

1. Solve:  $\frac{3}{x} = \frac{12}{15}$

2. Solve:  $\frac{3}{x} = \frac{x}{27}$

3. Solve:  $\frac{3}{x+2} = \frac{15}{20}$

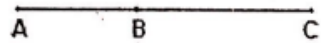
**4. Segment Addition Postulate:**

In the segment below,

$$AB = 2x + 9, BC = 4x - 7, AC = 38$$

What do  $x$  and  $AB$  equal?

$$x = \underline{\hspace{2cm}} \quad AB = \underline{\hspace{2cm}}$$



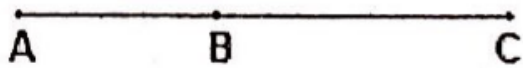
5. Definition of a Midpoint:

In the segment below,  
B is the midpoint of  $\overline{AC}$ .

$$AB = 4x + 2, BC = 6x - 8$$

What do  $x$  and  $AC$  equal?

$$x = \underline{\hspace{2cm}} \quad AC = \underline{\hspace{2cm}}$$



**6. Graph the following lines.**

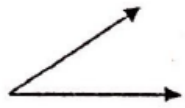
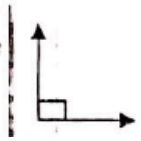
a.  $x = 2$

b.  $y = 4$

c.  $y = x$  (Hint: this is  $y = 1x + 0$ )

d.  $y = -x$  (Hint: this is  $y = -1x + 0$ )

7. Classify the following angles:



8. Angle Addition Postulate:

$$m\angle 1 = 7x - 2$$

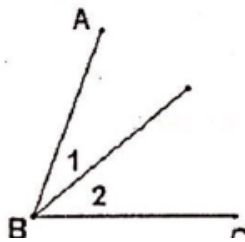
$$m\angle 2 = 5x + 5$$

$$m\angle ABC = 75^\circ$$

What is  $x$  equal to?

$x =$  \_\_\_\_\_

SIDE NOTE:  $m\angle 1$  is the shortcut way of writing "the measure of angle 1." It's like math texting – you write LOL instead of "laughing out loud," math people write  $m\angle 1$  instead of "the measure of angle 1."



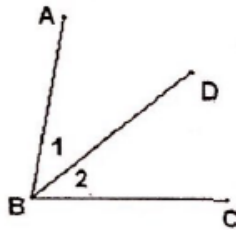
9. Angle Bisector:

$\overline{BD}$  bisects  $\angle ABC$   
 $m\angle 1 = 5x - 12$   
 $m\angle 2 = 2x + 21$

What are  $x$  and  $m\angle ABC$  ?

$x =$  \_\_\_\_\_

$m\angle ABC =$  \_\_\_\_\_



For 10-11, suppose  $RS \cong MN$ . For each set, solve for  $x$ , and find the length of each segment.

10.  $RS = 3x + 17$ ,  $MN = 7x - 15$

$x = \underline{\hspace{2cm}}$   $RS = \underline{\hspace{2cm}}$   $MN = \underline{\hspace{2cm}}$



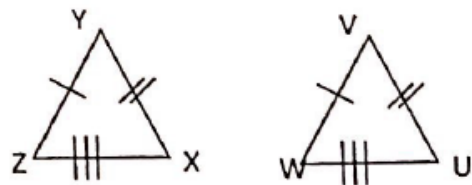
11.  $RS = x + 10$ ,  $MN = 2x + 4$

$x = \underline{\hspace{2cm}}$   $RS = \underline{\hspace{2cm}}$   $MN = \underline{\hspace{2cm}}$

12. Congruent ( $\cong$ ) means "the same size and shape." Equal (=) refers to numerical values. Fill in the following blanks with  $\cong$  or  $=$ . Use the diagrams at the right to assist you.

