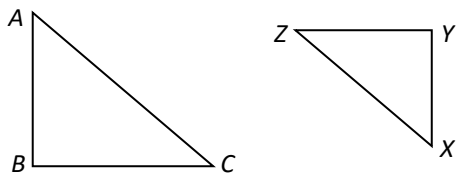


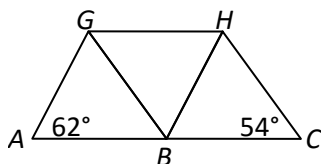
Geometry

1. In the diagram below, $AB = 4$, $AC = 6$, $XY = 3$, and $\triangle ABC \sim \triangle XYZ$ are similar.



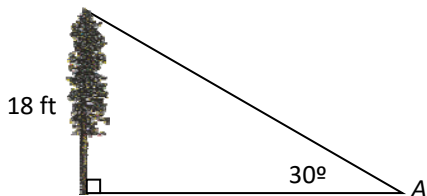
What is XZ ?

- A. $3\frac{1}{2}$
 B. $4\frac{1}{2}$
 C. 8
 D. 10
2. In the figure below, triangles ABG , BCH , and HGB are congruent.



What is the measure of angle GBH ?

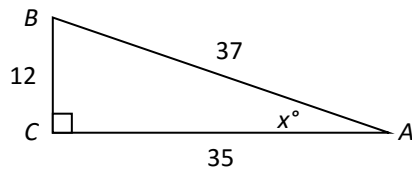
- A. 54°
 B. 58°
 C. 62°
 D. 64°
3. The top of an 18-foot tall tree is at an angle of elevation of 30° from a point A on level ground.



How far from the base of the tree is point A?

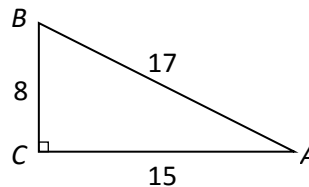
- A. 18 ft
 B. $18\sqrt{2}$ ft
 C. $18\sqrt{3}$ ft
 D. 36 ft

4. Look at the diagram below.



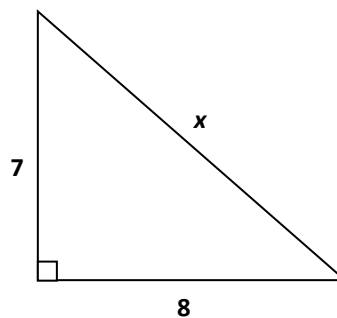
What is $\sin x^\circ$?

- A. $\frac{12}{35}$
 B. $\frac{12}{37}$
 C. $\frac{35}{37}$
 D. $\frac{37}{12}$
5. Use the figure below.



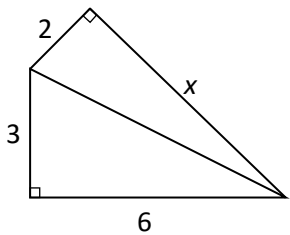
What is the cosine of angle A?

- A. $\frac{8}{15}$
 B. $\frac{8}{17}$
 C. $\frac{15}{17}$
 D. $\frac{17}{8}$
6. A right triangle is shown below.



Which equation represents the value of x ?

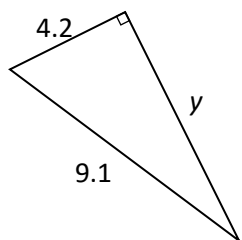
- A. $x = 7^2 + 8^2$
 B. $x = 8^2 - 7^2$
 C. $x = \sqrt{7^2 + 8^2}$
 D. $x = \sqrt{8^2 - 7^2}$
7. Use the figure below.



What is the value of x ?

- A. $\sqrt{23}$
- B. $\sqrt{31}$
- C. $\sqrt{41}$
- D. $\sqrt{49}$

8. Use the figure below.



Which equation shows the value of y ?

