



Arkansas Comprehensive Testing, Assessment, and Accountability Program

# Released Item Booklet

## Geometry End-of-Course Examination

April 2008 Administration

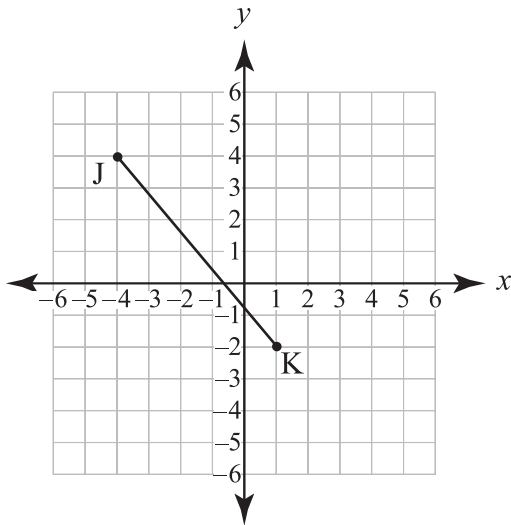
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**Arkansas Department of Education**

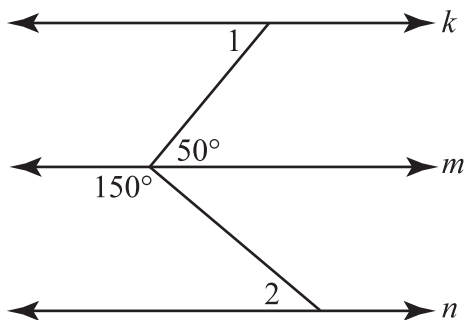
## PART II Released Geometry Items

1. What are the coordinates of the midpoint of  $\overline{JK}$  in the graph below?



- A.  $(-3, 2)$   
 B.  $(-2, 2)$   
 \* C.  $(-\frac{3}{2}, 1)$   
 D.  $(-\frac{5}{2}, 3)$

2. In the figure below, lines  $k$ ,  $m$ , and  $n$  are parallel.



What is the sum of  $m\angle 1$  and  $m\angle 2$ ?

- \* A.  $80^\circ$   
 B.  $100^\circ$   
 C.  $180^\circ$   
 D.  $200^\circ$

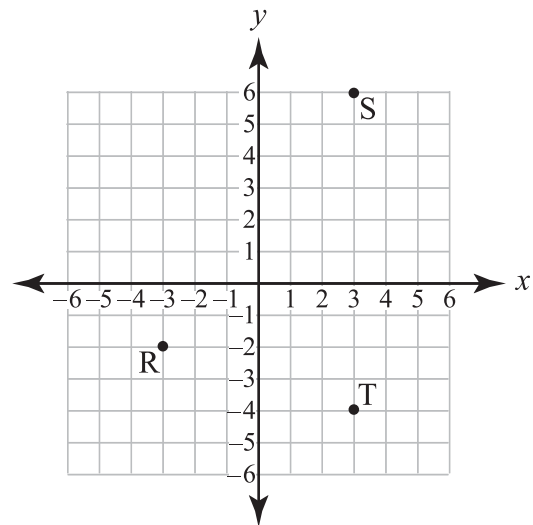
3. Patricia and three of her friends were measuring their heights. They wrote down the facts below.

- Sue is shorter than Marcy.
- Patricia is taller than Sue.
- Jessie is taller than Patricia.
- Jessie is shorter than Marcy.

Which shows the **correct** order from the shortest to the tallest girl?

