

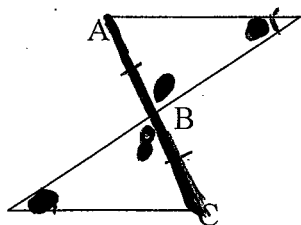
Name:

1. Write the $\angle x \cong \angle y$ and $\angle y \cong \angle z$, then $\angle x \cong \angle z$ is an example of which property?

transitive property

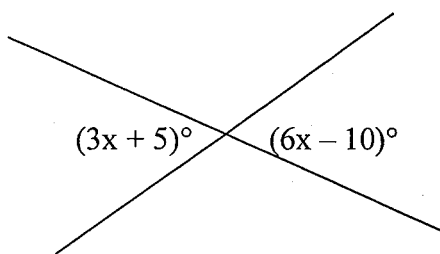
2. Are the triangles congruent? If so, state the rule.

$$\overline{AB} \cong \overline{CB}$$



AAS

3. Find the value of x in the diagram



$$3x + 5 = 6x - 10$$

$$5 = 3x - 10$$

$$+10 \quad +10$$

$$15 = 3x$$

$$5 = x$$

4. Are the lines parallel, perpendicular or neither?

$$3x = 4y + 4$$

$$3x - 4 = 4y$$

$$\frac{3}{4}x - 1 = y$$

parallel

$$3x - 4y = -12$$

$$-4y = -3x - 12$$

$$y = \frac{3}{4}x + 3$$

5. Solve the following equation:

$$x^2 - x - 56 = 0$$

$$(x - 8)(x + 7) = 0$$

$$x - 8 = 0 \quad x + 7 = 0$$

$$x = 8$$

$$x = -7$$

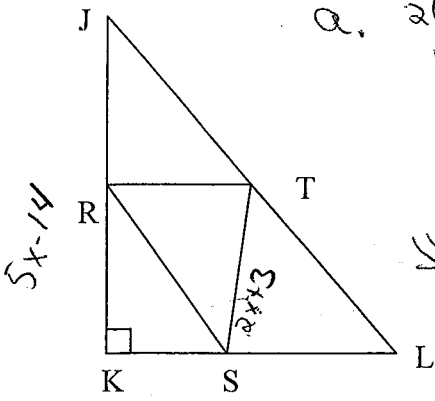
6. How many sides does a polygon have if the sum of the interior angles is 900° ?

$$900 = 180(n - 2)$$

$$5 = n - 2$$

$$7 = n$$

12. Use the diagram of $\triangle JKL$ where R, S and T are the midpoints of sides.



a. $2(2x+3) = 5x-14$
 $4x+6 = 5x-14$
 $-4x \quad -4x$
 $6 = x-14$
 $20 = x$
 $JK = 5x-14$
 $= 5(20)-14$
 $= 86$

