

**Unit #1: Algebra in Geometry**

1. Point H is the midpoint of line segment TE. The coordinates of H are (-1, 1) and the coordinates of the one endpoint is (-7,-4). Find the coordinates of the **other endpoint**.  
 (5,6)

2. If the midpoint is (7, 5) and one endpoint is (5, -6), what is the **other endpoint**?  
 A.  $(6, -\frac{1}{2})$       B.  $(1, \frac{11}{2})$       C. (19,4)      D. (9,16)

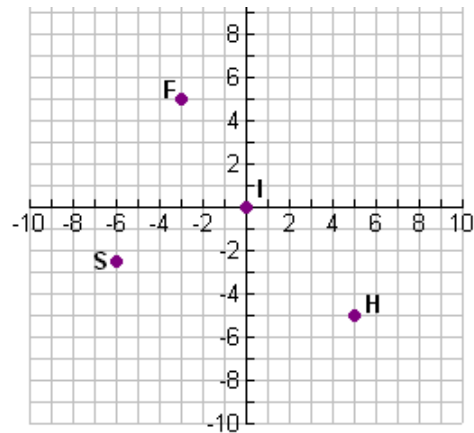
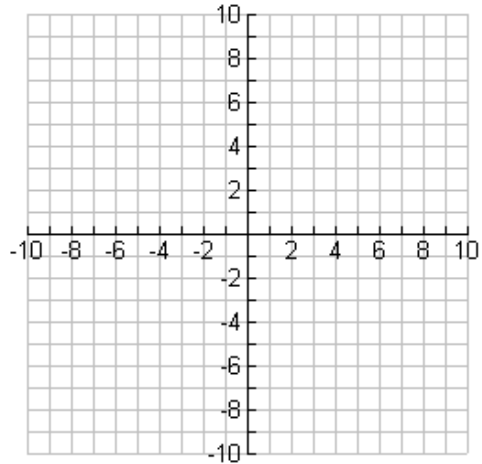
3. Find the length of  $\overline{GO}$  if  $G(-1,1)$  and  $O(-3,-4)$ .  
 5.39

4. Find the length of BE if  $B(-3,3)$  and  $E(-15,17)$   
 18.44

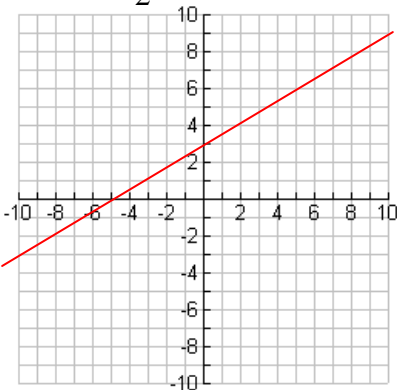
5. Find the midpoint of  $\overline{MS}$  if  $M(-4,10)$  and  $S(12,8)$   
 (4,9)

6. Find the midpoint of  $\overline{AC}$  if  $A(-2,3)$  and  $C(5,-3)$ .  
 (1.5,0)

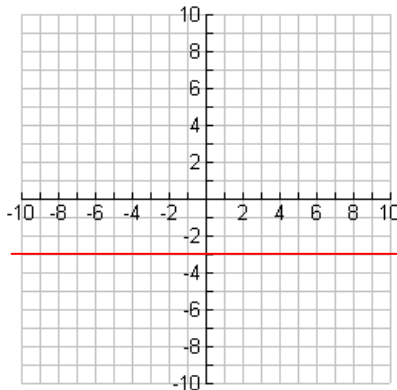
7. What are the ordered pairs of the points on the graph?  
 F (-3, 5)  
 I (0, 0)  
 S (-6, -2.5)  
 H (5, -5)