- A. $y = \sqrt{9.1^2 - 4.2^2}$
- B. $y = \sqrt{4.2^2 + 9.1^2}$
- C. $y = 9.1^2 - 4.2^2$
- D. $y = 4.2^2 + 9.1^2$

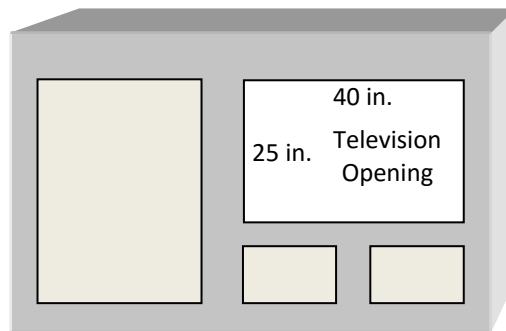
9. Which set of numbers could be the lengths of the sides of a right triangle?

- A. 2, 3, 4
- B. 3, 4, 7
- C. 5, 10, 15
- D. 9, 12, 15

10. A triangle has sides with lengths of 11 meters, 9 meters, and 7 meters. What type of triangle is it?

- A. acute
- B. equiangular
- C. obtuse
- D. right

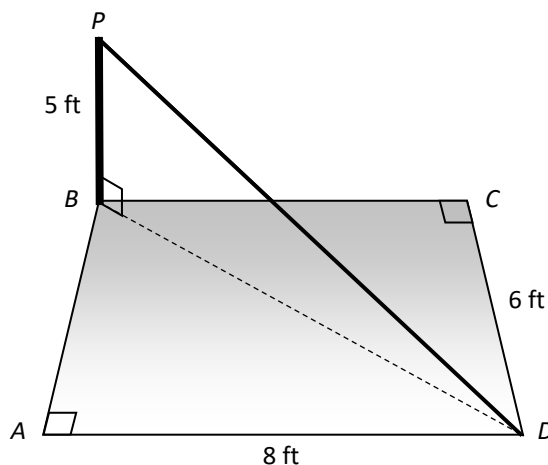
11. The entertainment center shown below has a 25-inch by 40-inch opening for a television.



A television is measured by the length of its diagonal. Which is the largest television set that would fit in the opening?

- A. 36 inches
- B. 42 inches
- C. 50 inches
- D. 65 inches

12. In the diagram below, a 5-foot pole \overline{BP} is erected at the corner of an 8-foot by 6-foot rectangular concrete pad $ABCD$. The pole is perpendicular to the pad and anchored with a guy wire \overline{PD} .

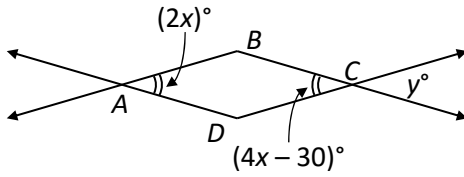


Note: Diagram not drawn to scale

What is the length of the guy wire, PD , in feet?

- A. $5\sqrt{5}$ feet
- B. $\sqrt{35}$ feet
- C. $\sqrt{10} + \sqrt{5}$ feet
- D. $10 + \sqrt{5}$ feet

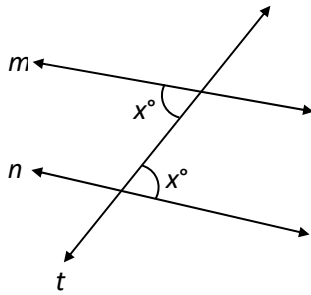
13. In the figure below, $\angle DAB \cong \angle BCD$.



What is the value of y ?

- A. $y = 30$
- B. $y = 45$
- C. $y = 60$
- D. $y = 75$

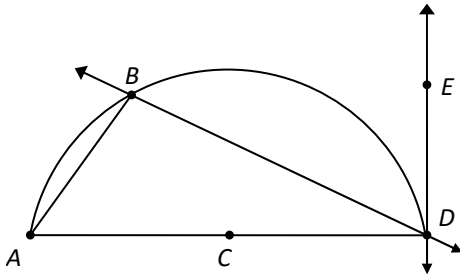
14. In the figure below, lines m and n are intersected by transversal t .



Which statement must be true?

- A. $x = 45$
- B. $x = 90$
- C. lines m and n intersect
- D. lines m and n are parallel

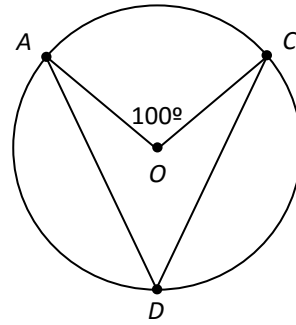
15. Use the figure below.



