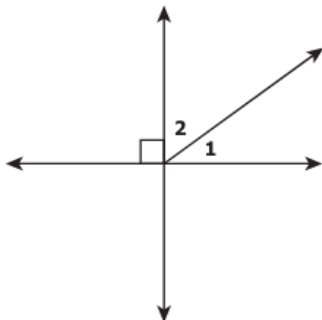


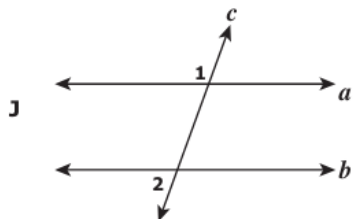
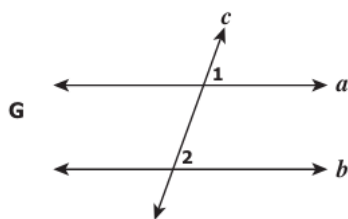
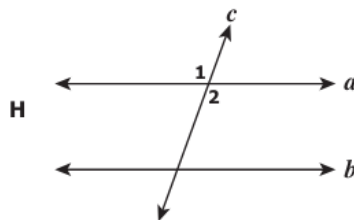
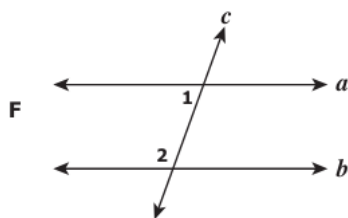
1. In the figure shown, $m\angle 1 = (4x + 12)^\circ$ and $m\angle 2 = (6x + 8)^\circ$.

What is $m\angle 1$?

- A 20°
- B 40°
- C 50°
- D 76°



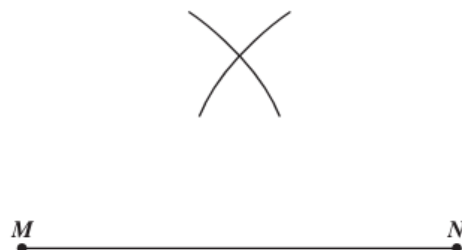
2. In each of the following figures, transversal c cuts lines a and b . In which figure are $\angle 1$ and $\angle 2$ corresponding angles?



3. The arcs for a compass and straightedge construction are shown below.

Which construction is apparently being made?

- A Two lines parallel to $\overline{MN}$
- B Two congruent angles
- C A segment congruent to $\overline{MN}$
- D The perpendicular bisector of $\overline{MN}$



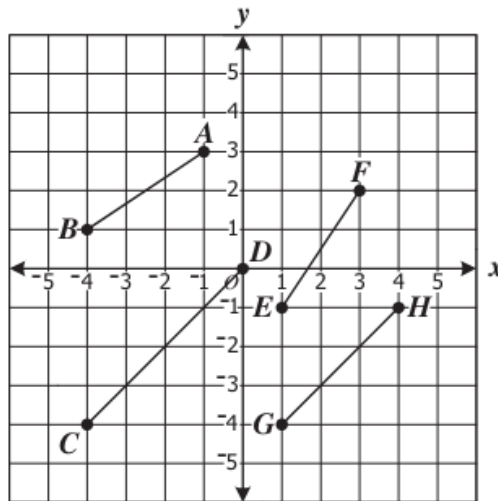
4. Which two segments in the drawing above are most likely parallel?

F $\overline{CD}$ and $\overline{GH}$

G $\overline{CD}$ and $\overline{AB}$

H $\overline{AB}$ and $\overline{EF}$

J $\overline{EF}$ and $\overline{GH}$



5. Which segment has a measure equal to $\frac{1}{2}(PQ)$?

A

B

C

D

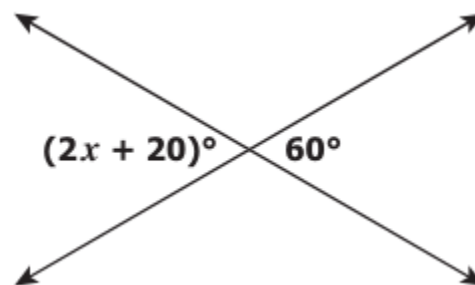
6. Two lines intersect as shown.
What is the value of x ?

