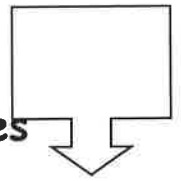


Name \_\_\_\_\_

# Honors Math III - Unit 5 - Parallelograms and Triangles



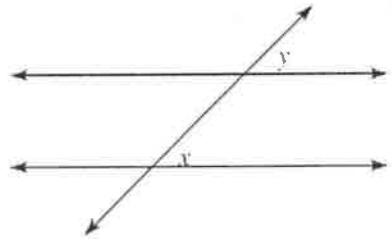
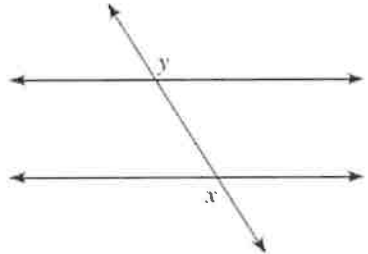
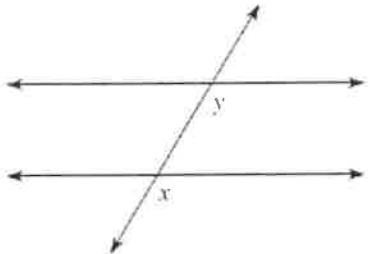
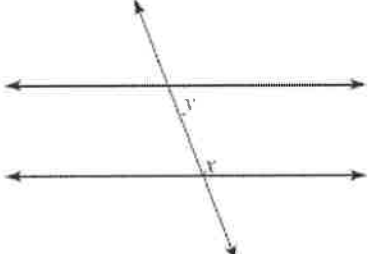
<b>Date</b>	<b>Lesson/Objective</b>	<b>Homework</b>
Wed. Nov. 1	Parallel Lines	HW 5-1
Thurs. Nov. 2	Proofs of Triangles	HW 5-2
Fri. Nov. 3	<i>Review and Quiz</i>	
Mon. Nov. 6	<i>Parallelograms</i>	HW 5-3
Tues. Nov. 7	<i>Quadrilaterals</i>	HW 5-4
Wed. Nov. 8	<i>Pre-Act More Quads</i>	HW 5-5
Thurs. Nov. 9	<i>Centers of Triangles</i>	HW 5-6
Fri. Nov. 10	<i>Holiday</i>	
Monday Nov. 13	<i>Review</i>	Complete Review WS
Tuesday Nov. 14	<i>Test Unit 5</i>	

# Homework 5.1: Parallel Lines and Transversals

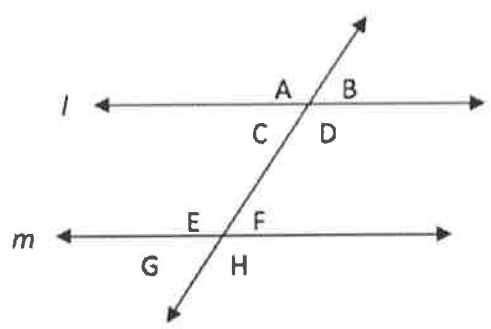
→ 2 pages \*

Name: \_\_\_\_\_

**Directions:** Name each of the following types of angles. Then, state whether they are congruent or supplementary.

<p>1)</p> 	<p>Name:</p>   <p>Congruent or Supplementary</p>	<p>2)</p> 	<p>Name:</p>   <p>Congruent or Supplementary</p>
<p>3)</p> 	<p>Name:</p>   <p>Congruent or Supplementary</p>	<p>4)</p> 	<p>Name:</p>   <p>Congruent or Supplementary</p>

**Directions:** Find the value of x in each question given that lines l and m are parallel. Check your answers by finding the measure of each angle.



