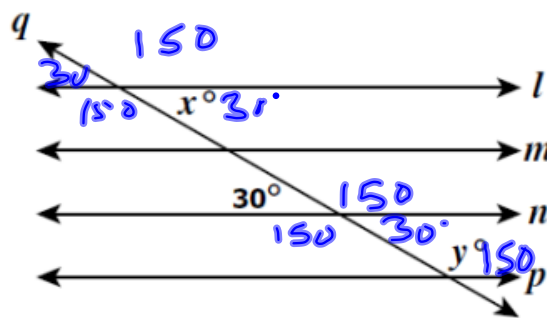


7 In the figure shown, line  $q$  is a transversal of parallel lines  $l$ ,  $m$ ,  $n$ , and  $p$ .

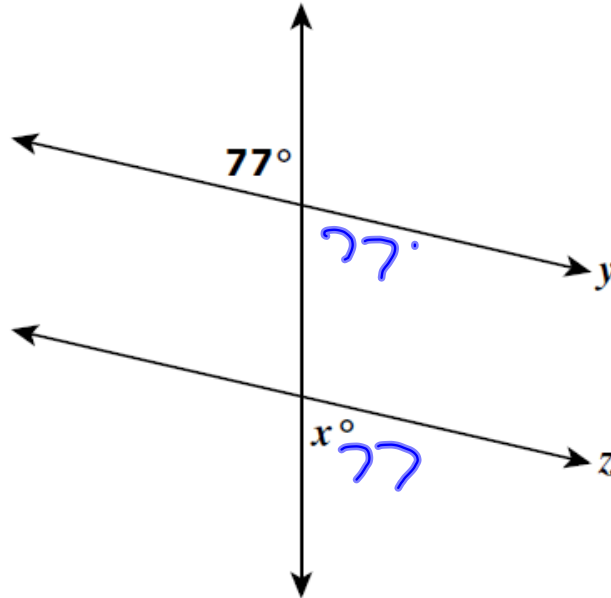


What are the values of  $x$  and  $y$  ?

- ~~A  $x = 30, y = 30$~~
- B  $x = 30, y = 150$
- ~~C  $x = 150, y = 30$~~
- ~~D  $x = 150, y = 150$~~

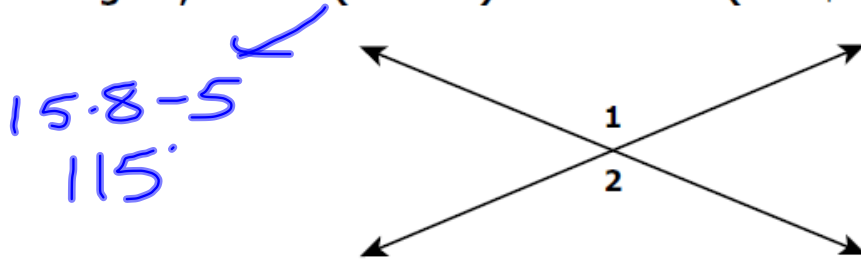
$x = 30^\circ \quad y = 150^\circ$

9 Lines  $y$  and  $z$  are cut by a transversal.



For what value of  $x$  is  $y \parallel z$ ?  $77^\circ$

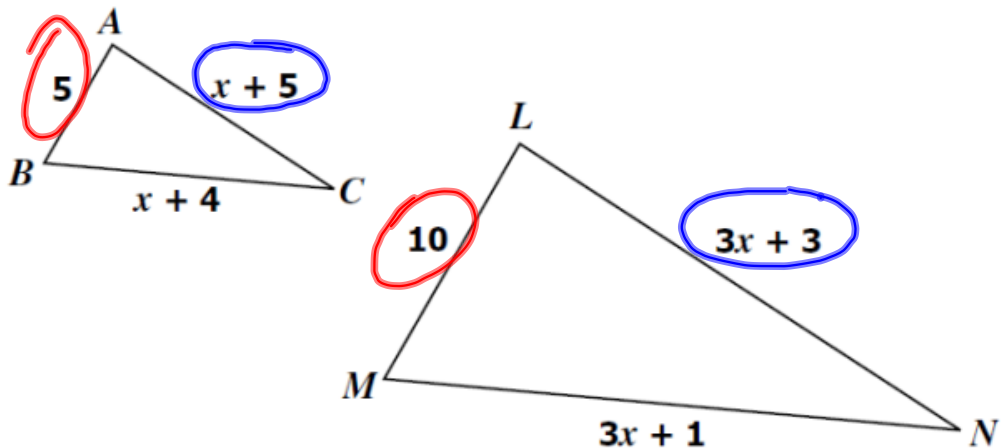
10 In this figure,  $m\angle 1 = (15x - 5)^\circ$  and  $m\angle 2 = (10x + 35)^\circ$ .