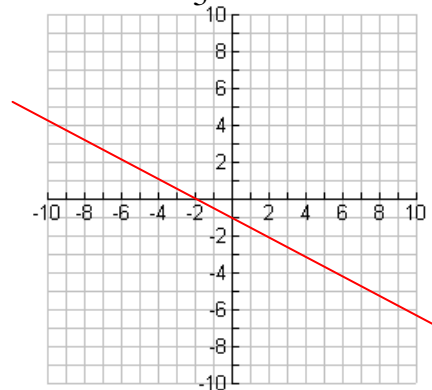
8.  $y = \frac{1}{2}x + 3$



9.  $y = -3$

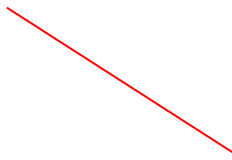


10.  $y = -\frac{2}{3}x - 1$

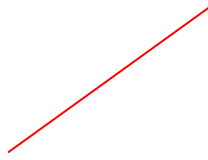


11. Sketch a line for each of the following slopes:

a. Negative



b. Positive



C. Undefined



D. Zero



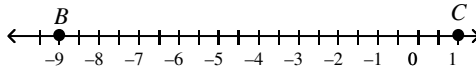
## Unit #2: Notations and Segments

1. Find LM.



$$LM = 8$$

2. Find the length of  $\overline{BC}$ ?



A) 8

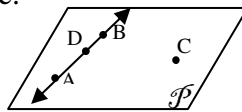
B) 9

C) 10

D) 20

3. Name the Plane in all ways possible.

ADC, ABC, DBC, and  $\mathcal{P}$



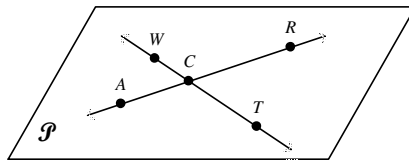
4. Which of the following **incorrectly** names the given plane?

A) WAC

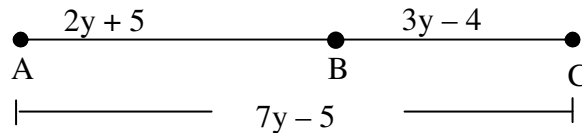
B) ACR

C)  $\mathcal{P}$

D) TAC



5. Given the line segment, solve for y.



$$y = 3$$

6. E is the midpoint of  $\overline{DF}$ ,  $DE = 2x + 4$ , and  $EF = 3x - 1$ . Find DE, EF and DF.

$$DE = 14, EF = 14, DF = 28$$

7. E bisects  $\overline{DF}$ ,  $DE = 2y$ , and  $EF = 8y - 3$ . Find DE, EF, and DF.

$$DE = 1, EF = 1, DF = 2$$

8. O is between D and G. If  $DO = 17.8$  and  $DG = 25.9$ , what is OG?

$$8.1$$

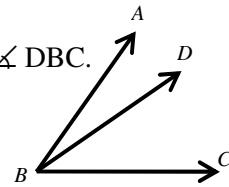
9. B is between A and C.  $AB = 32$  and  $CB = 23$ . Find AC.

$$55$$

## Unit #3: Angles

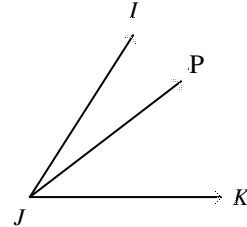
1.  $m\angle ABD = 28^\circ$ ,  $m\angle DBC = (5x + 2)^\circ$   $m\angle ABC = (9x - 10)^\circ$  Find  $m\angle DBC$ .

$$m\angle DBC = 52^\circ$$



2. P is in the interior of  $\angle IJK$   $m\angle IJP = 17^\circ$  and  $m\angle PJK = (4x - 4)^\circ$  and  $m\angle IJK = (6x - 5)^\circ$  Find  $m\angle PJK$ .

$$m\angle PJK = 32^\circ$$



3. Write an equation showing each of the following definitions:  
 a. Supplementary angles                      b. Complementary angles

$$m\angle 1 + m\angle 2 = 180^\circ$$

$$m\angle 1 + m\angle 2 = 90^\circ$$

4. Which of the following equations correctly shows the definition of complementary angles?

A)  $m\angle 1 + m\angle 2 = 90$

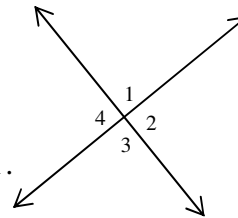
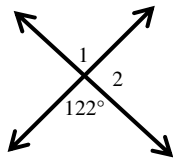
B)  $m\angle 1 + m\angle 2 = m\angle 3$