5.  $m\angle C = 3x - 10;$   
 $m\angle F = x + 70$
6.  $m\angle D = x + 27;$   
 $m\angle F = 2x - 39$
7.  $m\angle B = 2(x + 40);$   
 $m\angle G = 5x + 44$

x =

$m\angle C =$

$m\angle F =$

x =

$m\angle D =$

$m\angle F =$

x =

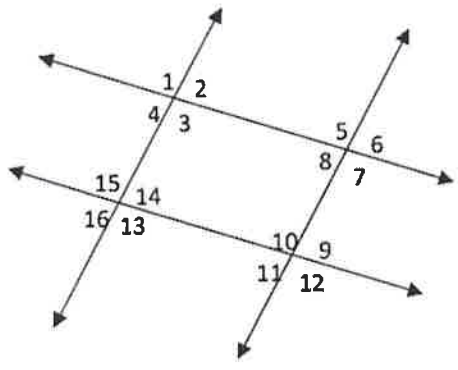
$m\angle B =$

$m\angle G =$

# HW 5-1 cont

**Directions:** Solve for the following. Show all work in the space provided.

8. Given that  $m\angle 4 = 3x + 10$  and  $m\angle 12 = 2x + 30$ , find the value of  $x$ ,  $m\angle 4$ ,  $m\angle 10$ .



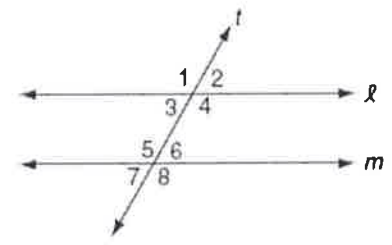
$x =$

$m\angle 4 =$

$m\angle 10 =$

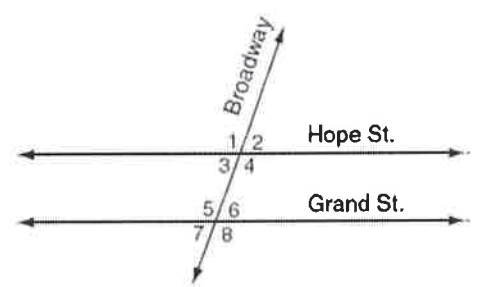
9. In the accompanying diagram, line  $l$  is parallel to line  $m$ , and line  $t$  is a transversal. Which must be a true statement?

- (1)  $m\angle 1 + m\angle 4 = 180$       (3)  $m\angle 3 + m\angle 6 = 180$
- (2)  $m\angle 1 + m\angle 8 = 180$       (4)  $m\angle 2 + m\angle 5 = 180$



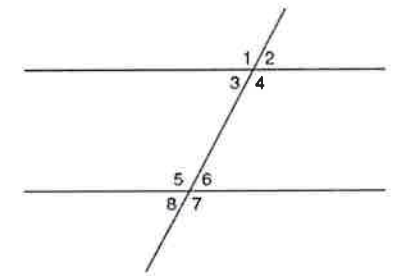
10. The accompanying diagram shows two parallel roads, Hope Street and Grand Street, crossed by a transversal road, Broadway. If  $m\angle 1 = 110$ , what is the measure of  $m\angle 7$ ?

- (1)  $40^\circ$                               (3)  $110^\circ$
- (2)  $70^\circ$                               (4)  $180^\circ$

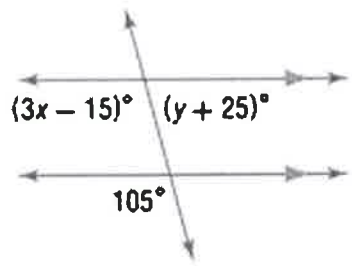


11. In the accompanying figure, what is one pair of alternate interior angles?

- (1)  $\angle 1$  and  $\angle 2$                       (3)  $\angle 4$  and  $\angle 6$
- (2)  $\angle 4$  and  $\angle 5$                       (4)  $\angle 6$  and  $\angle 8$



12. Find the value of  $x$  and  $y$ .



$x =$

$y =$

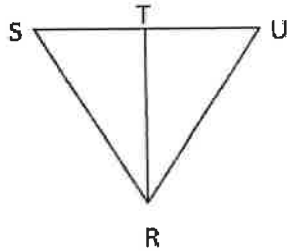
⇒ 2 pages

# Homework 5.2: Triangle Proofs

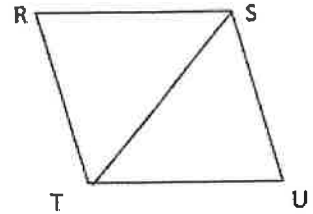
Math 3

Name: \_\_\_\_\_

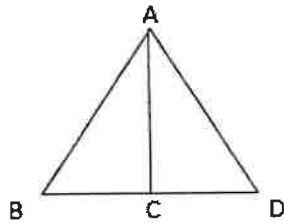
Given:  $RS \cong RU$ ,  $TS \cong TU$ ,  
 $\angle S \cong \angle U$ ,  $\angle SRT \cong \angle URT$   
Prove:  $\triangle RST \cong \triangle RUT$



