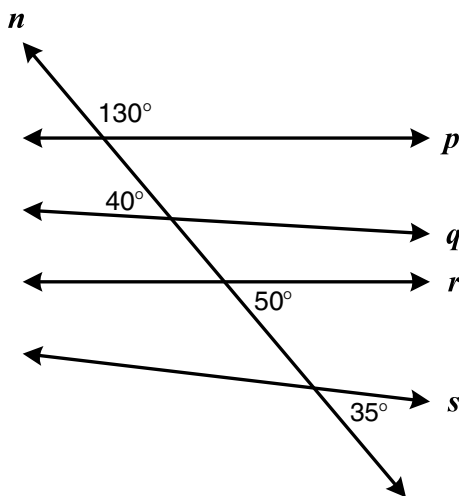
What is the measure of  $\angle 8$ ?

- 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  $86^\circ, 94^\circ$

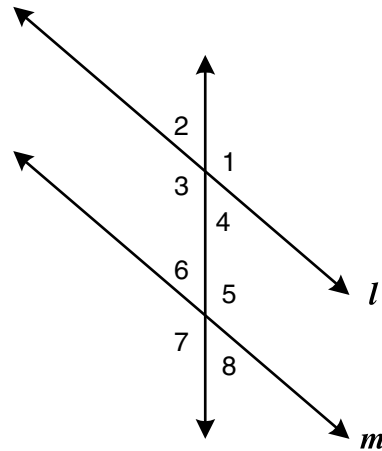
5 Line  $n$  intersects lines  $p, q, r,$  and  $s,$  forming the indicated angles.



Which two lines are parallel?

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

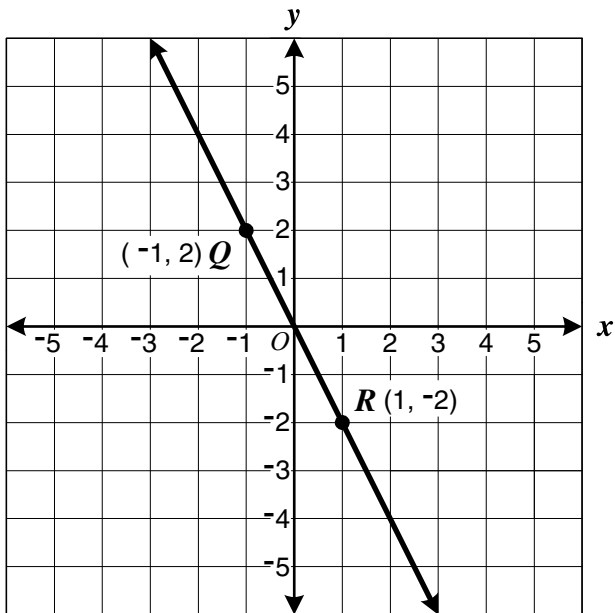
6



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  $\angle 7 \cong \angle 1$

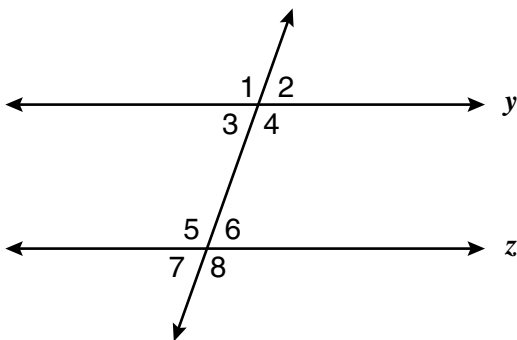
7



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)