- A. Marcy, Sue, Jessie, Patricia  
 B. Patricia, Sue, Marcy, Jessie  
 C. Sue, Patricia, Marcy, Jessie  
 \* D. Sue, Patricia, Jessie, Marcy

4. Which would **most** accurately classify the triangle with vertices R, S, and T below?

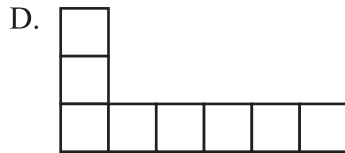
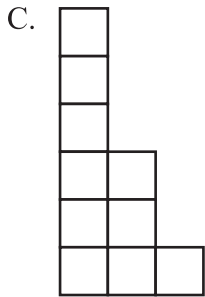
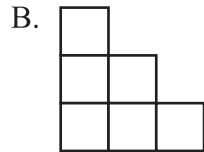
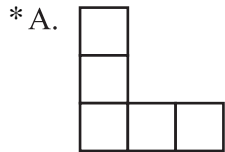
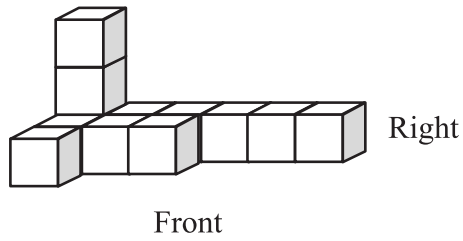


- A. equilateral triangle  
 \* B. isosceles triangle  
 C. scalene triangle  
 D. right triangle

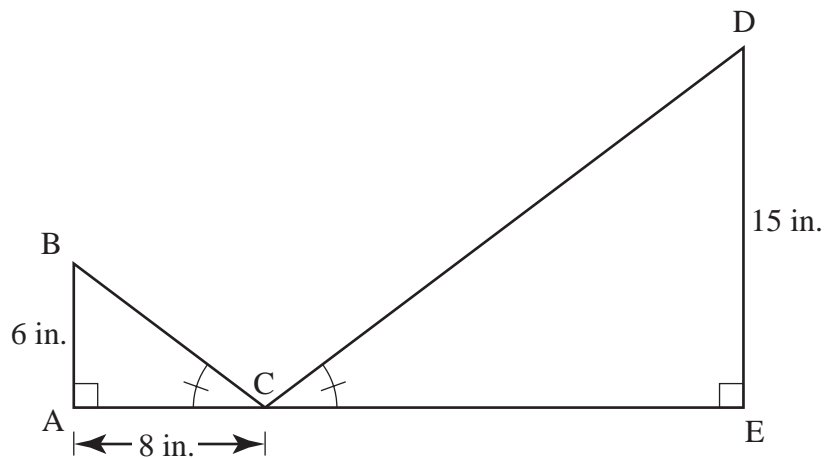


**PART II Released Geometry Items**

8. Which is the left-side view of the figure below?



9. What is the length of  $\overline{CD}$ ?



- A. 3.2 in.
- B. 10 in.
- C. 20 in.
- \* D. 25 in.

**PART II Released Geometry Items**

10. Below are three figures made of hexagons.



Figure 1  
1 hexagon

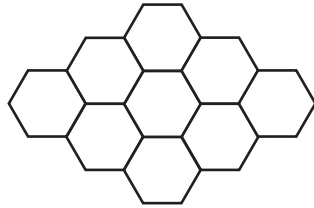


Figure 2  
9 hexagons

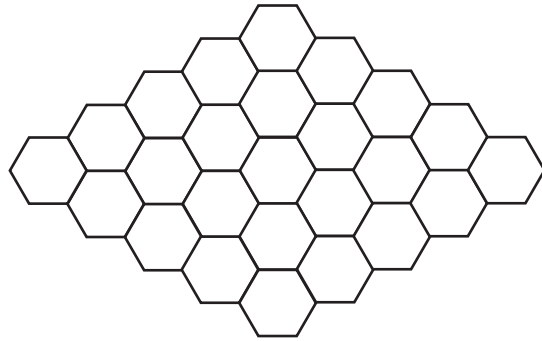
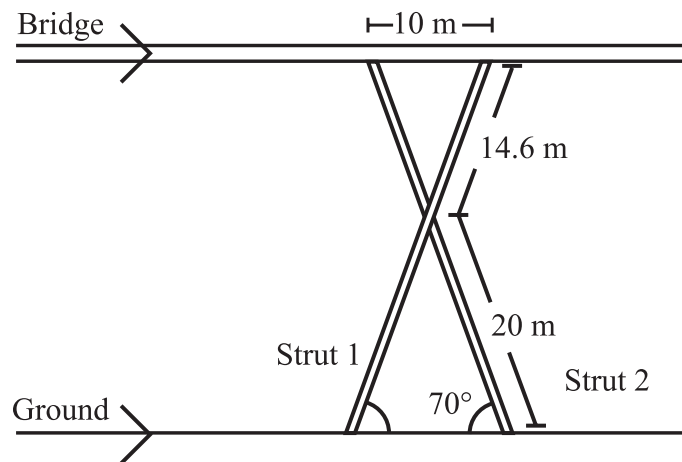