What word best describes \overline{DB} ?

- A. chord
- B. diameter
- C. secant
- D. tangent

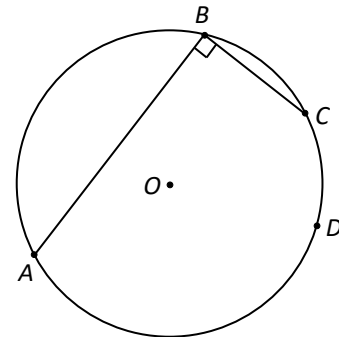
16. In the diagram below, points A , C , and D , are on circle O .



What is the measure of $\angle ADC$?

- A. 25°
- B. 50°
- C. 100°
- D. 200°

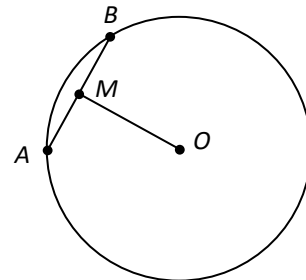
17. Look at the figure below.



What is the measure of $\angle ADC$?

- A. 45°
- B. 90°
- C. 180°
- D. 360°

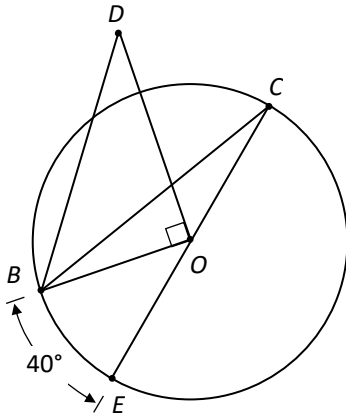
18. In the diagram below, M is the midpoint of chord AB on circle O , $AB = 16$ centimeters, and $OM = 15$ centimeters.



What is the radius of circle O ?

- A. 15 cm
- B. 17 cm
- C. 23 cm
- D. 34 cm

19. Use the diagram below.

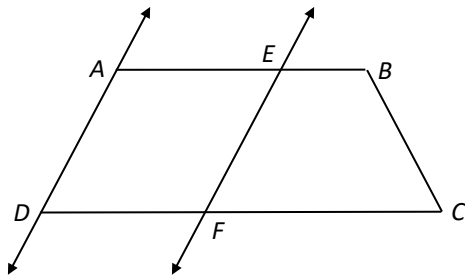


What is the measure of $\angle BCE$?

- A. 20°
- B. 25°
- C. 40°
- D. 50°

20. In the figure, quadrilateral $ABCD$ is a

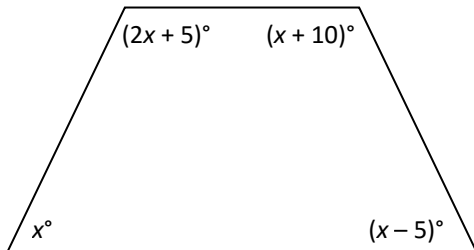
trapezoid, $\overline{AD} \parallel \overline{BC}$, and $m\angle BEF = 125^\circ$.



What is $m\angle ADF$?

- A. 35°
- B. 55°
- C. 70°
- D. 125°

21. Look at the quadrilateral below.



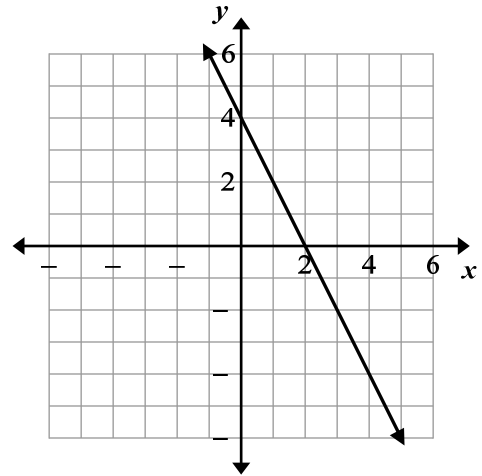
What is the value of x ?