C)  $\angle 1 + \angle 2 = 90$

D)  $m\angle 1 + m\angle 2 = 180$

5. Find  $m\angle 1$  and  $m\angle 2$

$$m\angle 1 = 122^\circ \text{ \& } m\angle 2 = 58^\circ$$

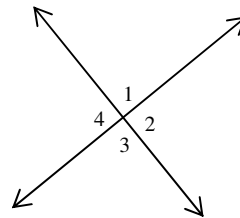


6. If  $m\angle 1 = (2x + 45)^\circ$  and  $m\angle 3 = (5x - 45)^\circ$ , find  $m\angle 1$ .

$$m\angle 1 = 105^\circ$$

7. If  $m\angle 1 = (10x + 6)^\circ$  and  $m\angle 2 = (10x + 6)^\circ$ , find  $m\angle 1$

$$m\angle 1 = 90^\circ$$



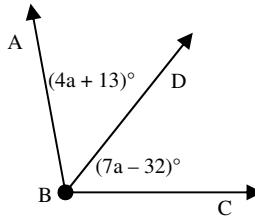
8. What is the supplement of a  $56^\circ$  angle?

$$124^\circ$$

9. What is the complement of a  $56^\circ$  angle?

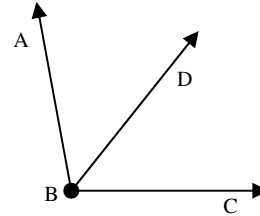
$$34^\circ$$

10. Find  $m\angle ABC$  if  $\overline{BD}$  is an angle bisector.



$m\angle ABC = 146^\circ$

11. Find  $m\angle ABD$  if  $\overline{BD}$  is an angle bisector and  $m\angle ABC = 176^\circ$



$m\angle ABD = 88^\circ$

**Unit #4: Logic**

Use the conditional statement below to answer questions 1 – 5.

***If today is Sally’s birthday, then she will eat cake.***

1. Identify the hypothesis:	Today is Sally’s birthday
2. Identify the conclusion:	She will eat cake
3. Write the inverse:	If today is not Sally’s birthday, then she will not eat cake.
4. Write the converse:	If she will eat cake, then it is Sally’s birthday.
5. Write the contrapositive:	If she will not eat cake, then it is not Sally’s birthday.

Use the conditional statement below to answer questions 6 - 10.

*If an animal is a dog, then it has a wet nose.*

6. Identify the hypothesis:	An animal is a dog
7. Identify the conclusion:	It has a wet nose
8. Write the inverse:	If an animal is not a dog, then it does not have a wet nose.
9. Write the converse:	If an animal has a wet nose, then it is a dog.
10. Write the contrapositive:	If it does not have a wet nose, then it is not a dog.

The table shows the lengths of five green iguanas after birth and then after 1 year.

11. Estimate the length of a green iguana after 1 year if it was 8 inches long when it hatched.

= 40 inches

12. Make a conjecture about the average growth of a green iguana during the first year.

Grows about 25 in per year

Iguana	Length after Hatching (in.)	Length after 1 Year (in.)
1	10	36
2	9	34
3	11	35
4	12	35
5	10	37

Match each conditional statement with the algebraic property that would be used to prove the conclusion. NOTE: All answer choices will be used, none will be repeated.