Figure 3  
25 hexagons

If the pattern were to continue, how many hexagons would make up Figure 5?

- A. 32
- B. 49
- \* C. 81
- D. 98

11. A student examines a bridge, its support structures, and the ground below the bridge, as shown in the figure below.

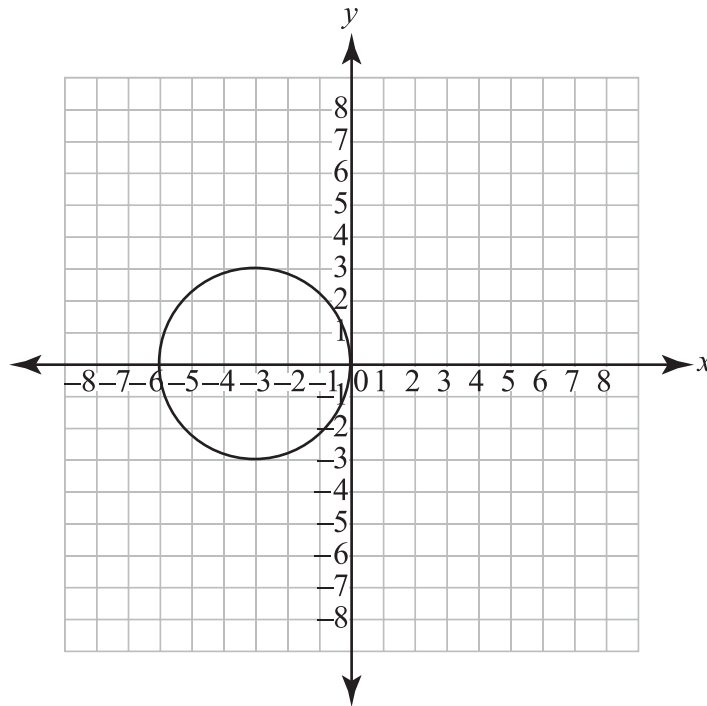


What distance separates the points where Struts 1 and 2 touch the ground?

- A. 7.3 meters
- \* B. 13.7 meters
- C. 29.2 meters
- D. 34.6 meters

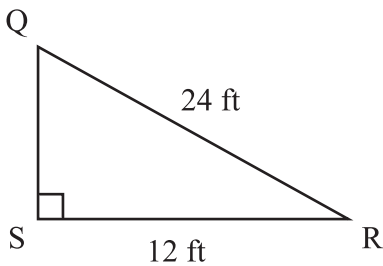
**PART II Released Geometry Items**

12. Which is the equation of the circle shown below?



- A.  $(x - 3)^2 + y^2 = 3$
- B.  $(x - 3)^2 + y^2 = 9$
- C.  $(x + 3)^2 + y^2 = 3$
- \* D.  $(x + 3)^2 + y^2 = 9$

13. What is  $m\angle R$ , to the nearest degree, in the figure below?



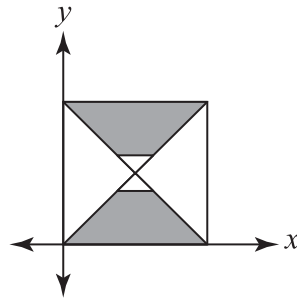
- \* A.  $60^\circ$
- B.  $36^\circ$
- C.  $30^\circ$
- D.  $27^\circ$

14. A rhombus has a diagonal that lies on the line  $y = \frac{1}{2}x + 3$ . What is the slope of the other diagonal in the rhombus?