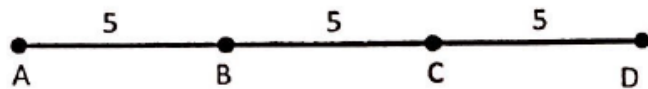
a.  $4 + 6$  \_\_\_\_\_  $10$

b. Triangle ZYX \_\_\_\_\_ Triangle WVU  
 Note: this is typically written  
 $\triangle ZYX$  \_\_\_\_\_  $\triangle WVU$



c.  $4x + 8$  \_\_\_\_\_  $4(x + 2)$

d.  $\overline{AB}$  \_\_\_\_\_  $\overline{CD}$



e.  $\overline{AB}$  \_\_\_\_\_  $\overline{CD}$

13. If U is between T and B, find the value of x and the lengths of the segments. (Hint: Draw a picture for each problem with the given information and then write the equation to solve.)  
\*\*between implies "on the same line as the other 2 points.

a.  $TU = 2x$ ,  $UB = 3x + 1$ ,  $TB = 21$

$x = \underline{\hspace{2cm}}$

$TU = \underline{\hspace{2cm}}$

$UB = \underline{\hspace{2cm}}$

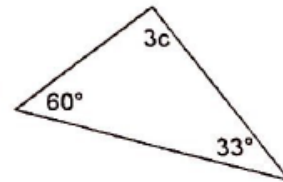
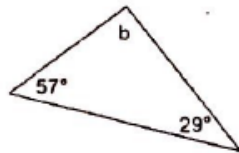
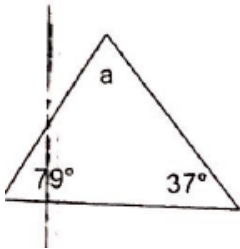
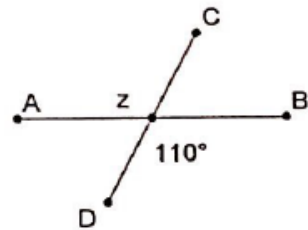
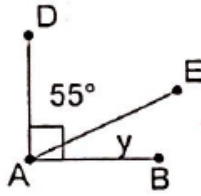
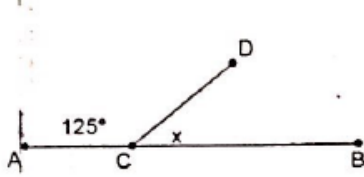
b.  $TU = 4x - 1$ ,  $UB = 2x - 1$ ,  $TB = 5x$

$x = \underline{\hspace{2cm}}$

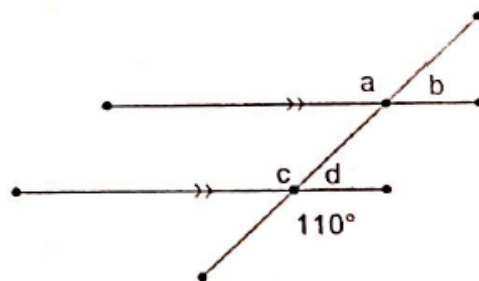
$TU = \underline{\hspace{2cm}}$

$UB = \underline{\hspace{2cm}}$

14. Given what you know about triangles, right angles, and straight angles, solve for the variables:



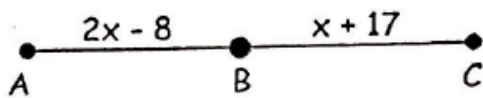
15. The angles around parallel lines have some really interesting properties...can you figure them out?  
Find the values of a, b, c, and d.



Side Note:

The little arrows on the two lines are Geometry notation for saying "these lines are parallel."

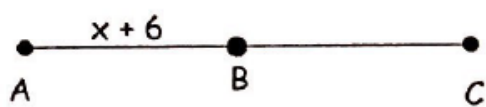
16. Let  $\overline{AB} \cong \overline{BC}$ .



$x =$  \_\_\_\_\_  $AB =$  \_\_\_\_\_

$BC =$  \_\_\_\_\_  $AC =$  \_\_\_\_\_

17. Let  $\overline{AB} \cong \overline{BC}$ ,  $AC = 3x - 31$



$x =$  \_\_\_\_\_

$AB =$  \_\_\_\_\_

$BC =$  \_\_\_\_\_

$AC =$  \_\_\_\_\_

## CHAPTER 7: GEOMETRIC FIGURES



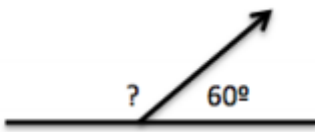
HOW MANY DEGREES ARE IN A TRIANGLE?