- A. 32
- B. 34
- C. 68
- D. 70

22. What is the measure of an exterior angle of a regular octagon?

- A. 22.5°
- B. 45°
- C. 90°
- D. 135°

23. Look at the graph below.



What is the slope of the line?

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

24. The equation of a line is given below.

$$2x + 3y = 12$$

What is the slope of the line?

- A. $-\frac{3}{2}$
- B. $-\frac{2}{3}$
- C. 2
- D. 4

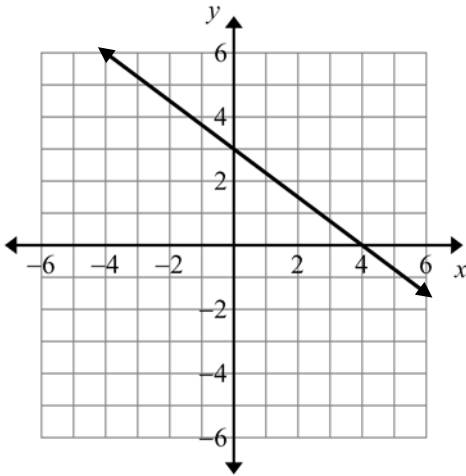
25. The table below shows points on a line.

x	-2	-1	0	1	2
y	-2	1	4	7	10

What is the slope of the line?

- A. $-\frac{1}{3}$
- B. $\frac{1}{3}$
- C. -3
- D. 3

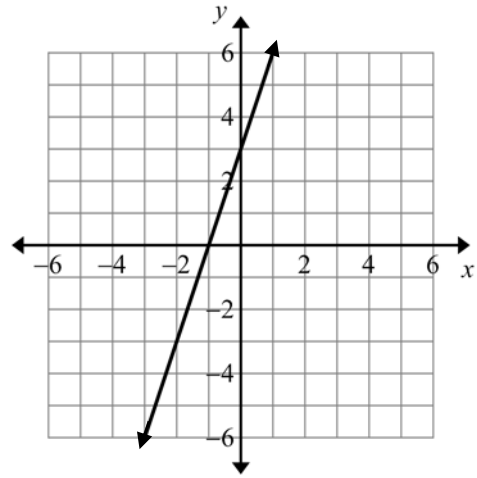
26. The graph of a linear equation is shown below.



What is the slope of a line perpendicular to the given line?

- A. $-\frac{4}{3}$
- B. $-\frac{3}{4}$
- C. $\frac{3}{4}$
- D. $\frac{4}{3}$

27. The graph of a linear equation is shown below.



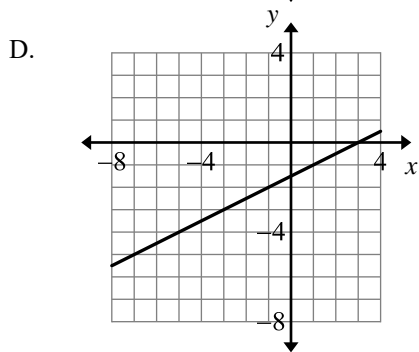
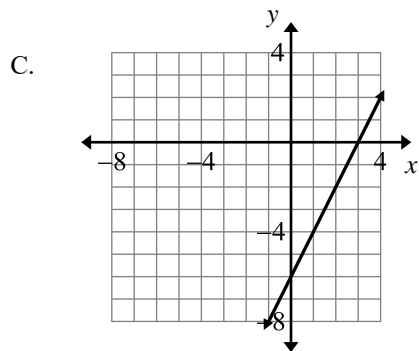
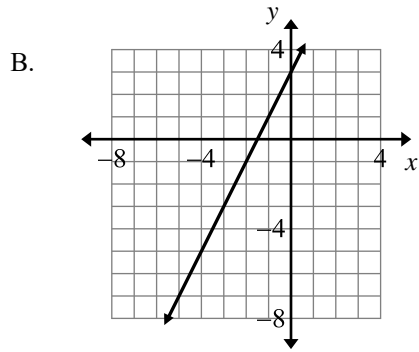
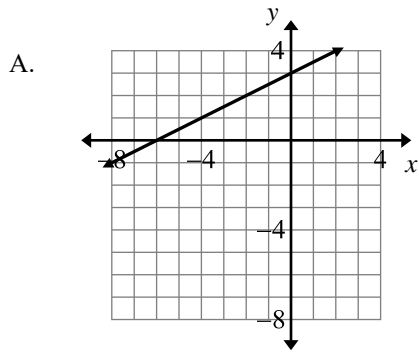
Which equation represents a line parallel to the given line?