What is  $m\angle 1$ ?

$$\begin{aligned}
 15x - 5 &= 10x + 35 \\
 -10x & \quad -10x \\
 \hline
 5x - 5 &= 35 \\
 +5 & \quad +5 \\
 \hline
 5x &= 40 \\
 x &= 8
 \end{aligned}$$

12 Given:  $\triangle ABC \sim \triangle LMN$



What is the length of  $\overline{AC}$ ?

$$\frac{5}{10} = \frac{x+5}{3x+3}$$

$$10(x+5) = 5(3x+3)$$

$$10x + 50 = 15x + 15$$

$$\begin{array}{r} -10x \qquad \qquad -10x \\ \hline \end{array}$$

$$\begin{array}{r} 50 = 5x + 15 \\ -15 \qquad \qquad -15 \\ \hline \end{array}$$

$$35 = 5x$$

$$AC = 7 + 5 = 12$$

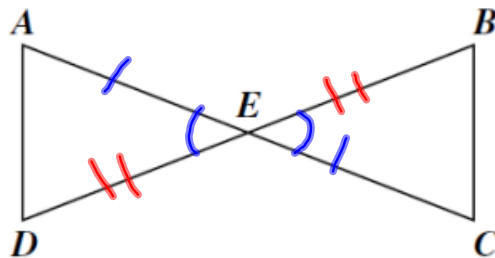
$$x = 7$$

13 Given the following measures of the sides of triangles, which is a right triangle?

- A 41 cm, 40 cm, 9 cm
- B 45 ft, 40 ft, 35 ft
- C 52 in., 50 in., 11 in.
- D 45 yd, 35 yd, 25 yd

$$a^2 + b^2 = c^2$$
$$9^2 + 40^2 = 41^2 \checkmark$$

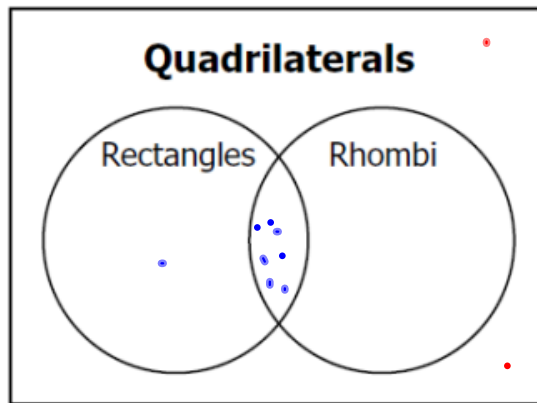
15 Given: In this figure,  $\overline{AC}$  and  $\overline{BD}$  bisect each other.



Based on the information given, which triangle congruence theorem could be used to prove  $\triangle AED \cong \triangle CEB$ ?

SAS

14



Which of the following statements *must* be true about this Venn diagram?

- ~~F~~ All rectangles are rhombi.
- G** Some rhombi are rectangles.
- ~~H~~ Quadrilaterals are not rhombi or rectangles.
- ~~J~~ All quadrilaterals are rhombi and rectangles.

16 Statement: <sup>not</sup> If lines are skew, then they are ~~not~~ coplanar. <sup>is</sup>

What is the contrapositive of the statement?

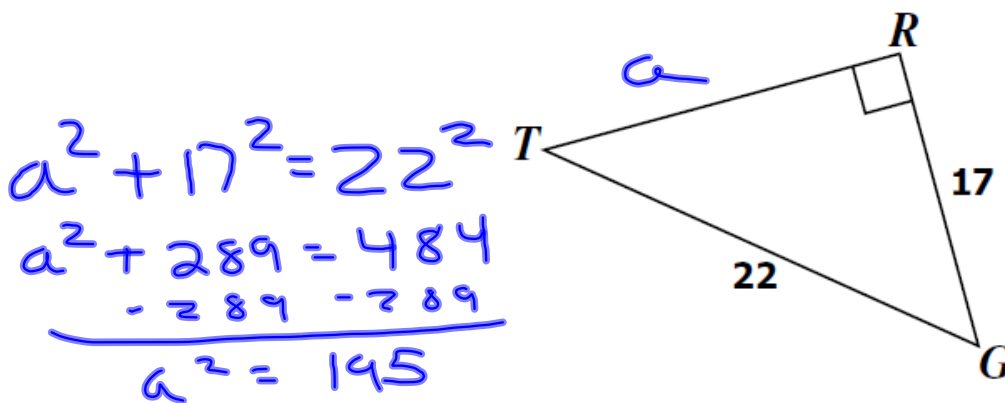
F If lines are not coplanar, then they are skew.