WHAT IS A STRAIGHT ANGLE?

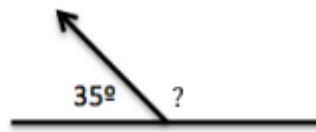
WHAT IS A LINEAR PAIR?

Find the measure of the missing angle.

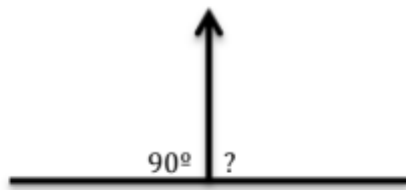
6.



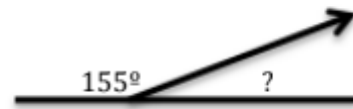
7.



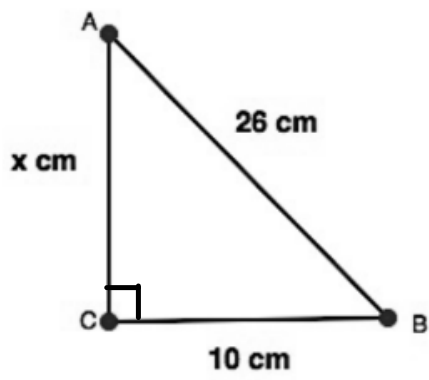
8.



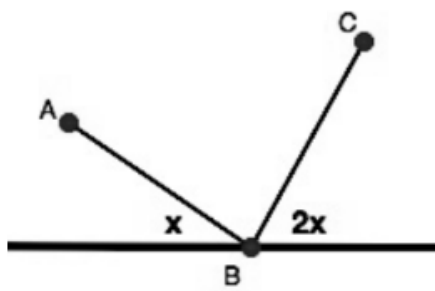
9.



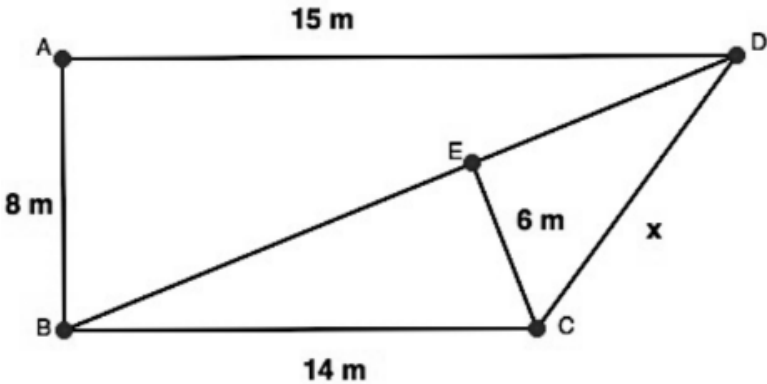
<u>Symbol</u>	<u>Definitions</u>
___ 1. =	A. <b>Absolute value</b> - it is always equal to the positive value of the number inside the lines. It represents distance from zero.
___ 2. $m\angle C$	B. <b>Congruent</b> - Figures that are the same size and shape are said to be congruent.
___ 3. $\overline{GH}$	C. <b>Parallel</b> - used between segments, lines, rays, or planes
___ 4. $\triangle ABC$	D. <b>Line segment with endpoints G and H.</b> Line segments can be congruent to each other. You would not say they were equal.
___ 5. $\perp$	E. <b>Ray GH</b> - The letter on the left indicates the endpoint of the ray.
___ 6. $\angle ABC$	F. Used when comparing numbers of <b>equal value</b> .
___ 7. $\overline{GH}$	G. <b>Plus or minus</b> - indicates 2 values, the positive value and the negative value
___ 8. $\cong$	H. <b>Triangle ABC</b>
___ 9. $\sim$	J. Indicates the <b>measure of an angle</b> . It would be set equal to a number.
___ 10. $\overline{GH}$	K. <b>Perpendicular</b> - Lines, rays, segments, and planes can all be perpendicular
___ 11. $\overline{GH}$	L. <b>Angle ABC</b> - The middle letter is always the vertex of the angle.
___ 12. $\parallel$	M. <b>Similar</b> - Figures that have been dilated are similar.
___ 13. $\pm$	N. <b>The length of GH.</b> It would equal a number.
___ 14. $ x $	P. Refers to the <b>infinite line GH</b> . Lines are not equal or congruent to other lines.