F 20

G 40

H 50

J 60



7. In this figure, transversal e intersects lines a , b , c , and d .

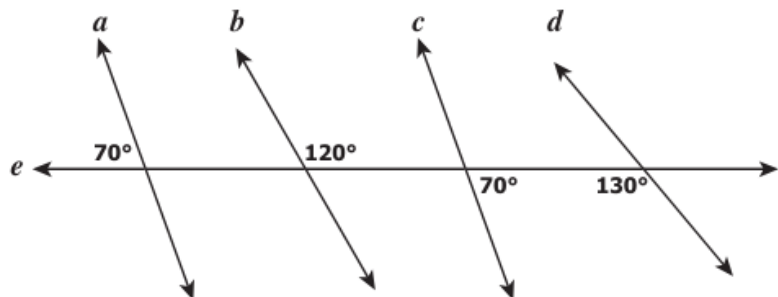
Which lines *must* be parallel?

A a and c

B b and c

C b and d

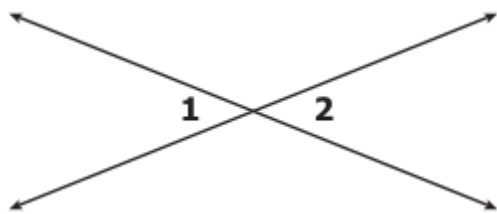
D a and d



8. In the diagram, $m\angle 1 = (6x + 12)^\circ$ and $m\angle 2 = (9x - 4)^\circ$.

Which is closest to the value of x ?

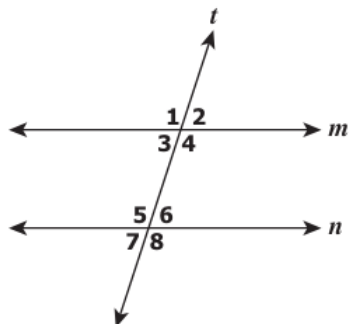
- F 5.3
- G 5.5
- H 11.5
- J 12.5



9. In this figure, line t is a transversal of lines m and n .

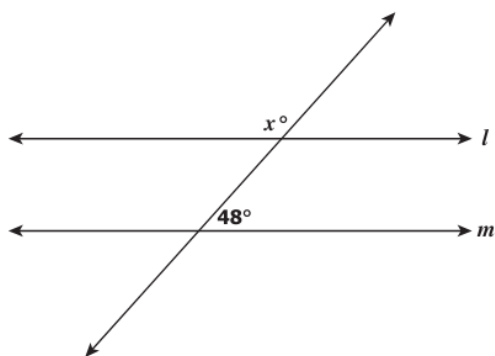
Which of the following statements determines that lines m and n are parallel?

- A $\angle 1 \cong \angle 4$
- B $\angle 2 \cong \angle 7$
- C $\angle 3$ and $\angle 5$ are complementary
- D $\angle 6$ and $\angle 8$ are supplementary



10. For what value of x is line l parallel to line m in this figure?

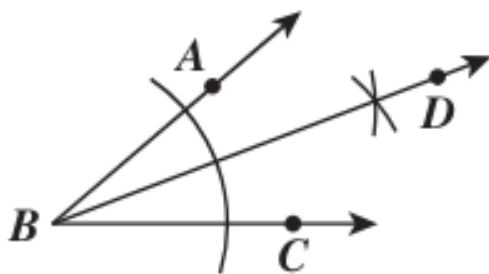
- F 42
- G 48
- H 132
- J 138



11. Amber constructed $\overline{BD}$ as shown.

Which of the following statements *must* be true?

- A $BA = BC$
- B $BD = 2BA$
- C $m\angle ABD = m\angle CBD$
- D $m\angle CBD = 2m\angle ABC$



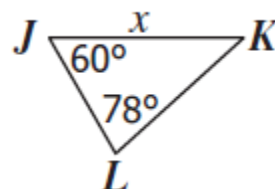
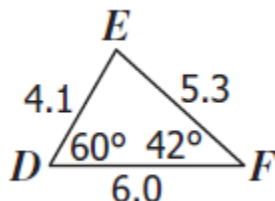
12. What value of x makes $\triangle DEF \cong \triangle JLK$?

F $x = 9.4$

G $x = 6.0$

H $x = 5.3$

J $x = 4.1$



13. Mr. Ammons is constructing a walkway through his rectangular garden. The walkway runs diagonally as shown in the diagram.