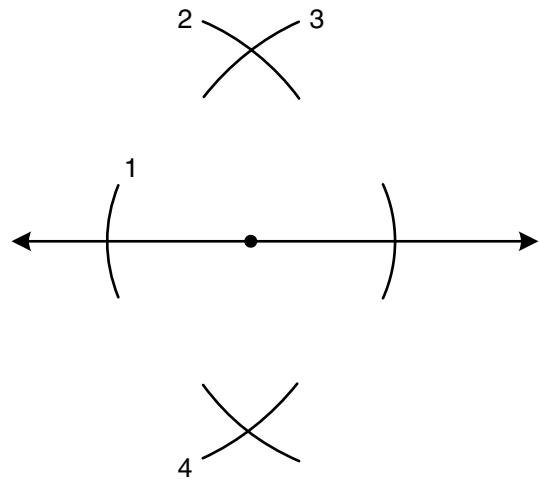
8 Given:  $m\angle 1 = 110^\circ$



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  $m\angle 5 = 110^\circ$

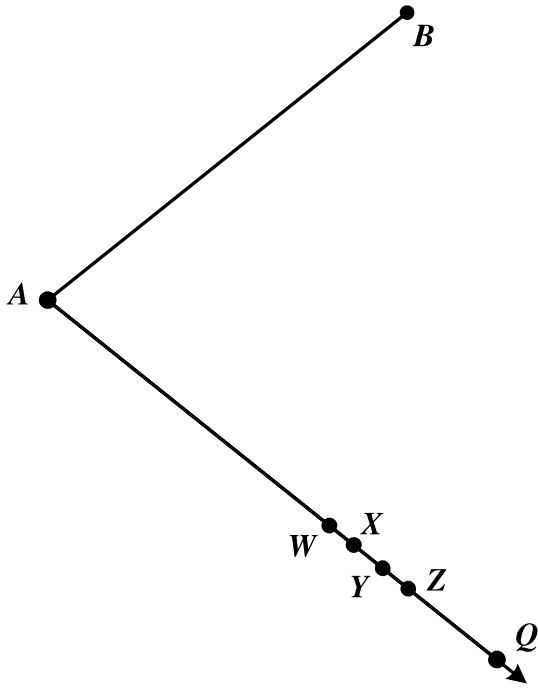
9



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

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

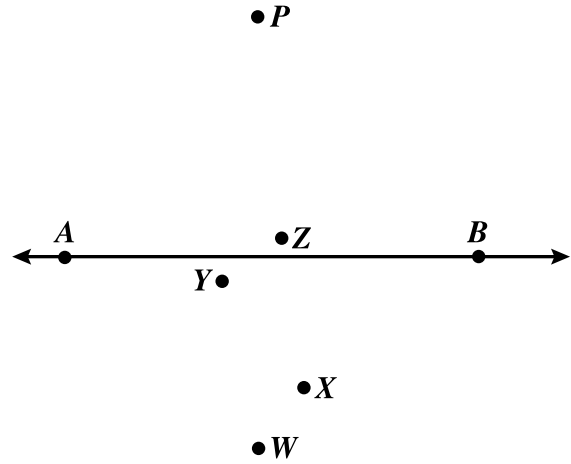
10



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

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

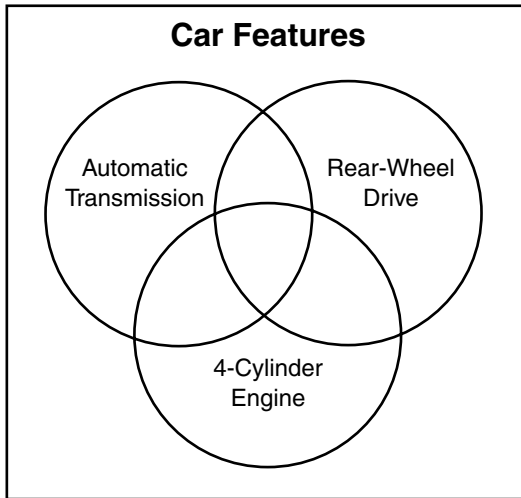
11



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

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

12



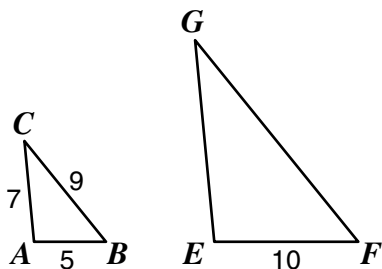
**According to the Venn diagram above, which is true?**

- 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.



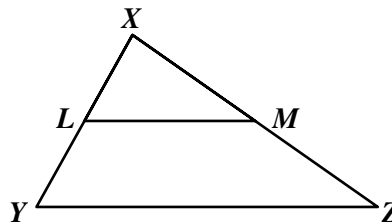
What is the perimeter of triangle  $EFG$ ?