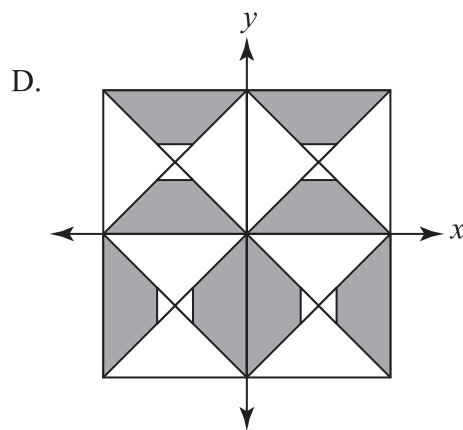
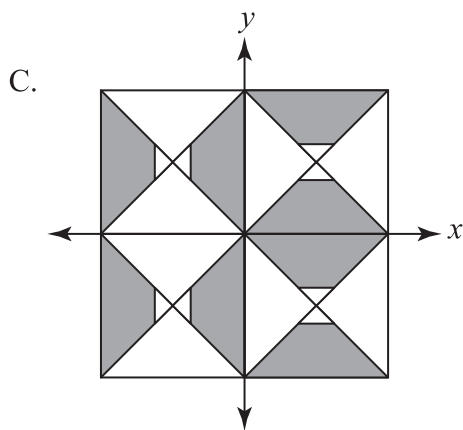
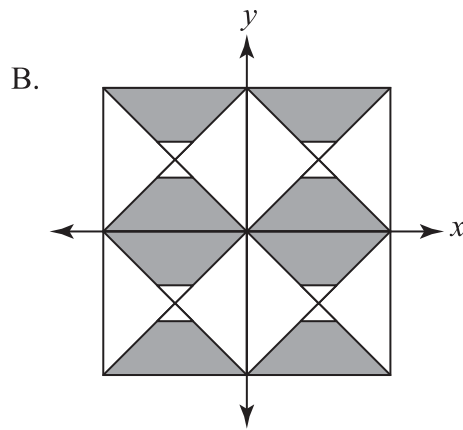
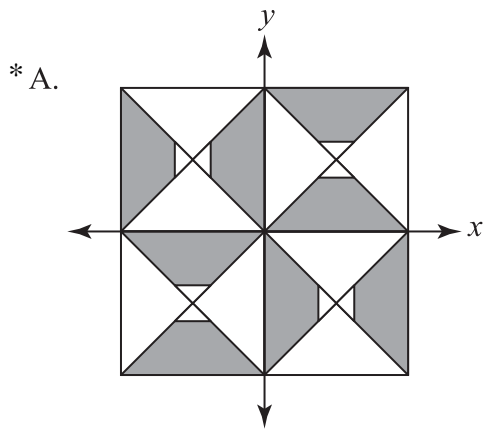
- \* A.  $-2$
- B.  $-\frac{1}{2}$
- C.  $\frac{1}{2}$
- D.  $2$