G If lines are not skew, then they are coplanar.

**H** If lines are coplanar, then they are not skew.

J If lines are skew, then they are coplanar.

19  $\triangle TRG$  is a right triangle.



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

18 Let  $p =$  An equation is of the form  $y = mx + b$ .

Let  $q =$  Its graph is a line.

$p$

$q$

Argument: ~~If an equation is of the form  $y = mx + b$ , then its graph is a line.~~  
The graph is not a line.

Therefore, the equation is not of the form  $y = mx + b$ .

Which of the following is the symbolic representation of the given argument?

**F**

$p \rightarrow q$
$\sim q$
$\therefore \sim p$

$p \rightarrow q$

$\sim q$

$\therefore \sim p$

**G**

$p \rightarrow q$
$q$
$\therefore p$

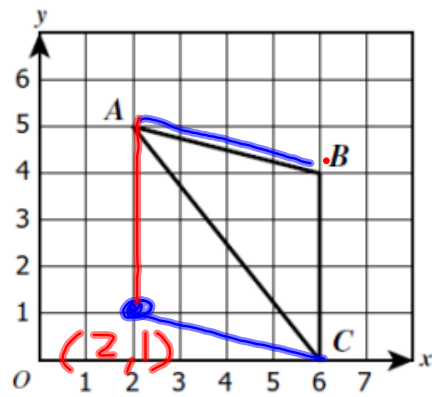
**H**

$p \rightarrow q$
$\sim p$
$\therefore \sim q$

**J**

$p \rightarrow q$
$p$
$\therefore q$

17 Coordinates  $A(2, 5)$ ,  $B(6, 4)$ , and  $C(6, 0)$  are connected to form  $\triangle ABC$ .



If  $\triangle CDA$  is congruent to  $\triangle ABC$ , what are the coordinates of  $D$  ?

~~A (1, 1)~~

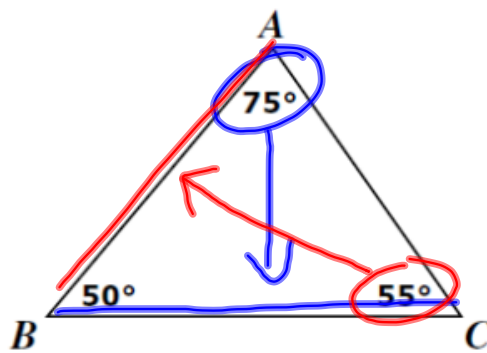
B (1, 2)

C (2, 2)

D (2, 1)



20



Which list has the sides of  $\triangle ABC$  ordered from longest to shortest?

F  $\overline{BC}, \overline{AC}, \overline{AB}$

~~G  $\overline{AB}, \overline{AC}, \overline{BC}$~~

~~H  $\overline{AC}, \overline{AB}, \overline{BC}$~~

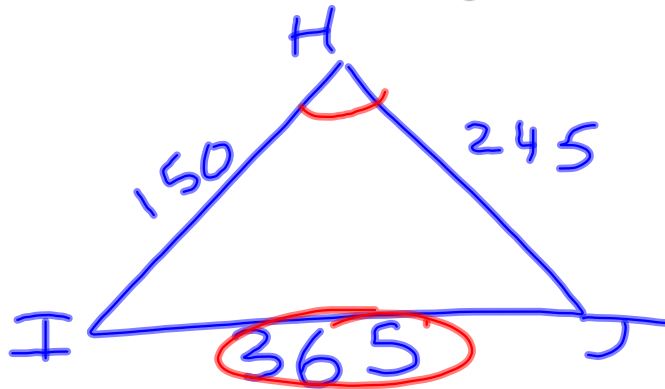
**J**  $\overline{BC}, \overline{AB}, \overline{AC}$

BC AB AC

- 21 Three survey markers are located on a map at points  $H$ ,  $I$ , and  $J$ . A triangle is formed by connecting these markers by string so that  $HI = 150$  feet,  $HJ = 245$  feet, and  $IJ = 365$  feet.

Which statement is true about the measures of the angles of  $\triangle HIJ$ ?

- ~~A  $m\angle H$  is the smallest~~  
**B  $m\angle H$  is the largest**  
C  $m\angle I$  is the smallest  
D  $m\angle I$  is the largest



- 23 Two sides of a triangle measure 14 inches and 8 inches. Which *cannot* be the length of the remaining side?