- |                 |                 |                   |
|-----------------|-----------------|-------------------|
| A. Reflexive    | D. Substitution | G. Subtraction    |
| B. Symmetry     | E. Transitive   | H. Multiplication |
| C. Distributive | F. Addition     | I. Division       |

- E 13. If  $7 = A$  and  $A = X$ , then  $7 = X$   
A 14. If  $Y$ , then  $Y = Y$   
F 15. If  $2x - 4 = 20$ , then  $2x = 24$   
C 16. If  $3(x - 7) = 11$ , then  $3x - 21 = 11$   
I 17. If  $5x = 100$ , then  $x = 20$   
B 18. If  $BG = PL$ , the  $PL = BG$

19. <b>Given</b> $6(x - 2) = 12$ , <b>Then</b> $x = 4$	Statements	Reasons
	$6(x - 2) = 12$	Given
	$6x - 12 = 12$	Distribute
	$6x = 24$	Addition
	$x = 4$	Division

20. Given:  $\overline{CO} = \overline{OL}$   
Conclusion:  $\overline{CO} \cong \overline{OL}$

Statements	Reason
$\overline{CO} = \overline{OL}$	Given
$\overline{CO} \cong \overline{OL}$	Definition of Congruence

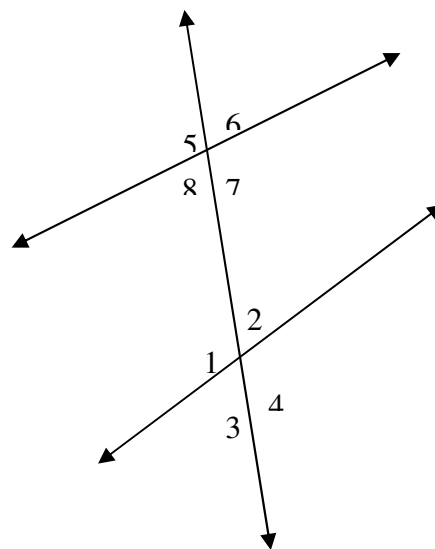
21. Given:  $\angle 2$  is the supplement to  $\angle 3$   
Conclusion:  $m\angle 2 + m\angle 3 = 180^\circ$

Statements	Reason
$\angle 2$ is the supplement to $\angle 3$	Given
$m\angle 2 + m\angle 3 = 180^\circ$	Definition of Supplementary Angles

## Unit #5: Parallel Lines and Transversals

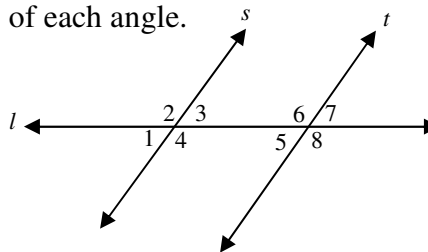
Use the given picture to answer the following questions.

- $\angle 2$  and  $\angle 3$  are vertical angles.
- $\angle 5$  and  $\angle 1$  are corresponding angles.
- $\angle 3$  and  $\angle 6$  are alternate exterior angles.
- $\angle 8$  and  $\angle 7$  or  $5$  are a linear pair.
- $\angle 7$  and  $\angle 1$  are alternate interior angles.
- $\angle 8$  and  $\angle 1$  are same-side interior angles.
- $\angle 5$  and  $\angle 3$  are same-side exterior angles.



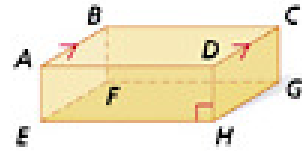
8. Given that line  $s \parallel t$ , and  $m\angle 2 = 112^\circ$  find the measures of each angle.

- |                            |                            |
|----------------------------|----------------------------|
| a. $m\angle 1 = 68^\circ$  | e. $m\angle 5 = 68^\circ$  |
| b. $m\angle 2 = 112^\circ$ | f. $m\angle 6 = 112^\circ$ |
| c. $m\angle 3 = 68^\circ$  | g. $m\angle 7 = 68^\circ$  |
| d. $m\angle 4 = 112^\circ$ | h. $m\angle 8 = 112^\circ$ |