b. $2(3x-4) = 9x-20$
 $6x-8 = 9x-20$
 $-8 = 3x-20$
 $12 = 3x$
 $4 = x$

$KL = 9x-20$
 $= 9(4)-20$
 $= 16$

a. If $ST = 2x + 3$ and $JK = 5x - 14$ then $JK = \underline{86}$

b. If $RT = 3x - 4$ and $KL = 9x - 20$ then $KL = \underline{16}$

c. If $RT = \frac{1}{3}JL$ and $JL = 9$, then $KS = \underline{3}$
 $RT = 3$

13. Solve the system of equations

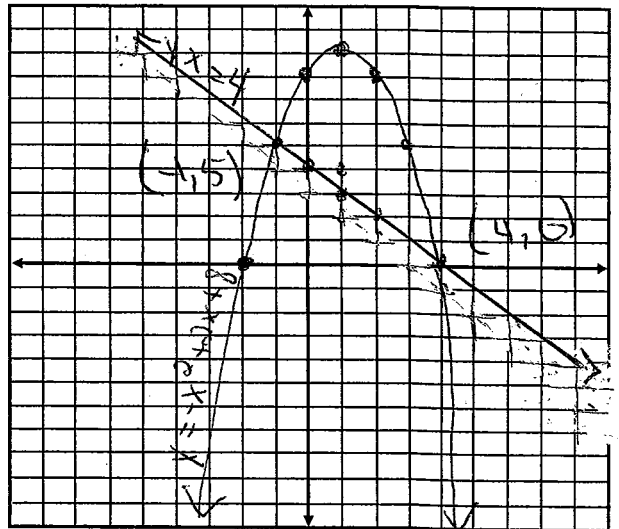
$-x^2 + 2x + 8 = y$

$x + y = 4$

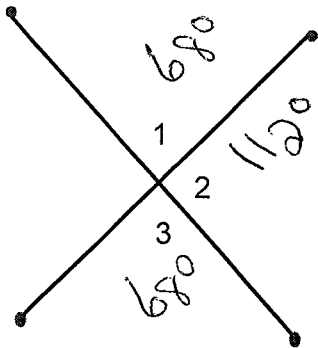
$y = -x + 4$

$$\begin{array}{r} x \quad y \\ \hline 4000-0100 \\ 00000000 \end{array}$$

$(-1, 5)$
 $(4, 0)$

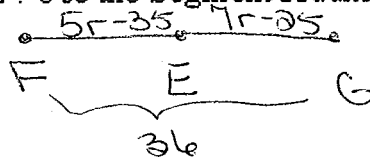


14. If $m\angle 3 = 68^\circ$, then what is the measure of $\angle 1$ and $\angle 2$?



1. Let E be between F and G . Use the Segment Addition Postulate to solve for r .

$FE = 5r - 35$
 $EG = 7r - 25$
 $FG = 36$



$5r - 35 + 7r - 25 = 36$
 $12r - 60 = 36$
 $12r = 96$
 $r = 8$

2. $m\angle JHI = (2x + 8)^\circ$ and $m\angle GHI = (8x - 4)^\circ$ and $m\angle JHG = 100^\circ$. Find $m\angle JHI$ and $m\angle GHI$.



$8x - 4 + 2x + 8 = 64$ \Rightarrow $JHI = 2x + 8$
 $10x + 4 = 64$ \Rightarrow $2(6) + 8$
 $10x = 60$ \Rightarrow $12 + 8$
 $x = 6$ \Rightarrow 20°

$m\angle GHI = 8x - 4$
 $= 8(6) - 4$
 $= 48 - 4$
 $= 44^\circ$

3. The notation for the length of the segment between P and Q is \overline{PQ} .

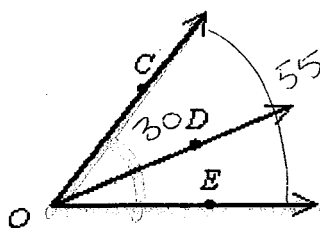
[A] \overline{QP}

[B] \overleftrightarrow{PQ}

[C] \overline{PQ}

[D] PQ

4. If $m\angle COE = 55^\circ$ and $m\angle COD = 30^\circ$, then what is the measure of $\angle DOE$?



$55 - 30$

[A] 23°

[B] 25°

[C] 30°

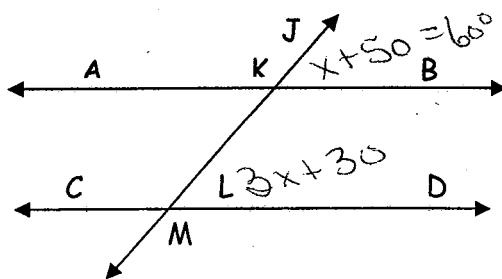
[D] 22°

5. In the diagram, \overline{AB} is parallel to \overline{CD} . If $m\angle JKB = x + 50$ and $m\angle KLD = 3x + 30$, find:

a. x

b. $m\angle JKB$

c. $m\angle KLC$



$x + 50 = 3x + 30$
 $50 = 2x + 30$
 $20 = 2x$
 $10 = x$

$x = 10$

60°

120°

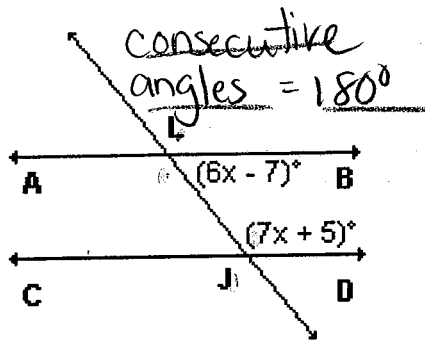
6. Find $m\angle CJI$ if $\overline{AB} \parallel \overline{CD}$.