Given  $m\angle ABC = 90^\circ$

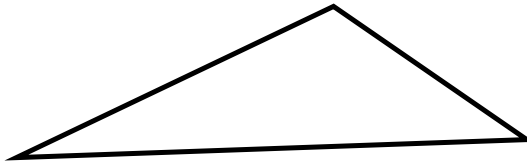


Given:  $\triangle BEC$ ,  $\triangle CED$ , and  $\triangle DAB$  are right triangles.



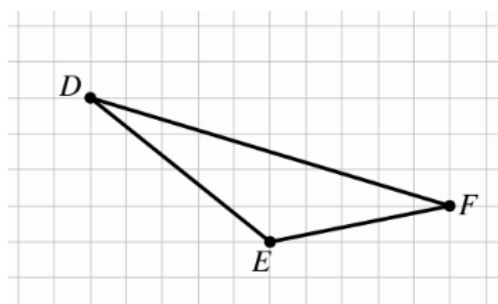


ALTITUDE, MEDIAN, ANGLE BISECTOR, AND  
PERPENDICULAR BISECTOR



Use  $\triangle DEF$  in problems 11 - 13.

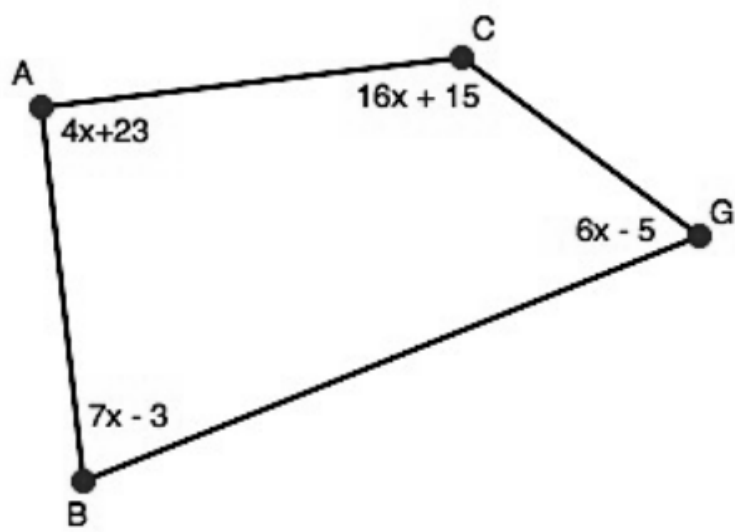
11. Construct the altitude from vertex  $D$  to  $\overline{EF}$ .
12. Construct the median from  $D$  to  $\overline{EF}$ .
13. Construct the perpendicular bisector of  $\overline{EF}$ .



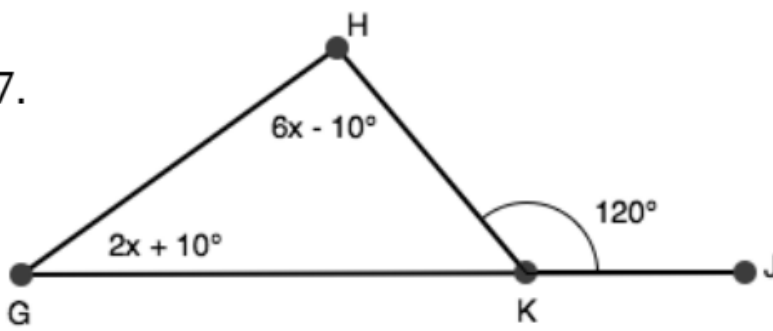
## VERTICAL ANGLES

## EXTERIOR ANGLES OF A TRIANGLE

## PARALLEL LINES CUT BY A TRANSVERSAL



17.



18.