- 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.*

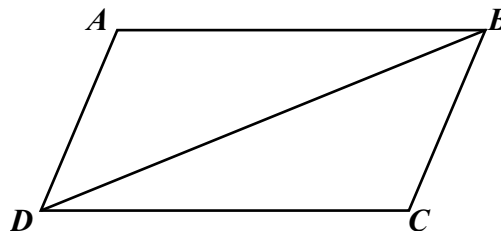
- A If you are prepared for the test, then you did your homework.  
 B If you are not prepared for the test, then you did not do your homework.  
 C If you do your homework, then you will be prepared for the test.  
 D If you do not do your homework, then you will not be prepared for the test.

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.



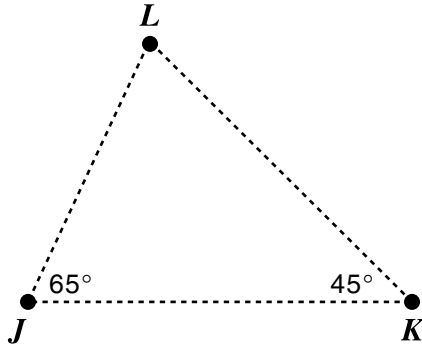
Prove:  $\triangle ABD \cong \triangle CDB$

$\angle A \cong \angle C$	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

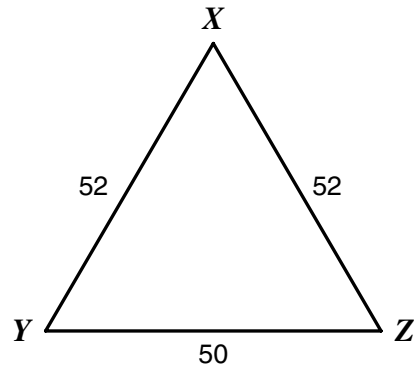
- 18 Three boys are in a field flying kites. Viewed from above, the angle at Kyle,  $K$ , measures  $45^\circ$ , and the angle at Jake,  $J$ , measures  $65^\circ$ .



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



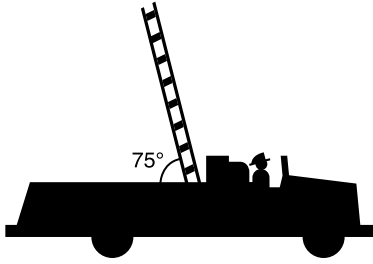
Using the information in the drawing, which angle has the least measure?

- 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

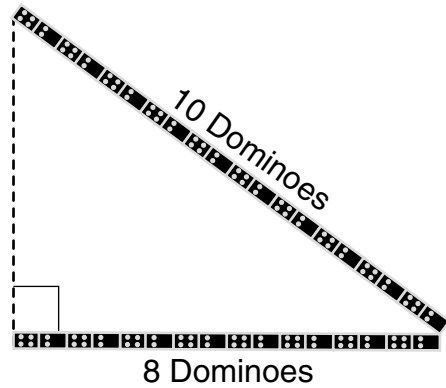


A fire truck has a ladder that can extend to 60 feet in length. The ladder can be safely raised to a maximum angle of 75° with the horizontal. Disregarding the height of the fire truck itself, which is closest to the maximum height that the ladder can safely reach?

$\sin 75^\circ \approx 0.966$ $\cos 75^\circ \approx 0.259$ $\tan 75^\circ \approx 3.73$
------------------------------------------------------------------------------------------------