$$7x + 5 = 7(14) + 5$$

$$= 98 + 5$$

$$= 103^\circ$$

$$180 - 103 = 77^\circ$$



$$6x - 7 + 7x + 5 = 180^\circ$$

$$13x - 2 = 180$$

$$13x = 182$$

$$x = 14$$

7. What does it mean when we say a polygon is regular?

all sides & all angles are congruent

8. Which set could not represent the lengths of the sides of a triangle?

a. {5, 10, 12}

b. {2, 5, 9}

c. {3, 4, 5}

d. {7, 9, 11}

$$2 + 5 < 9$$

9. Given that $\triangle CAT \cong \triangle DOG$, fill in the blanks below.

a. $\angle A \cong \angle O$

d. $\overline{TC} \cong \overline{GD}$

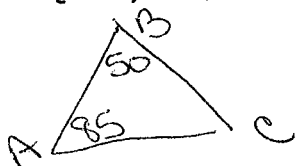
b. $\overline{OG} \cong \overline{AT}$

e. $\angle T \cong \angle G$

c. $\angle ATC \cong \angle OGD$

f. $\triangle ODG \cong \triangle ACT$

10. Given $\triangle ABC \cong \triangle PQR$, find the values of x and y if $m\angle A = 85^\circ$, $m\angle B = 50^\circ$, $m\angle Q = 7y - 6^\circ$, and $m\angle P = 10x + 15^\circ$.



$$\angle A \cong \angle P$$

$$10x + 15 = 85$$

$$10x = 70$$

$$x = 7$$

$$7y - 6 = 50$$

$$7y = 56$$

$$y = 8$$

11. Given: Find the area of $\triangle ABC$ with points A (-3, -1), B (2, -1), C (5, 3)

$$A = bh = 8 \cdot 4 = 32$$

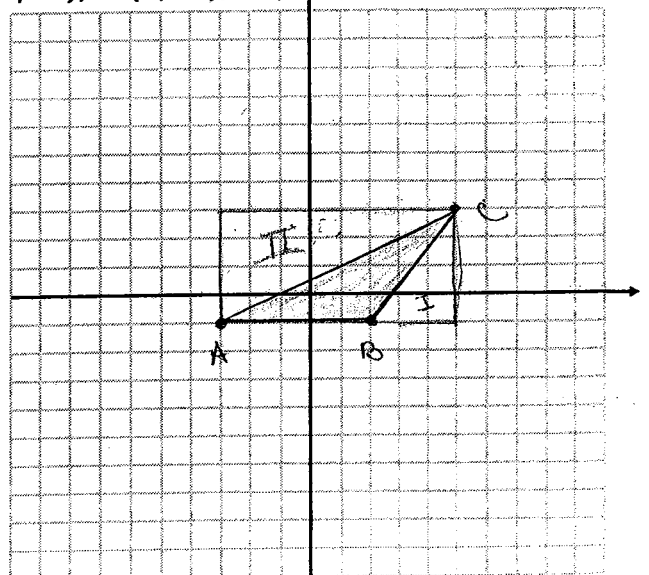
$$A_I = \frac{1}{2}bh = \frac{1}{2} \cdot 3 \cdot 4 = 6$$

$$A_{II} = \frac{1}{2}bh = \frac{1}{2} \cdot 4 \cdot 8 = 16$$

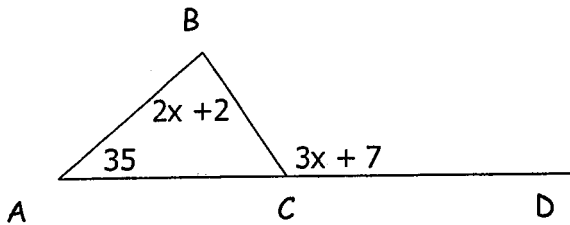
$$A = 32 - (6 + 16)$$

$$= 32 - 22$$

$$= 10$$



12. In $\triangle ABC$, What is the measure of $\angle BCD$?

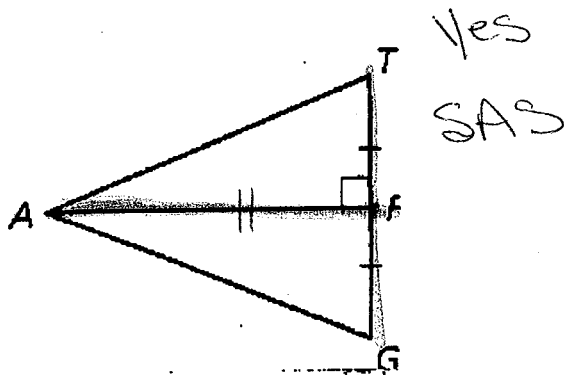


$$\begin{aligned} 2x + 2 + 35 &= 3x + 7 \\ 2x + 37 &= 3x + 7 \\ 37 &= x + 7 \\ 30 &= x \end{aligned}$$

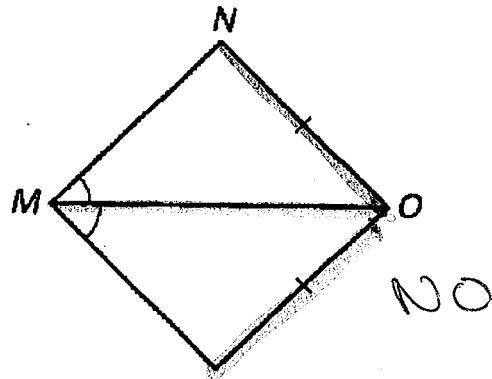
$$\begin{aligned} \angle BCD &= 3x + 7 \\ &= 3 \cdot 30 + 7 \\ &= 97^\circ \end{aligned}$$

13. Are the triangles congruent? If so, state the rule.

a.