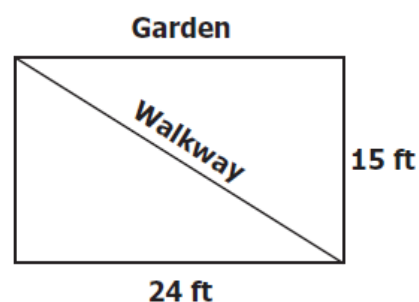
Which is closest to the length of the walkway?

A 18.7 ft

B 28.3 ft

C 30.0 ft

D 39.0 ft



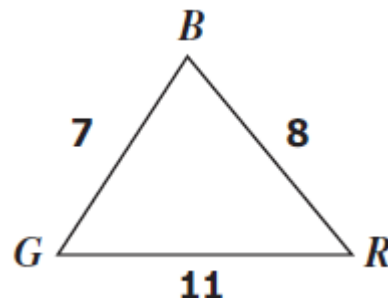
14. In the triangle shown, $GR = 11$, $BR = 8$, and $BG = 7$. Which statement is true about the angles in $\triangle RGB$?

F $m\angle R$ is the greatest

G $m\angle G$ is the greatest

H $m\angle R$ is the least

J $m\angle G$ is the least



15. Consider the following statement.

$$\text{If } 4x = 8, \text{ then } x = 2.$$

Which is the inverse of the statement?

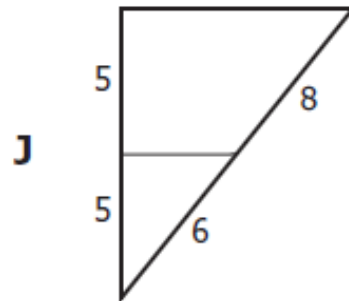
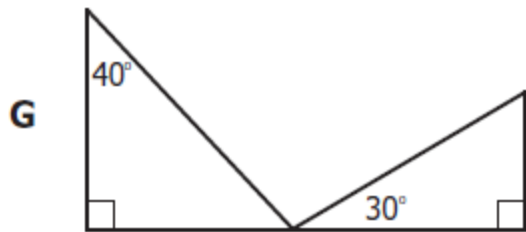
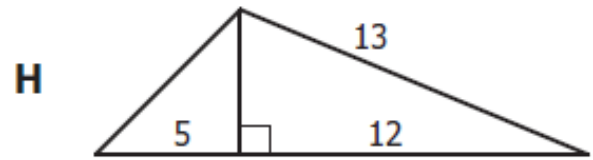
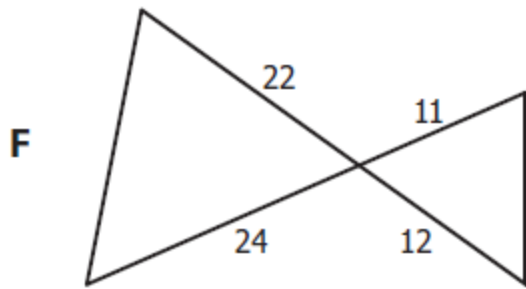
A If $x = 2$, then $4x = 8$.

B If $x \neq 2$, then $4x \neq 8$.

C If $x = 2$, then $4x \neq 8$.

D If $4x \neq 8$, then $x \neq 2$.

16. Which drawing contains a pair of similar triangles?



17. Triangle ABC is an equilateral triangle with side lengths of 10 inches.

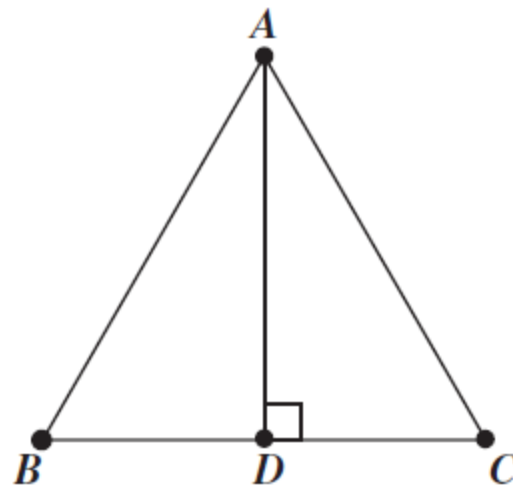
What is the length, in inches, of $\overline{AD}$?