Use the picture to name the following

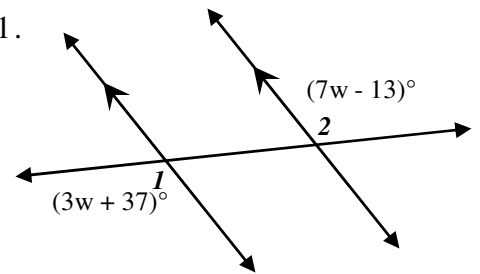
9.  $\overline{AD} \perp \overline{DH}$  or  $\overline{DC}$  or  $\overline{AB}$  or  $\overline{AE}$
10.  $\overline{AD} \parallel \overline{BC}$  or  $\overline{EH}$
11.  $\overline{AD}$  is skew to  $\overline{BF}$  or  $\overline{CG}$  or  $\overline{HG}$  or  $\overline{EF}$
12. Plane ADB is parallel to plane  $\overline{EFH}$  or  $\overline{FHG}$  or  $\overline{EFG}$  or  $\overline{EHG}$



13. Which of the following is always congruent:
- a) Vertical Angles
  - b) Corresponding Angles
  - c) Linear Pairs

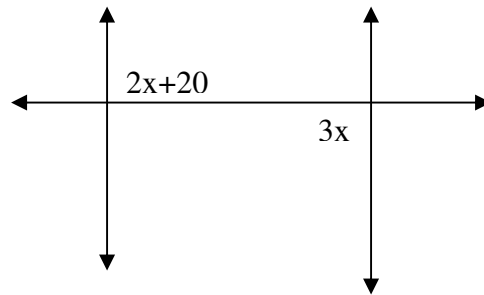
14. In the figure,  $m\angle 1 = (3w + 37)^\circ$  and the  $m\angle 2 = (7w - 13)^\circ$ . Find the  $m\angle 1$ .

$m\angle 1 = 74.5^\circ$



15. Find the value of x.

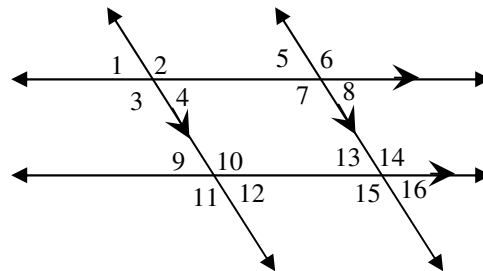
$x = 20$



Use the picture at the right to answer # 16-17

$38^\circ$  16. If  $m\angle 13 = 38^\circ$ , find  $m\angle 4$ .

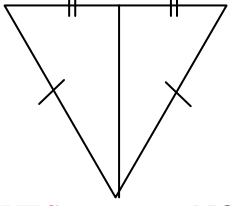
$33^\circ$  17. If  $m\angle 6 = 147^\circ$ , find  $m\angle 12$ .

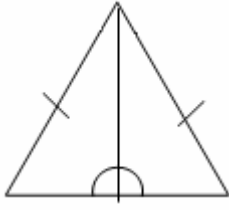


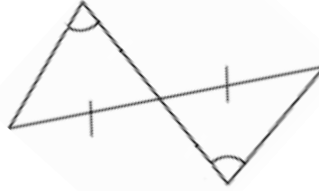
## Unit #6: Congruent Triangles

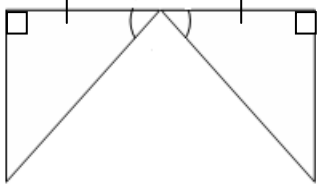
1. In isosceles triangle ABC, the vertex is  $80^\circ$ . The measures of all three interior angles of triangle ABC would be?  
 $80^\circ, 50^\circ, 50^\circ$
2. In isosceles triangle ABC, the vertex is  $110^\circ$ . The measures of all three interior angles of triangle ABC would be?  
 $110^\circ, 35^\circ, 35^\circ$

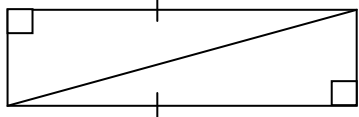
For 3-8 Tell whether or not the triangles can be proved congruent and if the triangles are congruent, give the reason for your answer (SSS, HL, SAS, AAS, ASA)