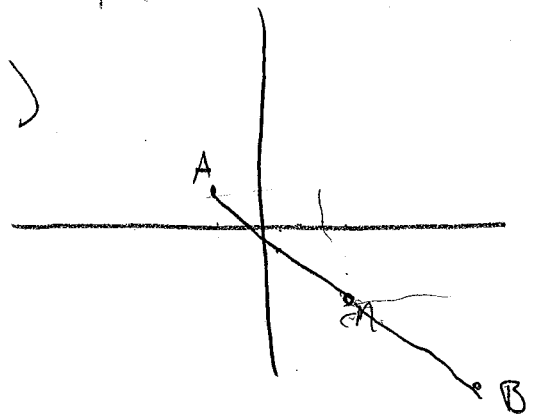
b.



14. M is the midpoint of \overline{AB} . Given that the coordinates of A are $(-2, 1)$ and the coordinates of M are $(4, -3)$. What are the coordinates of B?

$$\begin{array}{r} x \quad -2 \quad 4 \quad 10 \\ y \quad 1 \quad -3 \quad -7 \end{array}$$

$$\begin{array}{l} A \quad -2, 1 \\ M \quad 4, -3 \\ B \quad 10, -7 \end{array}$$



15. Find the midpoint of \overline{AB} . Given that the coordinates of A are $(-2, 1)$ and the coordinates of B are $(4, -3)$.

$$\begin{aligned} M &= \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \\ &= \left(\frac{-2 + 4}{2}, \frac{1 + (-3)}{2} \right) \\ &= \left(\frac{2}{2}, \frac{-2}{2} \right) \\ &= (1, -1) \end{aligned}$$

16. Given the diagram below name:

a. alternate interior angles

$$\angle 3 \cong \angle 6$$

$$\angle 4 \cong \angle 5$$

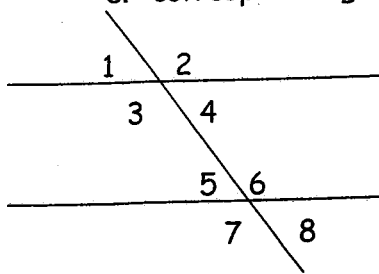
c. corresponding angles

$$\angle 1 \cong \angle 5$$

$$\angle 2 \cong \angle 6$$

$$\angle 3 \cong \angle 7$$

$$\angle 4 \cong \angle 8$$



b. alternate exterior angles

$$\angle 1 + \angle 8, \angle 2 + \angle 7$$

d. consecutive interior angles

$$\angle 3 + \angle 5$$

$$\angle 4 + \angle 6$$

17. Give an example of the transitive property.

$$\text{if } a = b \text{ and } b = c \text{ then } a = c$$

18. A right triangle has leg lengths of 4 and 8. Find the length of the hypotenuse in simplest radical form.

$$a^2 + b^2 = c^2$$

$$4^2 + 8^2 = c^2$$

$$16 + 64 = c^2$$

$$80 = c^2$$

$$\begin{aligned} c &= \sqrt{80} \\ &= \sqrt{16 \cdot 5} \\ &= 4\sqrt{5} \end{aligned}$$

19. The sides of a right triangle are 12, 16, and 20. What are the lengths of the sides of a similar triangle whose largest side is 50?

$$\frac{20}{50} = \frac{12}{x}$$

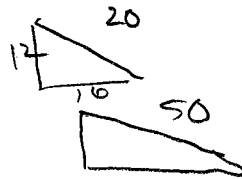
$$20x = 600$$

$$x = 30$$

$$\frac{20}{50} = \frac{16}{y}$$

$$20y = 800$$

$$y = 40$$



$$3 \cdot 10 = 30$$

$$4 \cdot 10 = 40$$

$$5 \cdot 10 = 50$$

20. In a regular octagon, the measure of each exterior angle is _____

$$\frac{360}{n} = \frac{360}{8} = 45^\circ$$

21. If the lengths of two sides of a triangle are 5 and 14, what could be the length of the third side?

$$x + 5 > 14$$

$$x > 9$$

$$5 + 14 > x$$

$$19 > x$$

$$x < 19$$