A 5

B $\frac{10\sqrt{3}}{3}$

C $5\sqrt{2}$

D $5\sqrt{3}$



18. **John wants to make a triangular garden. Which of the following are possible dimensions?**

F 4 ft by 5 ft by 10 ft

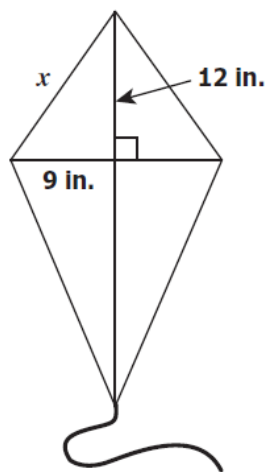
G 6 ft by 6 ft by 12 ft

H 6 ft by 8 ft by 10 ft

J 8 ft by 12 ft by 20 ft

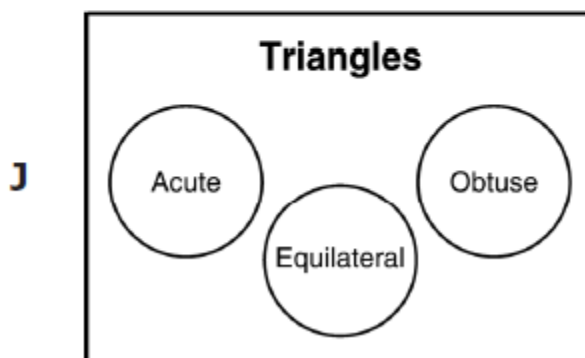
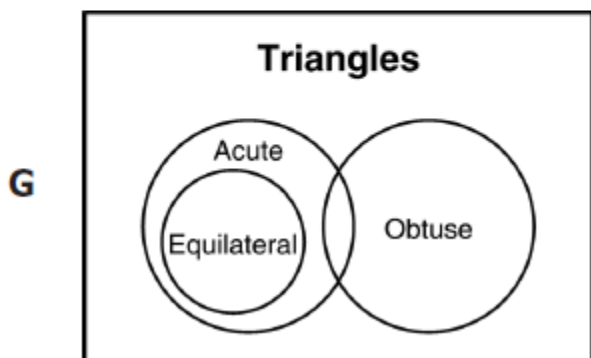
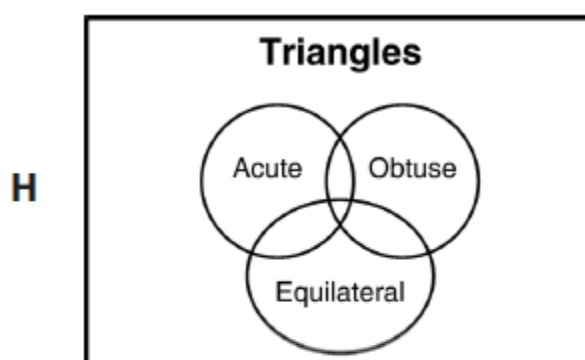
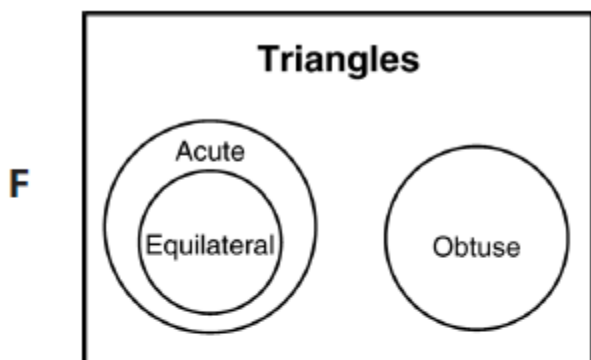
19. A drawing of Mark's kite is shown.
- What is the length of the short section of the outer frame indicated by x in the drawing?

- A. 16 in.
- B. 15 in.
- C. 14 in.
- D. 13 in.



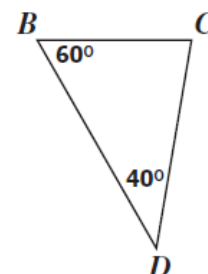
20. Which Venn diagram represents all the following set of statements?

- Some triangles are acute.
- Some triangles are obtuse.
- No triangle is both acute and obtuse.
- Some acute triangles are equilateral.