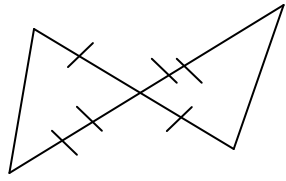
3)   
**YES**      **NO**  
SSS

4)   
**YES**      **NO**  
HL

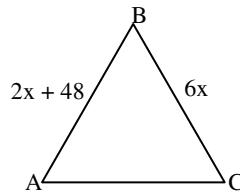
5)   
**YES**      **NO**  
AAS

6)   
**YES**      **NO**  
ASA

7)   
**YES**      **NO**  
HL

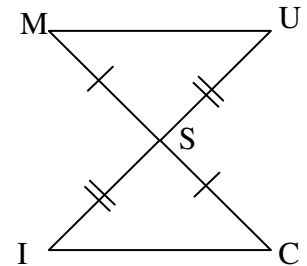
8)   
**YES**      **NO**  
SAS

9. Find AB in the given isosceles triangle with  $\overline{AB} \cong \overline{BC}$   
**AB = 72**



For 10 & 11: Use the diagram at the right to answer both.

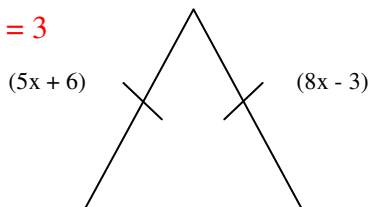
10)-. Write the triangle congruency of the given diagram?  
 **$\triangle MSU \cong \triangle CSI$**



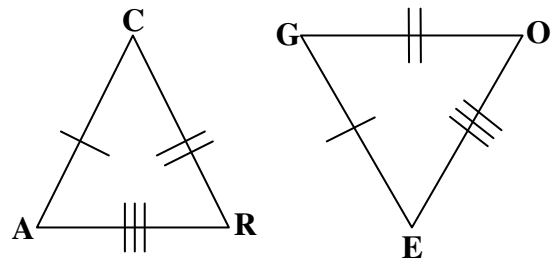
11. Which of the given statements is NOT true based on the given information?

- A)  $\angle U \cong \angle I$       B)  $\angle M \cong \angle C$       C)  $\overline{SU} \cong \overline{SC}$       D)  $\overline{MU} \cong \overline{CI}$

12. Find x      **x = 3**



13. Write the triangle congruency of the given triangles.  **$\triangle CAR \cong \triangle GEO$**



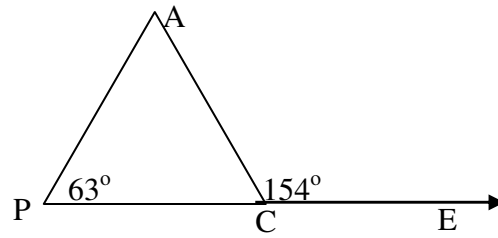


# Unit #7: Triangle Properties

1. Given the diagram at the right, find each:

$m\angle A = 91^\circ$

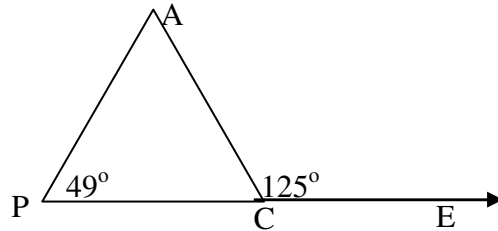
$m\angle ACP = 24^\circ$



2. Given the diagram at the right, find each:

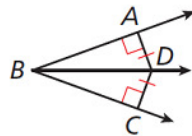
$m\angle A = 76^\circ$

$m\angle ACP = 55^\circ$



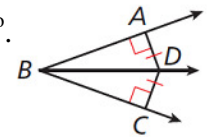
3. Given that the  $m\angle ABD = 21^\circ$ .

What is the  $m\angle ABC$ ?  $42^\circ$



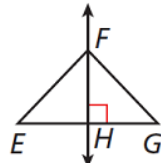
4. Given that the  $m\angle ABD = 34^\circ$ .

What is the  $m\angle ABC$ ?  $68^\circ$



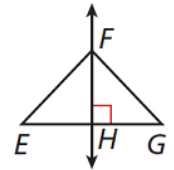
5. Given that  $EF = 12.5$ ,  $EH = 3.4$ ,  
and  $FG = 12.5$ , find  $EG$ .