**PART II Released Geometry Items**

15. Avari is making a quilt using the Arkansas Traveler Variation pattern. She starts with the block below.

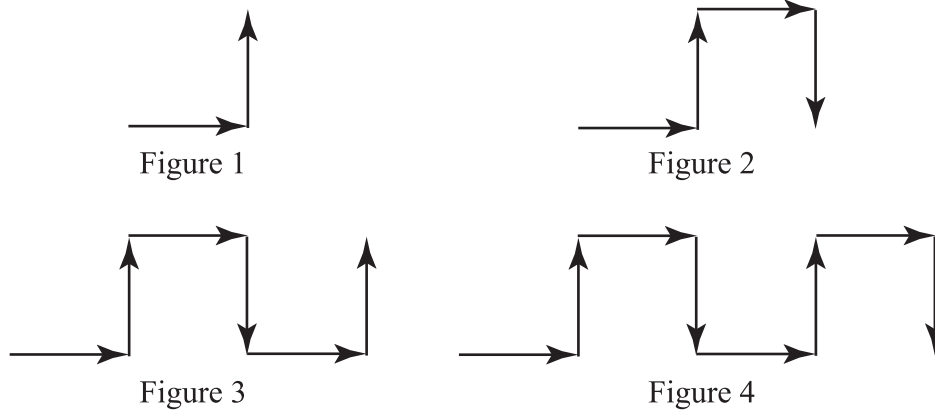


To draw the pattern, Avari sketches a second block by rotating the first block 90-degrees clockwise about the origin. Avari sketches two more blocks, each time rotating the previous block 90-degrees clockwise about the origin. When she completes the four blocks, which pattern has Avari made?



**PART II Released Geometry Items**

16. In which direction would the final arrow point in Figure 6 of the pattern below?



- A.
- B.
- C.
- \* D.

17. A cereal manufacturer needs to change the size of its cereal box to fit on narrower shelves. The dimensions of the current box are 12 inches high by 9 inches wide by 2 inches deep. The new box will have the same height and volume, but the width will be reduced by 1 inch. What will be the depth, to the nearest hundredth of an inch, of the new cereal box?

- A. 2.22 inches
- \* B. 2.25 inches
- C. 2.70 inches
- D. 3.00 inches

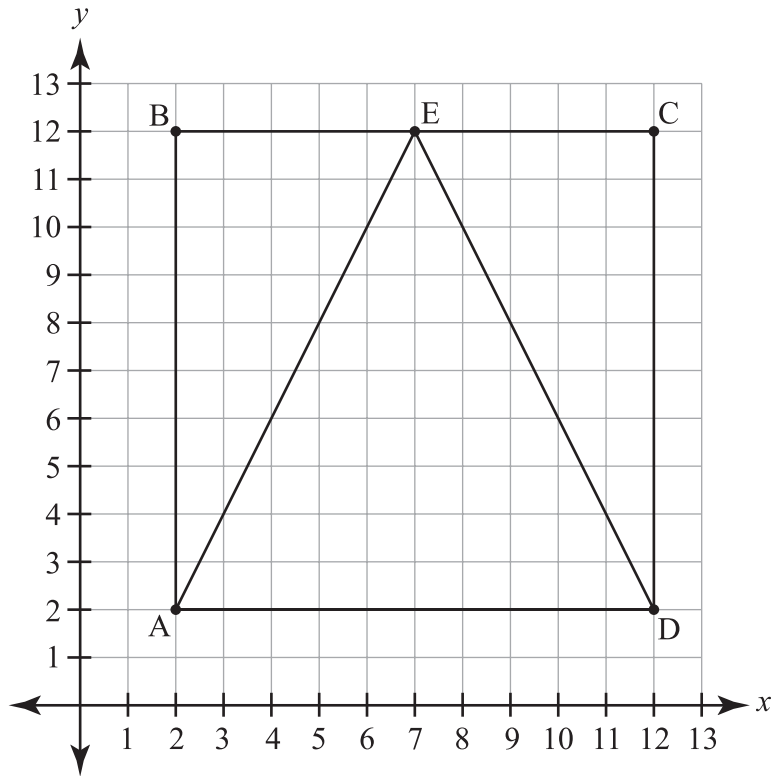
18. Diane is putting new tile on one of the walls in her bathroom. She wants to use tiles that are regular-shaped polygons, which she will tessellate for the pattern on the tile. Which shape will **not** be able to tessellate for her bathroom design?

- A. square
- \* B. octagon
- C. triangle
- D. hexagon



**PART II Released Geometry Items**

19. Edie inscribes  $\triangle AED$  inside a square,  $ABCD$ , as shown below.



What kind of triangle did Edie draw?