21. Which lists the sides of $\triangle BCD$ in order from shortest to longest?

- A. $\overline{CD}, \overline{BD}, \overline{BC}$
- B. $\overline{BC}, \overline{CD}, \overline{BD}$
- C. $\overline{BD}, \overline{CD}, \overline{BC}$
- D. $\overline{BC}, \overline{BD}, \overline{CD}$

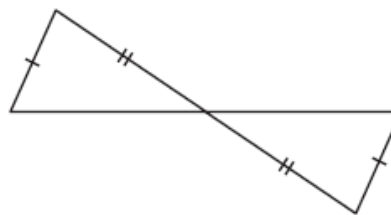


22. With the information given in the drawings, which pair of triangles can be proven congruent by the Side-Angle-Side postulate?

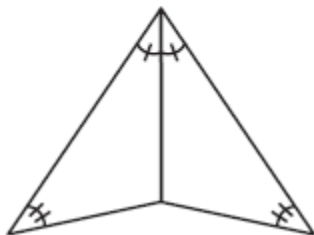
F



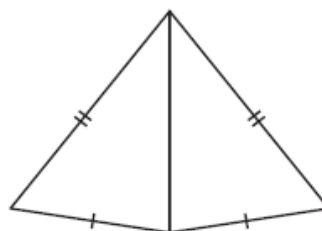
H



G



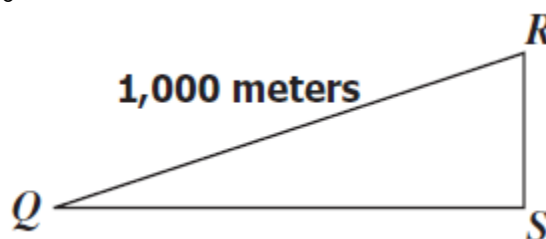
J



23. Given: $\triangle QRS$ where $m\angle Q = 20^\circ$ and $m\angle S = 90^\circ$

What is the length, to the nearest meter, of $\overline{RS}$?

- A. 342 m C. 500 m
B. 364 m D. 940 m

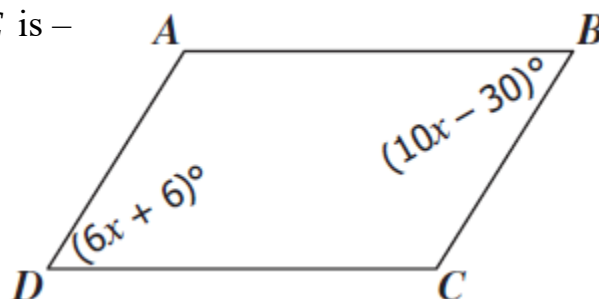


24. Which of the following quadrilaterals is NOT a parallelogram?

- A. Rectangle B. Rhombus C. Square D. Trapezoid

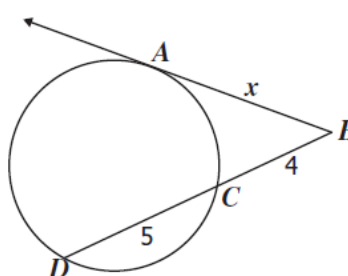
25. In parallelogram $ABCD$, the measure of $\angle C$ is –

- A. 82.5°
B. 97.5°
C. 120.0°
D. 130.0°



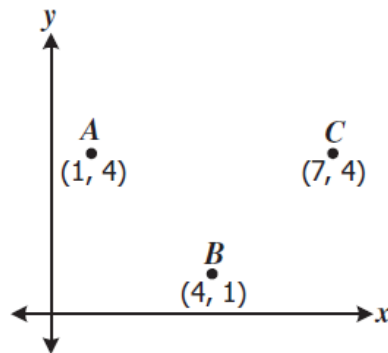
26. In the diagram, $\overline{AB}$ is tangent to the circle at point A , and $\overline{BD}$ intersects the circle at points C and D . What is the value of x ?