$6.8$



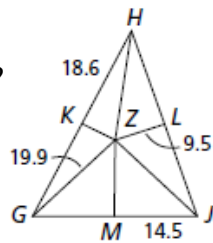
6. Given that  $EF = 11.5$ ,  $EH = 5.8$ ,  
and  $FG = 11.5$ , find  $EG$ .

$11.6$



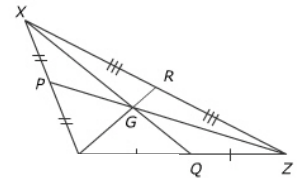
7. If Z is the circumcenter,  
what is the measure of ZJ?

ZJ =  $19.9$



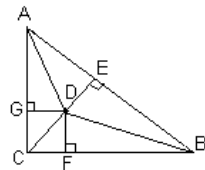
8) If G is the centroid and  $PZ = 72$   
what is the measure of ZG?

ZG =  $48$



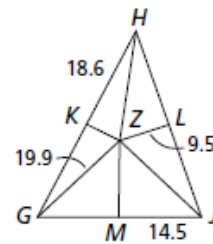
9) If D is the incenter and  
 $DF = 9.2$  what is DE?

DE =  $9.2$



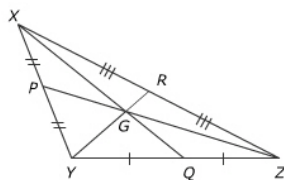
10. If Z is the circumcenter,  
what is the measure of ZH?

ZH =  $19.9$



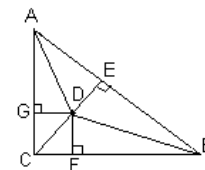
11) If G is the centroid and  $PZ = 63$   
what is the measure of ZG?

ZG =  $42$



12. If D is the incenter and  
 $DF = 7.8$  what is DE?

DE =  $7.8$

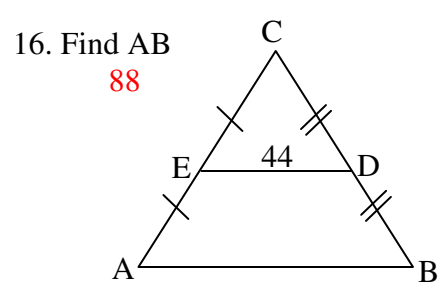
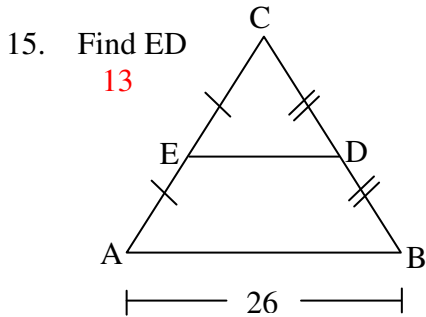
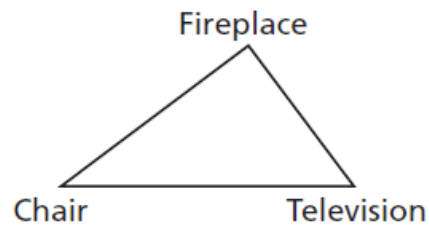


13. Tell whether a triangle can have sides with lengths 3.2, 4.7, and 7.2. EXPLAIN

Yes, because  $7.9 > 7.2$

14. Ray wants to place a chair so it is 15 ft. from his television set. Can the other two distances shown be 6 ft and 3 ft? EXPLAIN.