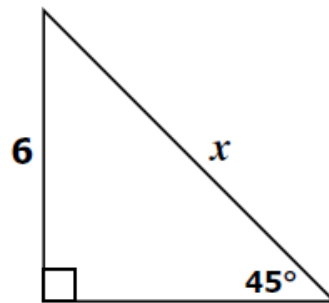
- ~~A 6 in.~~  
B 8 in.  
C 14 in.  
D 21 in.

$$14 - 8 = 6$$
$$14 + 8 = 22$$

6

22

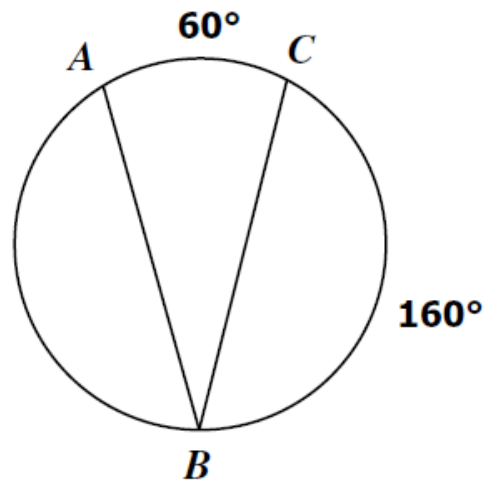
22



In the figure, what is the value of  $x$ ?

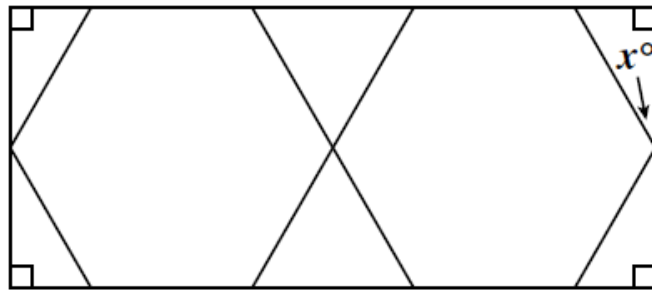
- F 6
- G  $6\sqrt{2}$
- H  $6\sqrt{3}$
- J 12

24



In the circle, what is the measure of  $\angle ABC$  ?

25 This figure shows a pattern of triangles and regular hexagons.



What is the value of  $x$  ?

- A 30
- B 60
- C 90
- D 120

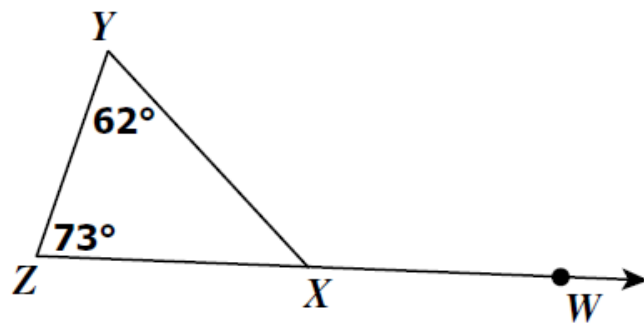
**26** Which figure has all sides of equal measure but not necessarily all angles of equal measure?

- F** Square
- G** Rectangle
- H** Rhombus
- J** Trapezoid

**29** In rectangle  $ABCD$ , the slope of  $\overline{AB}$  is  $\frac{1}{2}$ . What is the slope of  $\overline{CD}$ ?

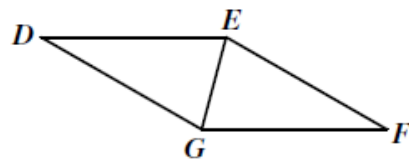
- A**  $-2$
- B**  $-\frac{1}{2}$
- C**  $\frac{1}{2}$
- D**  $2$

30 In the figure shown, what is  $m\angle WXY$  ?



- F**  $45^\circ$
- G**  $107^\circ$
- H**  $120^\circ$
- J**  $135^\circ$

31 *DEFG* is a rhombus with  $m\angle EFG = 28^\circ$ .

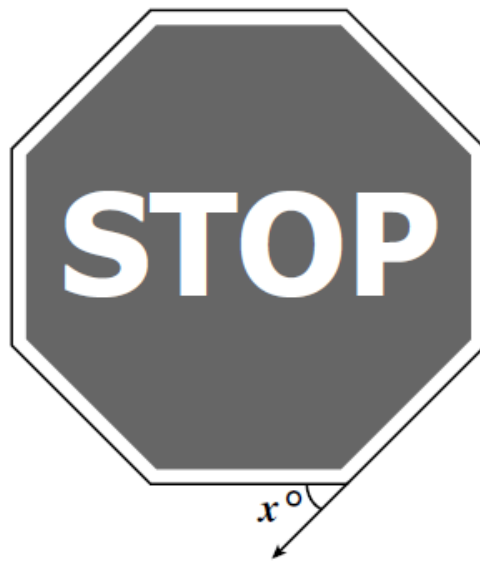


What is  $m\angle GDE$  ?