- F. 3
G. 4
H. 5
J. 6



27. In the drawing, what must be the coordinates of D to show $ABCD$ is a square?

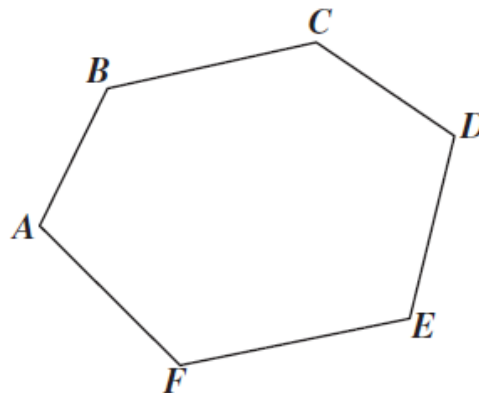
- A. $(7, 7)$
- B. $(4, 7)$
- C. $(4, 5)$
- D. $(4, 4)$



28. Given the polygon shown,

$$m\angle A + m\angle F + m\angle E + m\angle D + m\angle C + m\angle B =$$

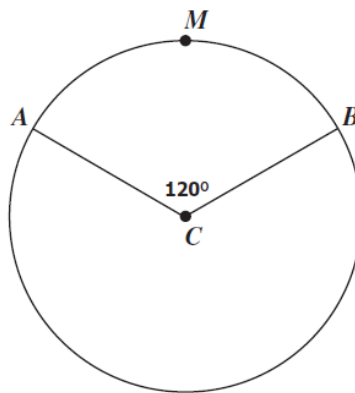
- F. 360°
- G. 540°
- H. 720°
- J. 900°



29. The circumference of Circle C is 144π .

What is the length of AMB ?

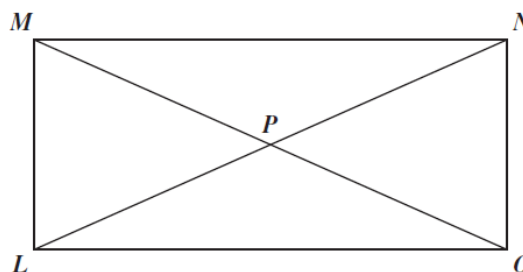
- A. 8π
- B. 16π
- C. 48π
- D. 96π



30. Rectangle $LMNO$ represents a park that has walking paths $\overline{LN}$ and $\overline{MO}$ that intersect at P . The length of $\overline{PN}$ is 195 feet, and the length of $\overline{MN}$ is 360 feet.

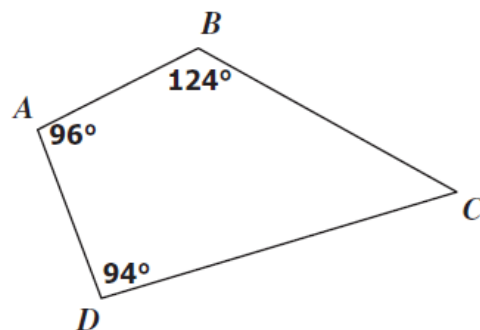
What is the length of $\overline{MO}$, one of the walking paths?

- A. 150 ft
- B. 195 ft
- C. 360 ft
- D. 390 ft



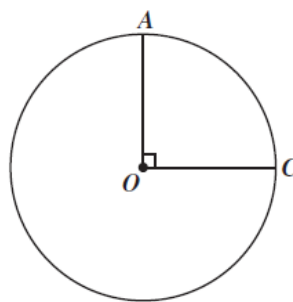
31. What is the measure of $\angle C$ in quadrilateral $ABCD$?

A. 46°
B. 56°
C. 86°
D. 96°



32. In Circle O , the degree measure of AC is –

A. 45°
B. 90°
C. 135°
D. 180°



33. When tiles are tessellated in a plane, what angle measure sum is required of the tiles surrounding a single point?

A. 90° B. 180° C. 360° D. 720°

34. No Longer on SOL and problem takes up too much space, so I axed it. ☹️

35. Which is closest to the total surface area of a cylinder with a radius of 5 inches and a height that is equal to its diameter?

A. 314 sq in. B. 471 sq in. C. 596 sq in. D. 785 sq in.

36. No Longer on SOL and problem takes up too much space, so I axed it. ☹️

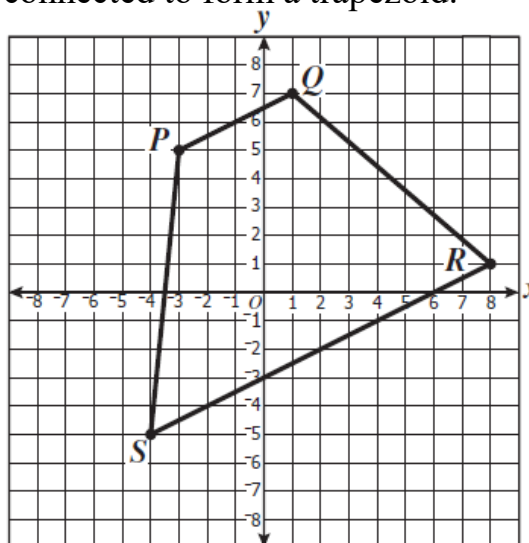
37. The radius of Sphere A is 2 inches, and the radius of Sphere B is 4 inches. How many times larger is the volume of Sphere B compared to the volume of Sphere A ?

