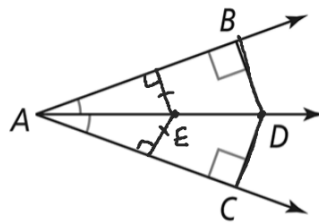


## Angle Bisector Theorem

If a point is on the bisector of an angle, then it is equidistant from the two sides of the angle.

PROOF: SEE EXERCISE 9.

If...



Then...  $BD = CD$

What is the value of  $KL$ ?

SOLUTION

$$2x + 3 = 4x - 11$$
$$\begin{array}{r} -2x \\ -2x \end{array}$$

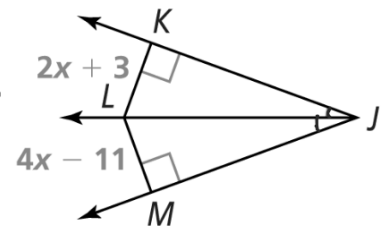
$$3 = 2x - 11$$

$$14 = 2x$$

$$x = 7$$

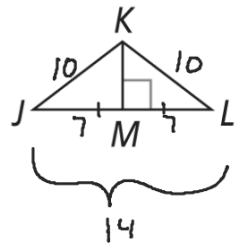
$$KL = 2x + 3$$

$$2(7) + 3 = 17$$



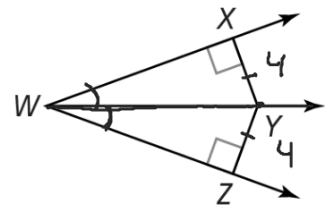
If  $JL = 14$ ,  $KL = 10$ , and  $ML = 7$ , what is  $JK$ ?

Enter your answer



If  $\angle XWY \cong \angle ZWY$  and  $XY = 4$ , what is  $YZ$ ?

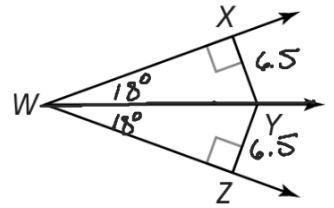
Enter your answer



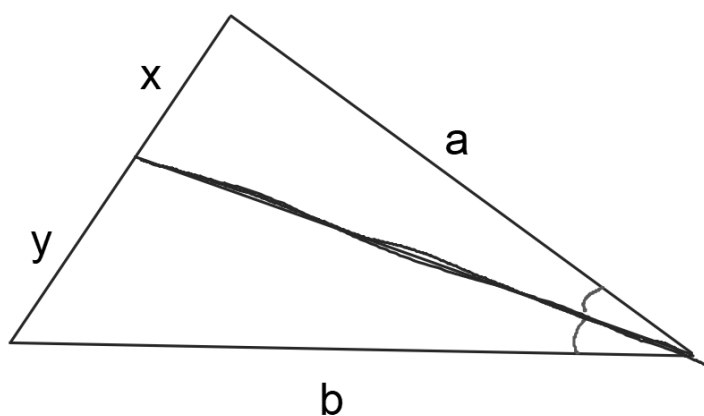
7. If  $XY = 6.5$ ,  $ZY = 6.5$ , and  $m\angle ZWY = 18$ , what is  $m\angle XWZ$ ?

$\rightarrow 36^\circ$

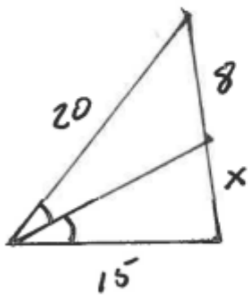
Enter answer here



The angle bisector cuts the opposite side in the same ratio as the two other sides.



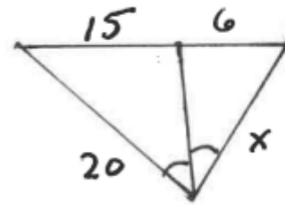
$$\frac{x}{y} = \frac{a}{b}$$



$$\frac{8}{x} = \frac{20}{15}$$

$$\frac{20x}{20} = \frac{120}{20}$$

$$x = 6$$



$$\frac{15}{6} = \frac{20}{x}$$

$$15x = 120$$

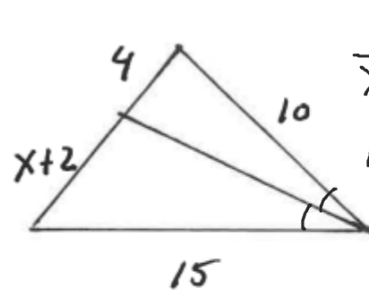
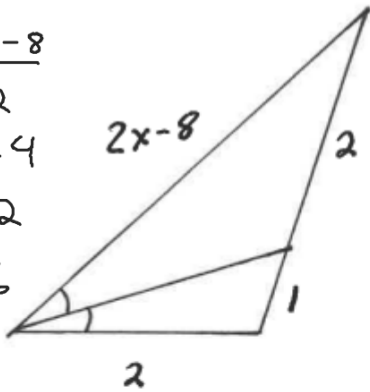
$$x = 8$$

$$\frac{2}{1} = \frac{2x-8}{2}$$

$$2x-8=4$$

$$2x=12$$

$$x=6$$



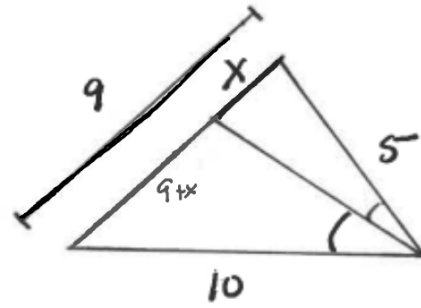
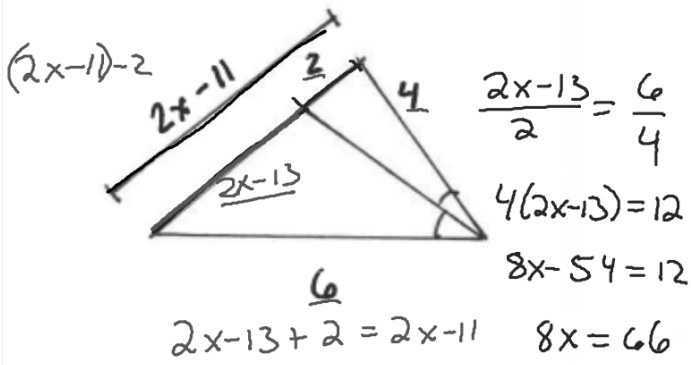
$$\frac{4}{x+2} = \frac{10}{15}$$

$$10(x+2) = 60$$

$$10x+20 = 60$$

$$10x = 40$$

$$x = 4$$



$$9+x+x=9$$

$$x = \frac{66}{8} = 8\frac{1}{4} = 8.25$$