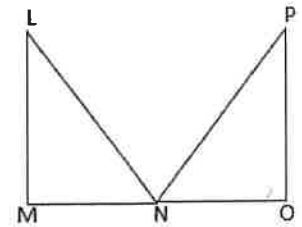
2. Given:  $RS \cong UT$ ,  $RT \cong SU$   
Prove:  $\triangle RST \cong \triangle UTS$



3. Given:  $AB \cong AD$ ,  $\angle B \cong \angle D$ ,  
 $\angle ACB$  &  $\angle ACD$  are  $90^\circ$   
Prove:  $\triangle ABC \cong \triangle ADC$

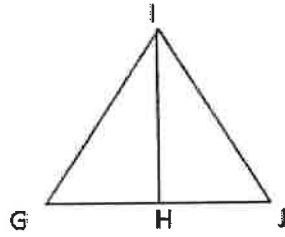


4. Given:  $LM \cong PO$ ,  $\angle L \cong \angle P$ ,  $\angle M$  &  $\angle O$  are  $90^\circ$   
Prove:  $\triangle LMN \cong \triangle PON$

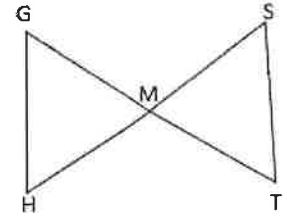


HW 5-2 cont

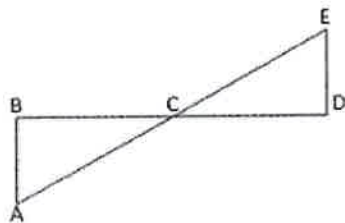
5. Given:  $H$  is the midpoint of  $GJ$ ,  $GI \cong IJ$   
 Prove:  $\triangle GHI \cong \triangle JHI$



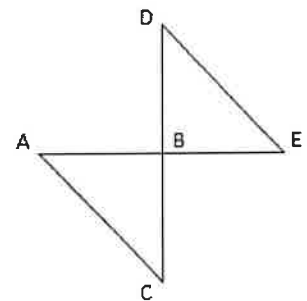
6. Given:  $M$  is the midpoint of  $GT$ ,  
 $M$  is the midpoint of  $HS$   
 Prove:  $\triangle GMH \cong \triangle TMS$



7. Given:  $\angle B$  &  $\angle D$  are  $90^\circ$ ,  $AE$  bisects  $BD$   
 Prove:  $\triangle ABC \cong \triangle EDC$



8. Given:  $DC \parallel AE$ ,  $DE \cong AC$ ,  
 $B$  is the midpoint of  $AE$   
 Prove:  $\triangle BDE \cong \triangle BCA$



HW 5-3 \* 2 pages

Name:

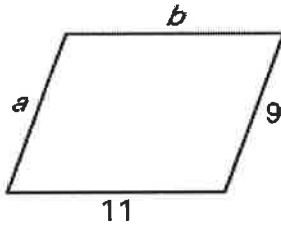
Period:

Date:

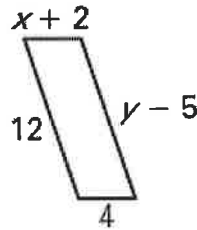
**Practice Worksheet:**  
**How do you use properties of parallelograms to solve problems?**

Find the value of each variable in the parallelogram.

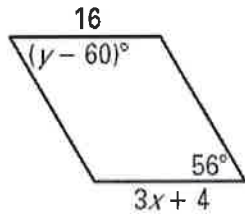
1.



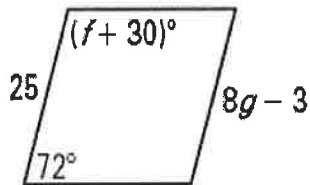
2.