A. 2 B. 3 C. 4 D. 8

38. A cylinder has a diameter of 10 inches and a height four times its radius. What is its volume?

F. 500π cu in. G. $2,000\pi$ cu in. H. $4,000\pi$ cu in. J. $40,000\pi$ cu in.

39. $P(-3, 5)$, $Q(1, 7)$, $R(8, 1)$, and $S(-4, -5)$ are connected to form a trapezoid.



What is the midpoint of $\overline{SR}$?

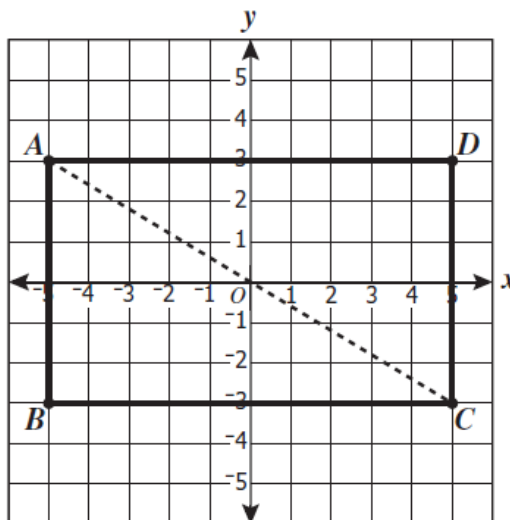
- A. (0, -3)
 B. (4, -1)
 C. (3, -1.5)
 D. (2, -2)
40. A trapezoid is located entirely in quadrant II. If this trapezoid is reflected across the x-axis, in which quadrant will the new trapezoid be located?

F. I G. II H. III J. IV

41. Rectangle $ABCD$ is placed on a grid as shown.

Which is closest to the length of diagonal $\overline{AC}$?

- A. 8.0
 B. 10.0
 C. 11.3
 D. 11.7

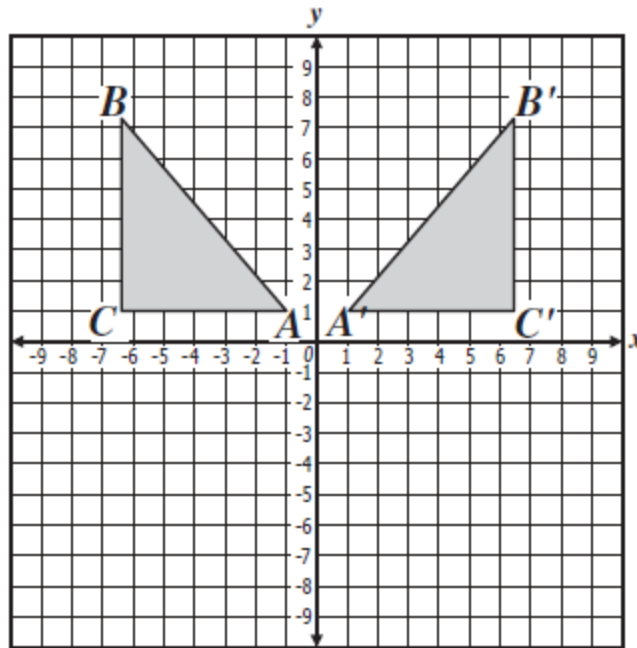


42. Which of the following letters has both line symmetry and point symmetry?

S D M H

- F. S
 G. D
 H. M
 J. H

43. Triangle ABC was transformed into triangle $A'B'C'$. Which term most accurately describes this transformation?
- A. Tessellation B. Reflection C. Rotation D. Translation



44. A quadrilateral is placed on a grid as shown. The apparent midpoint of $\overline{BD}$ is –
- F. $(-0.5, -0.5)$ H. $(1.5, 1.5)$
G. $(0.5, 3.5)$ J. $(1.5, 2.5)$