- A 15.53 ft
- B 57.96 ft
- C 60.00 ft
- D 62.12 ft

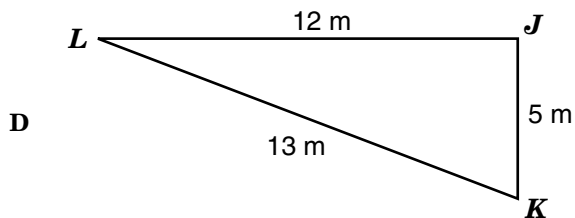
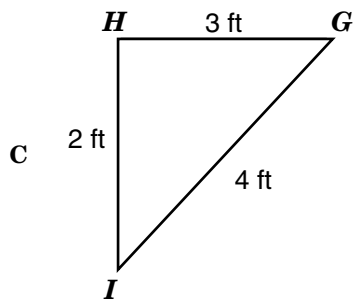
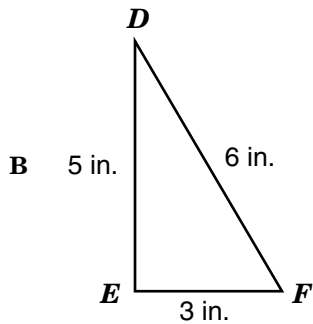
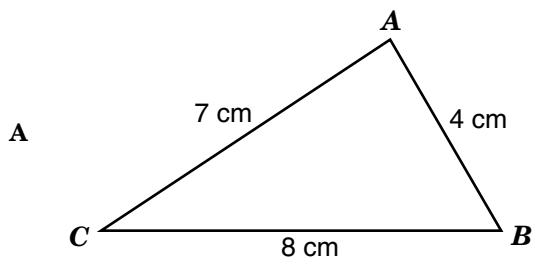
22 Scotty is making a train of dominoes on the floor.



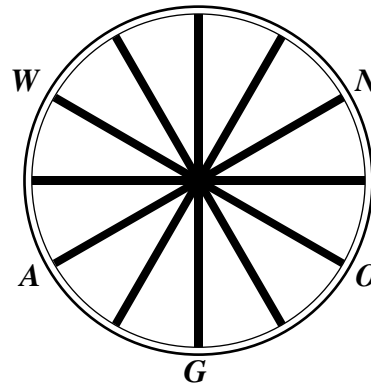
How many dominoes are needed to complete the triangle?

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

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



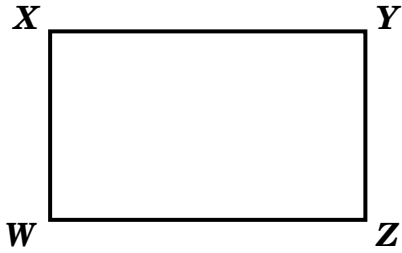
- 24 The spokes on a wagon wheel form twelve congruent central angles.



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

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

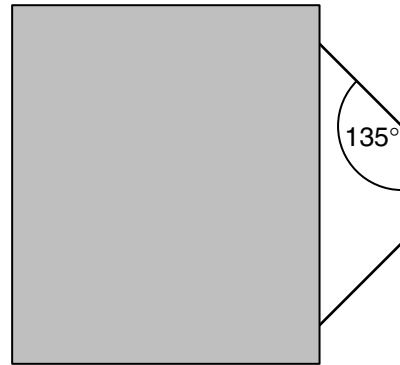
25  $XYZW$  is a rectangle.



Which of the following is *not necessarily* true?

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

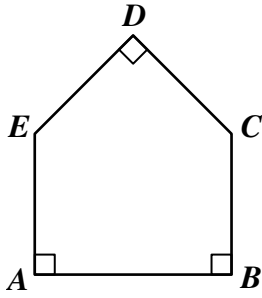
26 In the drawing, a *regular* polygon is partially covered by a rectangle.



What is the number of sides of this polygon?