- A. right
- B. scalene
- \* C. isosceles
- D. equilateral

20. What regular polygon has an exterior angle that measures 60 degrees?

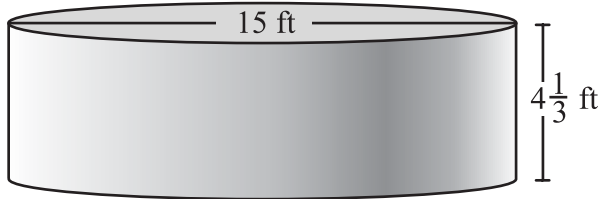
- A. square
- \* B. regular hexagon
- C. regular pentagon
- D. equilateral triangle

21. A solid-glass sphere is cast with a radius of 30 cm. What is the volume, to the nearest whole number, of this sphere? Use  $\pi = 3.14$ .

- A. 3768  $\text{cm}^3$
- B. 63585  $\text{cm}^3$
- \* C. 113040  $\text{cm}^3$
- D. 339120  $\text{cm}^3$

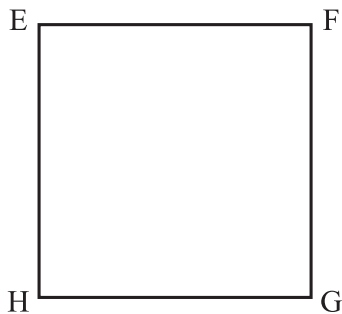
**PART II Released Geometry Items**

22. A cylindrical pool is being filled with water, as shown below. It measures 15 feet in diameter and  $4\frac{1}{3}$  feet in height.



How much water, to the nearest cubic foot, must be pumped into the pool if it is to be filled to  $\frac{3}{4}$  of its total height? Use  $\pi = 3.14$ .

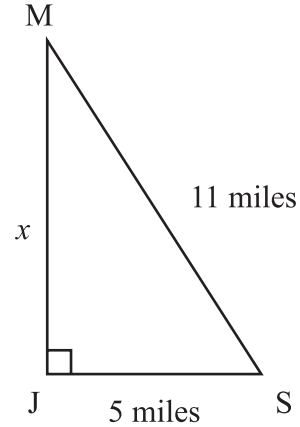
- A.  $255 \text{ ft}^3$
  - \* B.  $574 \text{ ft}^3$
  - C.  $765 \text{ ft}^3$
  - D.  $1,722 \text{ ft}^3$
23. You are trying to prove that quadrilateral EFGH is a square. You have already proven that all four sides are congruent.



Which statement, if true, would prove that EFGH is a square?

- \* A. The diagonals are congruent.
- B. The opposite sides are congruent.
- C. The opposite angles are congruent.
- D. The adjacent angles are supplementary.

24. Students in a geometry class are learning to use triangles to calculate distances. In the figure below, the vertices J, M, and S represent the homes of Jason, Maurice, and Shanna, respectively.

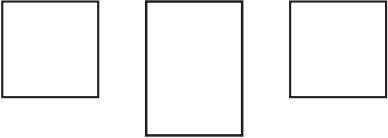
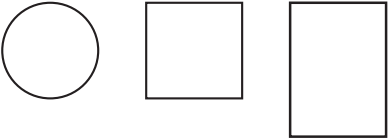
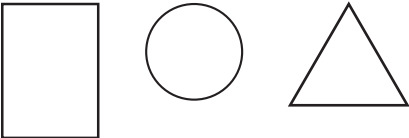
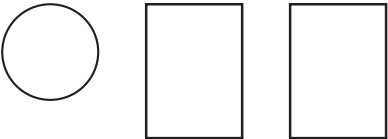


How far does Jason live from Maurice, to the nearest tenth of a mile?