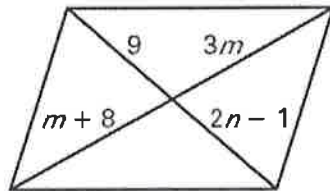
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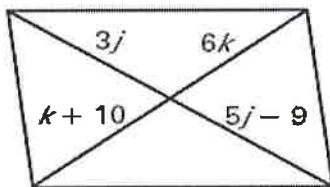
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5.

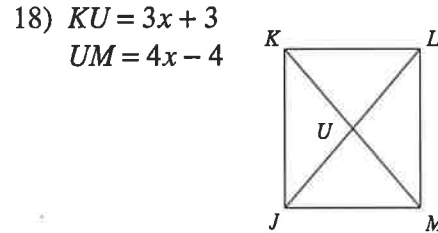
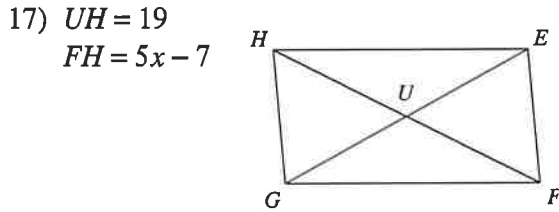
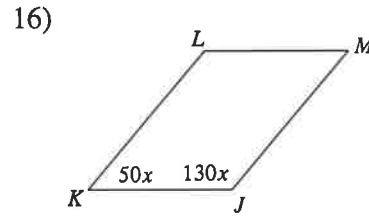
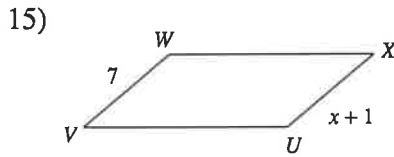
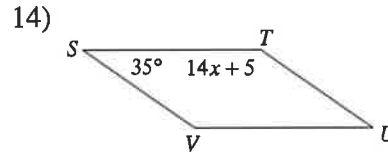
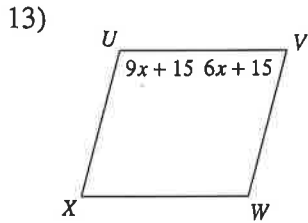
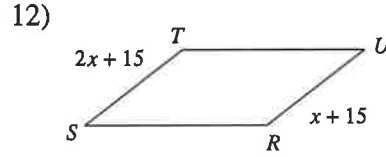
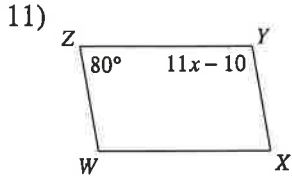


6.



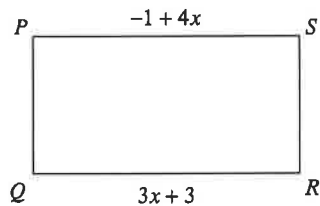
# HW 5-3 cont

Solve for  $x$ . Each figure is a parallelogram.

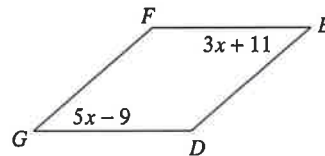


Find the measurement indicated in each parallelogram.

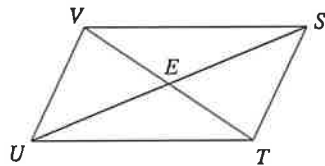
19) Find  $RQ$



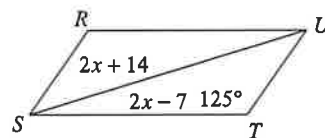
20) Find  $m\angle G$



21)  $TE = 4 + 2x$   
 $EV = 4x - 4$   
Find  $TE$



22) Find  $m\angle TSR$



# HW 5-4

## Parallelograms

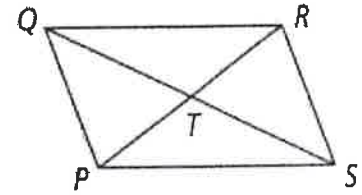
Name: \_\_\_\_\_

Math 3

Use the diagram below to solve for  $x$  and  $y$  if the figure is a parallelogram.

a)  $PT = 2x$ ,  $QT = y + 12$ ,  
 $TR = x + 2$ ,  $TS = 7y$

b)  $PT = y$ ,  $TR = 4y - 15$ ,  
 $QT = x + 6$ ,  $TS = 4x - 6$



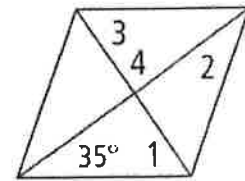
2. Find the measure of each angle if the figure is a rhombus.

a) Find the  $m\angle 1$ .