- A. $y = -\frac{1}{3}x$
- B. $y = -3x$
- C. $y = \frac{1}{3}x$
- D. $y = 3x$

28. Which pair of equations represents perpendicular lines?

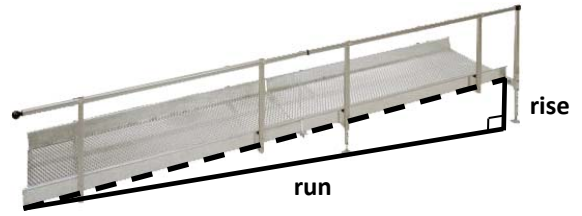
- A. $\begin{cases} y = \frac{1}{2}x + 2 \\ y = -\frac{1}{2}x + 4 \end{cases}$
- B. $\begin{cases} y = 5x + 7 \\ y = -\frac{1}{5}x + 3 \end{cases}$
- C. $\begin{cases} y = \frac{1}{5}x + 2 \\ y = \frac{1}{5}x + 1 \end{cases}$
- D. $\begin{cases} y = 3x + 4 \\ y = 6x + 8 \end{cases}$

29. Which graph represents $y = 2x + 3$?

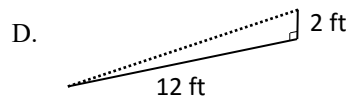
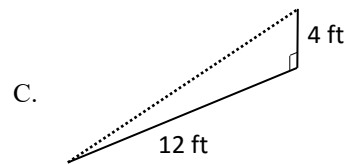
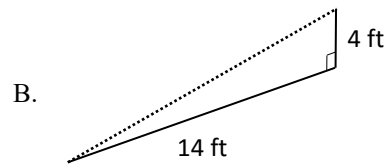
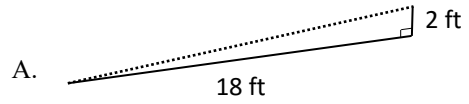


30. The Americans with Disabilities Act requires that wheelchair ramps have a slope between $\frac{1}{8}$ and $\frac{1}{12}$.

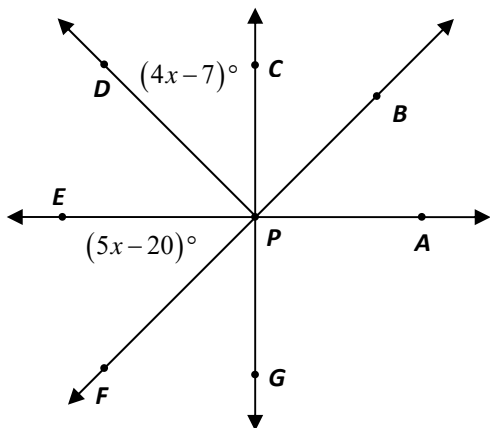
A diagram of a wheelchair ramp is shown below.



Which diagram represents a ramp that meets the slope requirement?



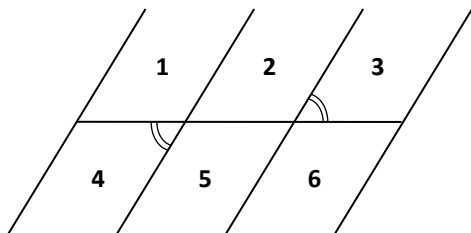
31. In the diagram below, $\angle DPC$ and $\angle EPF$ are congruent and complementary.



What is the value of x ?

- A. 3
- B. 13
- C. 23
- D. 37

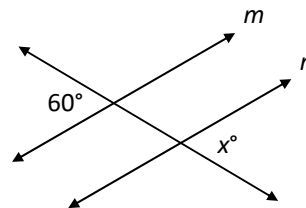
32. The diagram below shows six parking spaces. The marked angles are congruent.