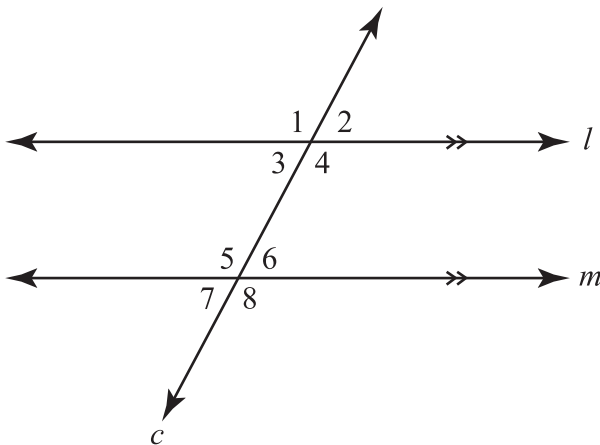
- A. 6.0 miles
  - \* B. 9.8 miles
  - C. 12.0 miles
  - D. 16.0 miles
25. A scale model of a cylindrical tank is 6 cm long. The model has a radius of 3 cm. Jake wants to bury a full size tank under his gas station. The full size tank has a radius of 4.5 m. How long is the full size tank?
- A. 2.25 m
  - B. 4 m
  - C. 7.5 m
  - \* D. 9 m

**PART II Released Geometry Items**

26. Which set of orthographic drawings could represent a cylinder?

- A. 
- B. 
- C. 
- \*D. 

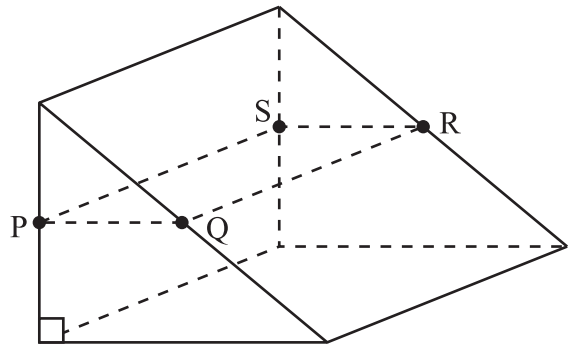
27. In the figure below, line  $l$  is parallel to line  $m$ .



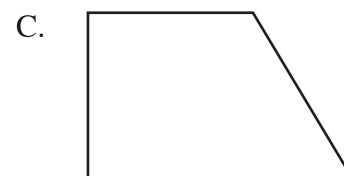
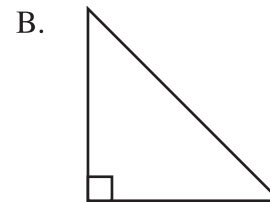
Which pair of angles must be supplementary?

- A.  $\angle 1$  and  $\angle 8$
- \*B.  $\angle 3$  and  $\angle 5$
- C.  $\angle 4$  and  $\angle 5$
- D.  $\angle 6$  and  $\angle 7$

Use the figure below to answer question 28.