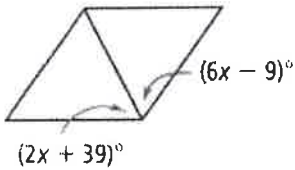
b) Find the  $m\angle 2$ .

c) Find the  $m\angle 3$ .

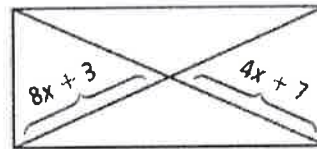
d) Find the  $m\angle 4$ .



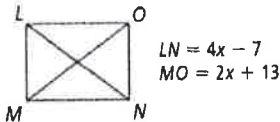
3. Solve for  $x$  if the figure is a rhombus.



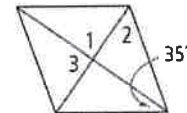
4. Solve for  $x$  if the figure is a rectangle.



5. What is the length of  $LN$  if the figure is a rectangle?

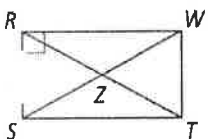


6. Solve for the missing angle measures if the figure is a rhombus.

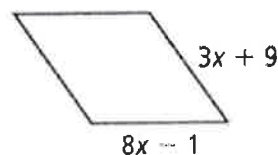


7. What is the length of  $SW$ ?

$RZ = 2x + 5$ ,  
 $SW = 5x - 20$



8. Solve for  $x$  if the figure is a rhombus.





# HW 5-5

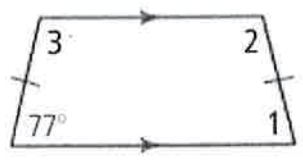
## Quadrilaterals

Name: \_\_\_\_\_

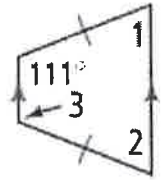
Math 3

Directions: For questions #1-2, find the measure of each missing angle.

1.

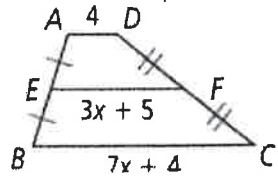


2.

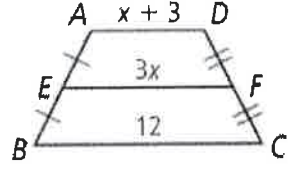


Directions: For questions #3-4, find x and the length of EF.

3.

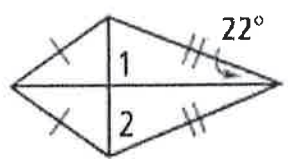


4.

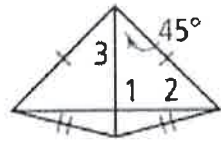


Directions: For questions #5-6, find the measures of the numbered angles in each kite.

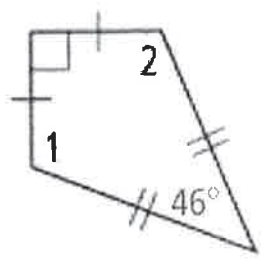
5.



6.



Challenge Question: Solve for the unknown angle measures in the kite shown below.