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

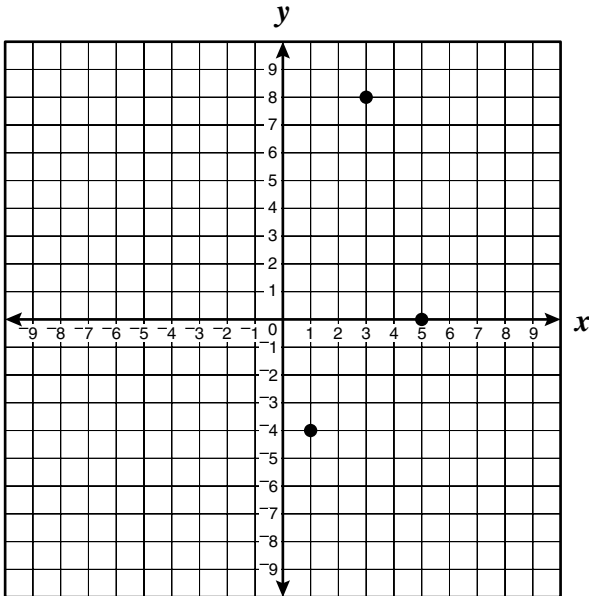
27



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

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

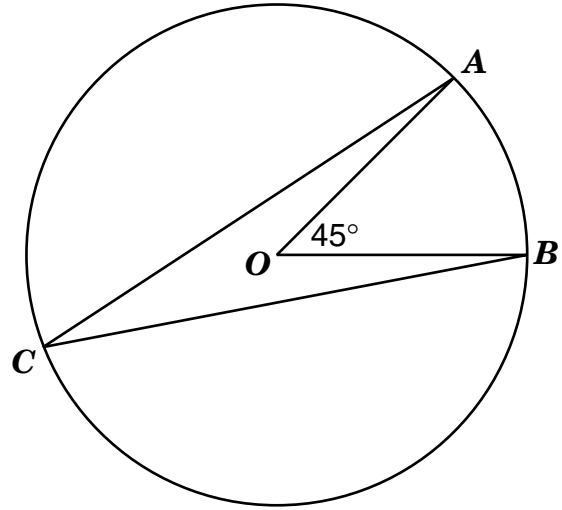
28 Three vertices of a parallelogram have coordinates  $(1, -4)$ ,  $(3, 8)$ , and  $(5, 0)$ .



What are the coordinates of the second-quadrant vertex?

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

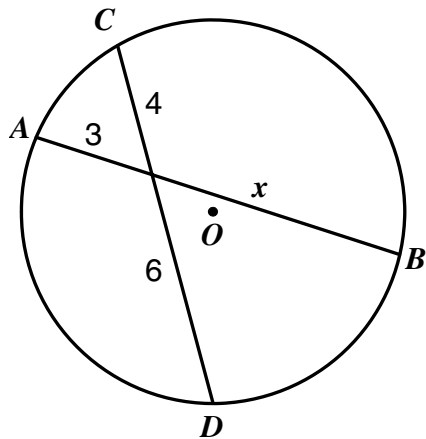
29



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

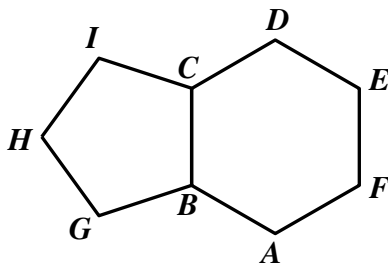
- A  $22.5^\circ$
- B  $45^\circ$
- C  $67.5^\circ$
- D  $90^\circ$

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



What is the value of  $x$ ?

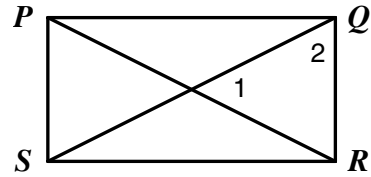
- F 5  
G 8  
H 10  
J 24
- 31 A regular pentagon and a regular hexagon share a side as shown in the figure.



What is the measure of  $\angle ABG$ ?

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

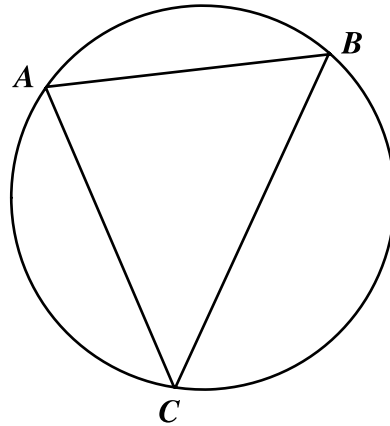
- 32 In the rectangle  $PQRS$ ,  $m\angle 1 = 50^\circ$ .



What is  $m\angle 2$ ?

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

- 33



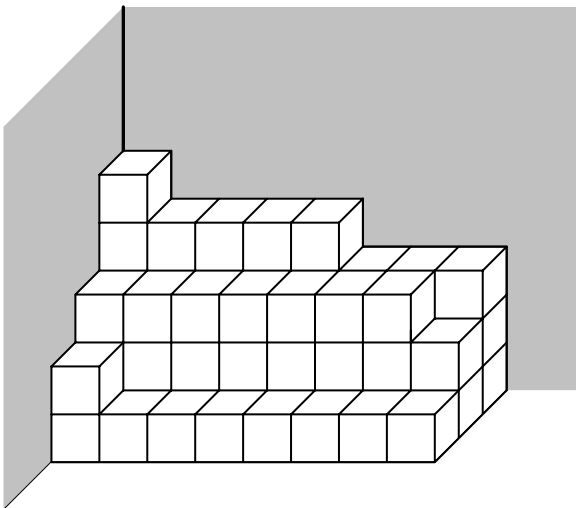
The sum of  $m\widehat{AB}$  and  $m\widehat{BC}$  is equal to —