No, because 9 is not bigger than 15



## Unit #8: Right Triangles and Radicals

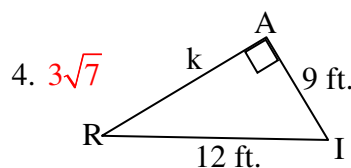
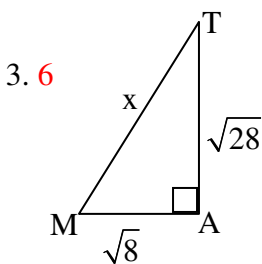
1. A 15 foot ladder is 5 feet from the base of a building. At what height does it touch the building?

$$x = 10\sqrt{2} = 14.14$$

2. An 10 ft. ladder is leaning up against a building. The top of the ladder hits the building at 7 ft. above the ground. How far away from the building is the bottom of the ladder?

$$x = \sqrt{51} = 7.14$$

For 3-4, find the missing side of the right triangle. Put answer in **SIMPLEST RADICAL FORM**.



Simplify

5.  $-\sqrt{144}$     -12

6.  $\sqrt{18}$      $3\sqrt{2}$

7.  $5\sqrt{45}$      $15\sqrt{5}$

Multiply

8.  $(\sqrt{3})(\sqrt{15})$      $3\sqrt{5}$

9.  $-2\sqrt{3} \cdot -\sqrt{25}$      $-10\sqrt{3}$

10.  $(\sqrt{7})^2$     7

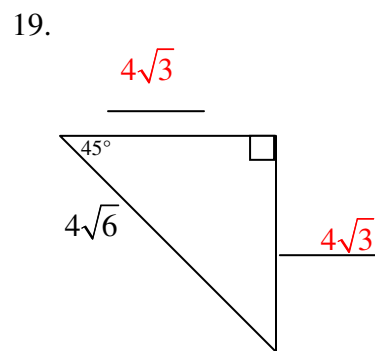
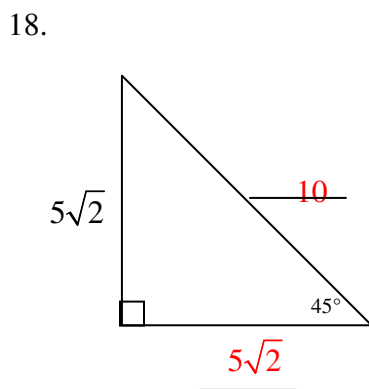
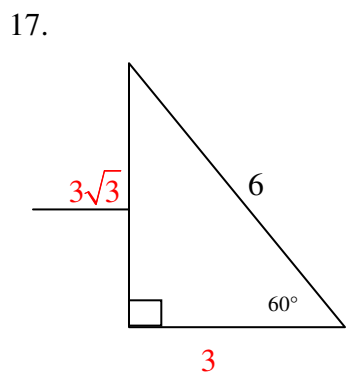
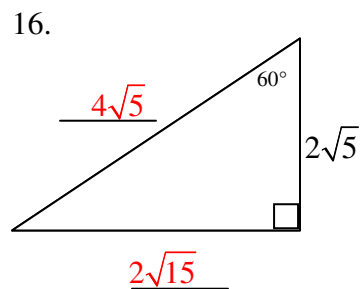
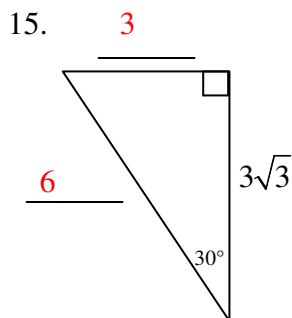
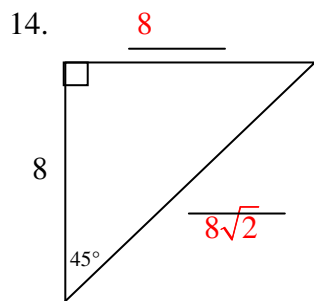
Divide and Rationalize

11.  $\frac{\sqrt{75}}{\sqrt{3}}$      5

12.  $\frac{\sqrt{32}}{4}$       $\sqrt{2}$

13.  $\frac{5}{\sqrt{12}}$       $\frac{5\sqrt{3}}{6}$

Find the missing side of the special right triangles. All answers should be in simplified radical form. (8 pts each)



20. A kite string is 220 feet long from the kite to the ground. The string makes a  $45^\circ$  angle with the ground. About how high off the ground is the kite?

$x = 110\sqrt{2} = 155.56$