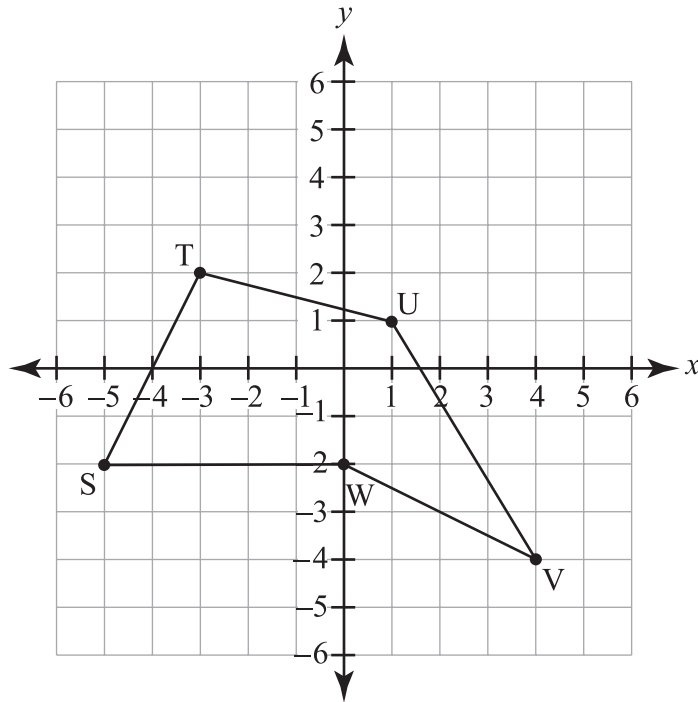


28. Which shape represents the cross section formed where a plane intersects the points P, Q, R and S in the right triangular prism shown above?



**PART II Released Geometry Items**

29. Polygon STUVW is shown below.



After polygon STUVW is reflected across the  $y$ -axis, what are the coordinates of  $S'$ , the image of point  $S$  after the transformation?

- A.  $(-5, -2)$
- B.  $(-5, 2)$
- \* C.  $(5, -2)$
- D.  $(5, 2)$

30. The hypotenuse of a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle measures 10 inches. What is the area of the triangle, rounded to the nearest hundredth?

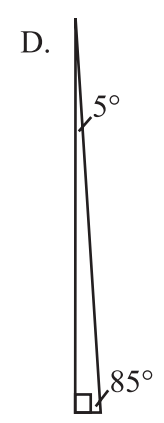
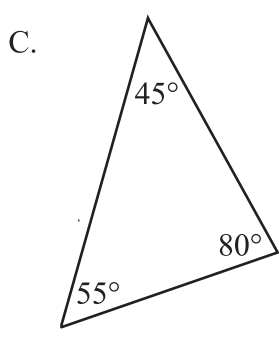
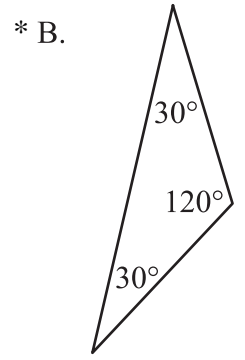
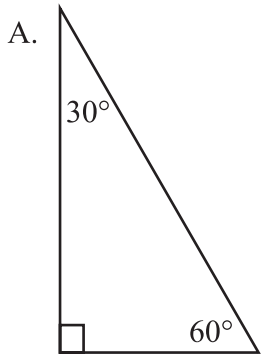
- A.  $12.50 \text{ in.}^2$
- B.  $17.68 \text{ in.}^2$
- \* C.  $21.65 \text{ in.}^2$
- D.  $25.00 \text{ in.}^2$

31. Which can be used to make a Platonic solid?

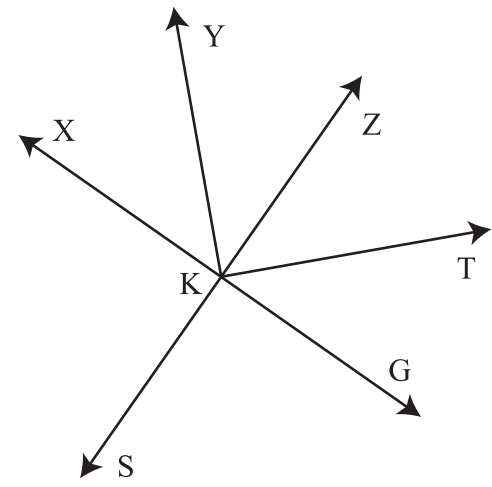
- A. right triangle
- B. scalene triangle
- C. isosceles triangle
- \* D. equilateral triangle

**PART II Released Geometry Items**

32. Which triangle has an altitude that is also a median?



33. In the figure below, line  $SZ \perp$  line  $XG$ .



Which pair of angles are adjacent and complementary?

- A.  $\angle XKS$  and  $\angle GKS$
- \* B.  $\angle XKY$  and  $\angle ZKY$
- C.  $\angle YKS$  and  $\angle ZKT$
- D.  $\angle XKZ$  and  $\angle GKS$