- 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

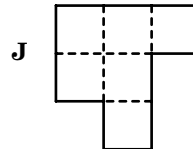
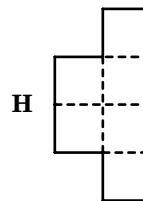
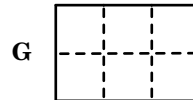
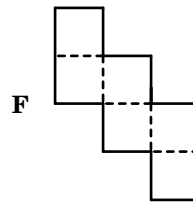
35 This drawing shows cubic boxes stacked in the corner of a warehouse.



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?



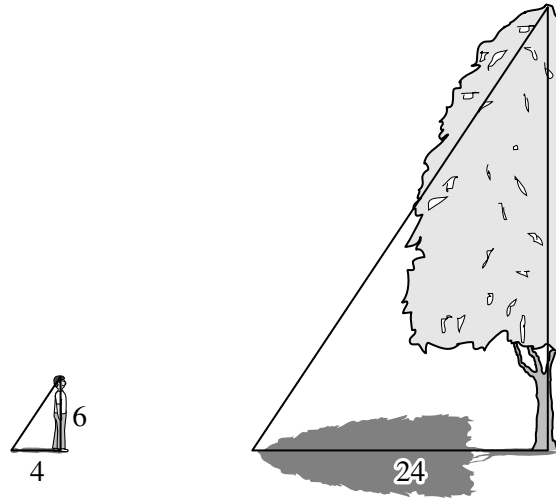
- 37 A machine for baling hay produces cylindrical bales that are 6 feet in diameter and  $5\frac{1}{3}$  feet in height.



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

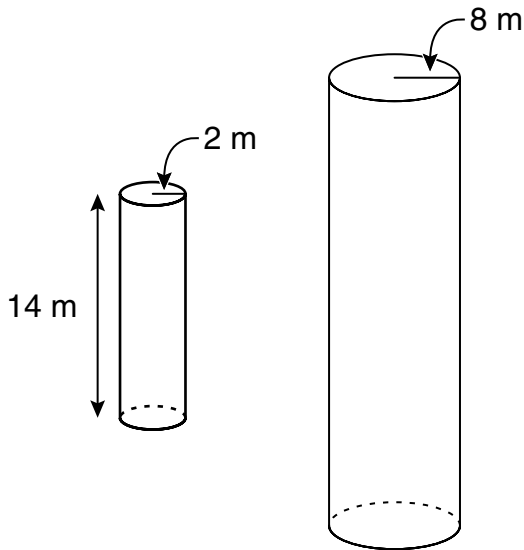
- 38 A boy knows that his height is 6 feet. At the time of day when his shadow is 4 feet, a tree's shadow is 24 feet.



What is the height of the tree?

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

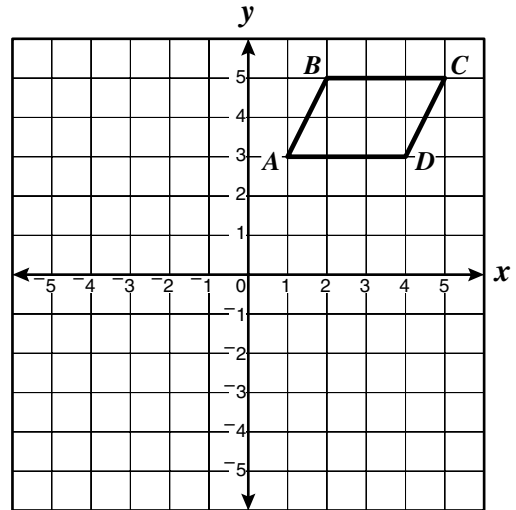
39 The cylinders shown are similar.