- A  $14^\circ$
- B  $28^\circ$
- C  $30^\circ$
- D  $56^\circ$



32 This figure is a traffic sign in the shape of a regular octagon.



What is the value of  $x$  ?

- F 45
- G 60
- H 135
- J 180

- 33** A rectangular rug is 24 feet long and 10 feet wide. A rhombus design is formed inside the rug by joining the midpoints of each side of the rectangle. What is the length of each side of the rhombus?
- A** 13 ft
  - B** 26 ft
  - C** 169 ft
  - D** 240 ft

**34** A man who is 6 feet tall casts a shadow that is 4 feet long. At the same time, a nearby flagpole casts a shadow that is 18 feet long. How tall is the flagpole?

- F** 10 ft
- G** 12 ft
- H** 22 ft
- J** 27 ft

**37** If a cube with side length 6 inches has its dimensions divided in half, what will be the volume of the new cube?

- A** 108 cubic inches
- B** 54 cubic inches
- C** 27 cubic inches
- D** 9 cubic inches

**40** Which line of reflection maps point  $K$  at  $(-2, 2)$  to point  $K'$  at  $(2, -2)$  ?

**F**  $y = 2$

**G**  $y = x$

**H**  $x$ -axis

**J**  $y$ -axis

**41** If the coordinates of  $A$  are  $(1, 1)$  and the midpoint of  $\overline{AB}$  is  $(-2, 0)$ , then the coordinates of  $B$  are —

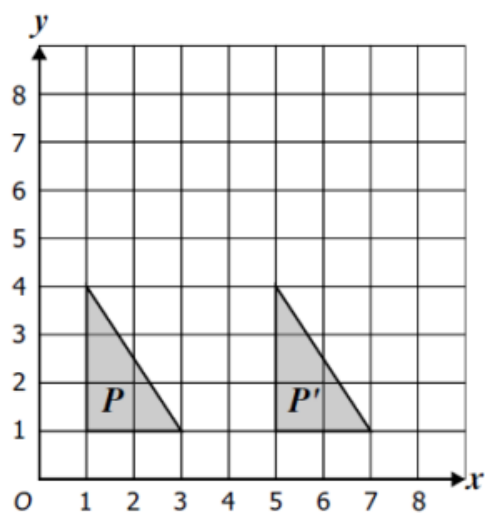
**A**  $(-0.5, 0.5)$

**B**  $(0.5, 0.5)$

**C**  $(-1, 0)$

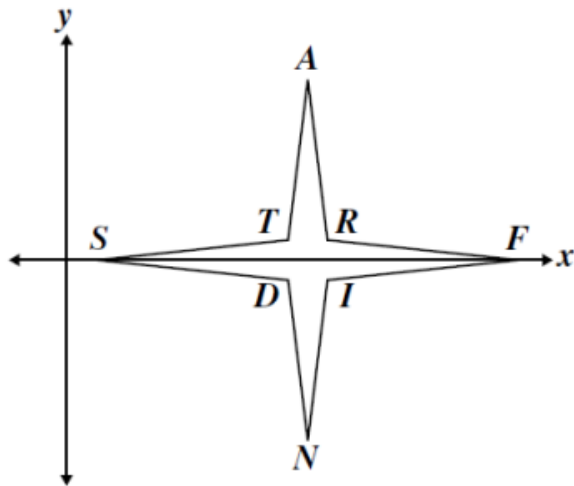
**D**  $(-5, -1)$

- 42 Which transformation could move the triangle  $P$  to triangle  $P'$  in a single step?



- F** Reflection over  $x = 4$
- G** Rotation about  $(2, 3)$
- H** Reflection over  $y = 4$
- J** Translation

- 43 Figure *STARFIND* is symmetric with respect to the  $x$ -axis. The coordinates of point  $A$  are  $(8, 6)$ . What are the coordinates of point  $N$ ?



- A**  $(8, -6)$
- B**  $(6, -8)$
- C**  $(-6, 8)$
- D**  $(-8, 6)$

**45 A regular quadrilateral has what type of symmetry?**

- A** Line symmetry only
- B** Point symmetry only
- C** Both point and line symmetry
- D** Neither point nor line symmetry