Is the width of parking space #2 the same as the width of parking space #5?

- A. Yes. Alternate exterior angles are marked congruent, so the lines are parallel and equidistant.
- B. Yes. Corresponding angles are marked congruent, so the lines are parallel and equidistant.
- C. No. Alternate interior angles are not marked congruent, so the lines may not be parallel and equidistant.
- D. No. Vertical angles are not marked congruent, so the lines may not be parallel and equidistant.

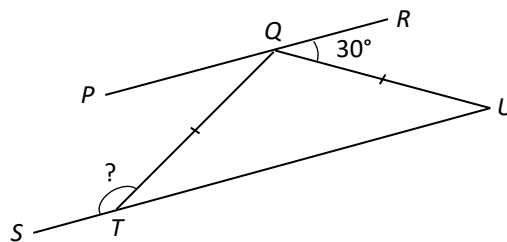
33. In the diagram below, line m is parallel to line n .



What is the value of x ?

- A. 30
- B. 60
- C. 120
- D. 150

34. In the diagram below, \overline{PR} is parallel to \overline{SU} , and \overline{QT} is congruent to \overline{QU} .



What is the measure of $\angle STQ$?

- A. 30°
- B. 120°
- C. 150°
- D. 165°

35. Use the information below.

$$\star = \bigcirc \bigcirc$$

$$\square = \bigcirc \triangle$$

$$\triangle = \bigcirc \bigcirc \bigcirc$$

Which figure is equivalent to $\star \square \square$?

- A. $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
- B. $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
 $\bigcirc \bigcirc$
- C. $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
 $\bigcirc \bigcirc \bigcirc$
- D. $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
 $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

36. Read the statement below.

Ravens are black.

Which conditional statement is equivalent to the given statement?

- A. If a bird is a raven, then it is black.
- B. If a bird is black, then it is a raven.
- C. If a bird is not a raven, then it is not black.
- D. If a raven is not black, then it is not a bird.

37. Use the statement below.

If a number is divisible by 2, then it is also divisible by 4.

Which is a **counterexample** to the statement?

- A. 6
- B. 16
- C. 36
- D. 56

38. Use the facts below.

- **Allie, Betty, Carlos, and Dan each have a different favorite color: blue, green, red, or yellow.**
- **Allie and Dan do not have blue as their favorite.**
- **Betty's favorite color is yellow.**
- **Dan's favorite color is not red.**

What is Carlos' favorite color?

- A. blue
- B. green
- C. red
- D. yellow

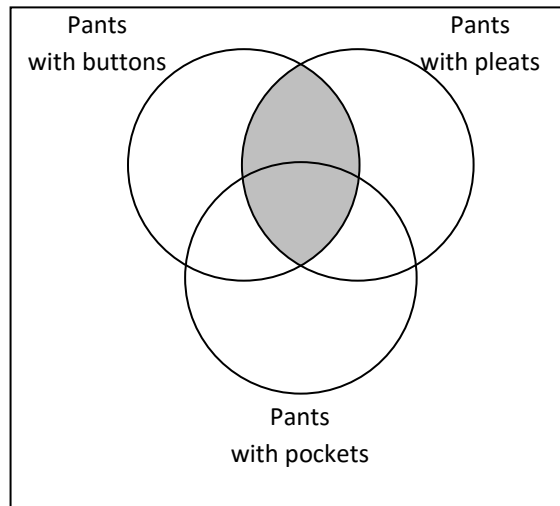
39. Jodi stacks five different colored blocks in a tower.

- The green block is below the yellow block and above the blue block.
- The blue block is between the yellow and the red blocks.
- The orange block is below the green and not touching the blue block.

Which correctly lists the colors of blocks from top to bottom?

- A. green, red, orange, yellow, blue
- B. red, green, blue, orange, yellow
- C. yellow, blue, red, green, orange
- D. yellow, green, blue, red, orange

40. The Venn diagram below represents pants with different characteristics.



What is represented by the shaded region?

- A. Pants with pockets, buttons, and pleats.
- B. Pants with pockets and buttons, but without pleats.
- C. Pants with buttons and pleats; some pants may have pockets.
- D. Pants with pockets and buttons; some pants may have pleats.