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  $3,584\pi \text{ m}^3$

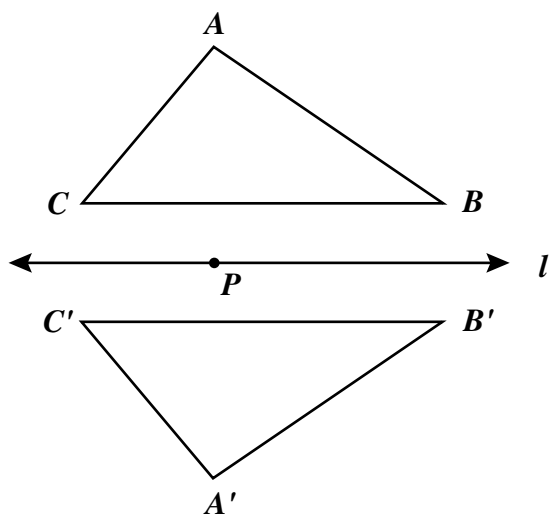
40



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  $(1, 4)$

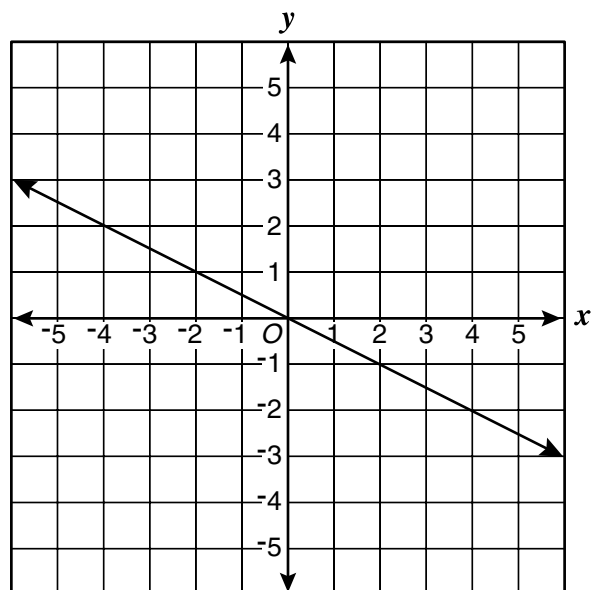
- 41 Triangle  $A'B'C'$  is a transformation of triangle  $ABC$ .



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  $l$

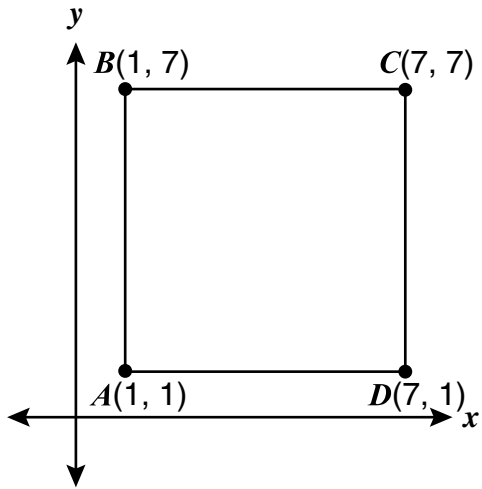
42



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

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

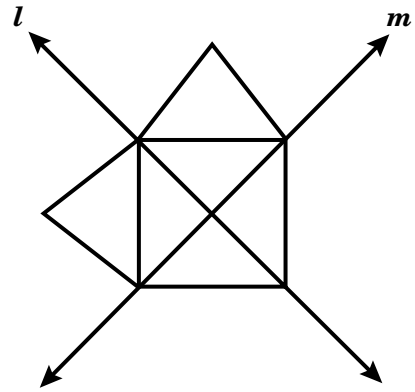
43



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

### Geometry, Core 1

If you get this many items correct:	Then your converted scale score is:
0	000
1	183
2	217
3	239
4	255
5	267
6	278
7	287
8	296
9	303
10	311
11	317
12	323
13	329
14	335
15	341
16	346
17	351
18	356
19	362
20	367
21	371
22	377
23	382
24	386
25	392
26	397
<b>27</b>	<b>401</b>
28	407
29	412
30	417
31	423
32	429
33	435
34	441
35	448
36	455
37	463
38	471
39	481
40	491
<b>41</b>	<b>504</b>
42	520
43	541
44	576
45	600