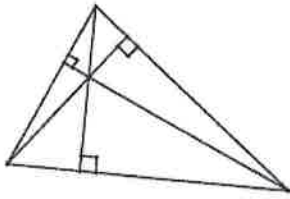
# HW 5-6 \* 2 pages

## Geometry – Points of Concurrency Worksheet

Name: \_\_\_\_\_ Period: \_\_\_\_\_

In each figure below, tell what point of concurrency is shown and what constructions form that point:

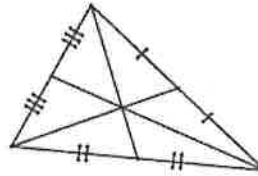
①



Point: \_\_\_\_\_

Formed by: \_\_\_\_\_

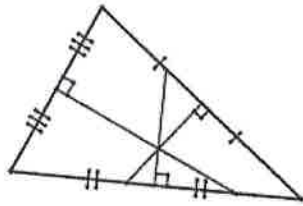
②



Point: \_\_\_\_\_

Formed by: \_\_\_\_\_

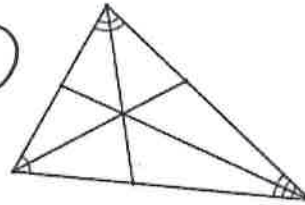
③



Point: \_\_\_\_\_

Formed by: \_\_\_\_\_

④



Point: \_\_\_\_\_

Formed by: \_\_\_\_\_

### Important Questions

5. Which points of concurrency are always inside the triangle? \_\_\_\_\_
6. Which point of concurrency is always on the vertex of a right triangle? \_\_\_\_\_
7. Which point of concurrency is always on the midpoint of the hypotenuse in a right triangle? \_\_\_\_\_
8. Which points of concurrency are always outside of an obtuse triangle? \_\_\_\_\_
9. Which point of concurrency is the center of gravity in a triangle? \_\_\_\_\_
10. Which point of concurrency is equidistant from every vertex? \_\_\_\_\_
11. Point G is the Centroid of  $\triangle ABC$ .  $AD = 8$ ,  $AG = 10$ , and  $CD = 18$ . Find the length of the given segment.

$\overline{BD}$  \_\_\_\_\_

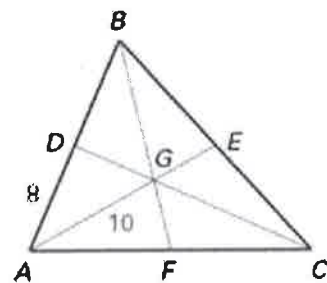
$\overline{AB}$  \_\_\_\_\_

$\overline{EG}$  \_\_\_\_\_

$\overline{AE}$  \_\_\_\_\_

$\overline{CG}$  \_\_\_\_\_

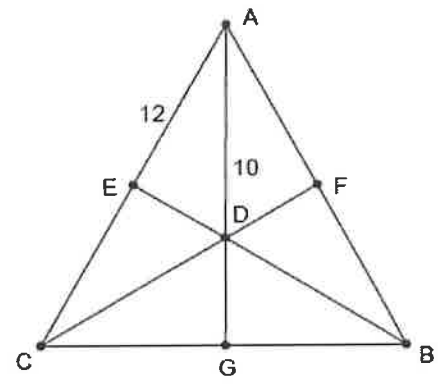
$\overline{DG}$  \_\_\_\_\_



5-6 cont

12. D is the centroid of  $\triangle ABC$ ,  $\overline{AE} = 12$ ,  $\overline{AD} = 10$ ,  $\overline{CF} = 12$ . Find the length of each segment.

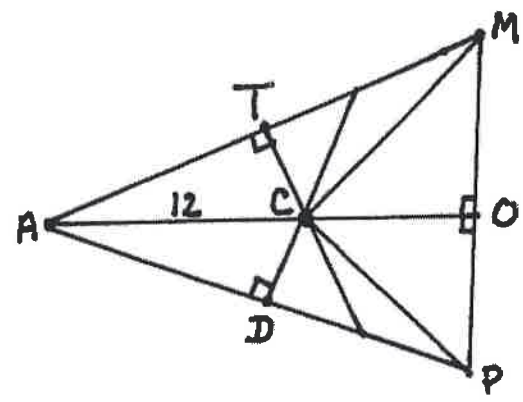
- $\overline{DG}$  \_\_\_\_\_
- $\overline{AG}$  \_\_\_\_\_
- $\overline{EC}$  \_\_\_\_\_
- $\overline{AC}$  \_\_\_\_\_
- $\overline{DF}$  \_\_\_\_\_



13. Given  
C is a circumcenter.

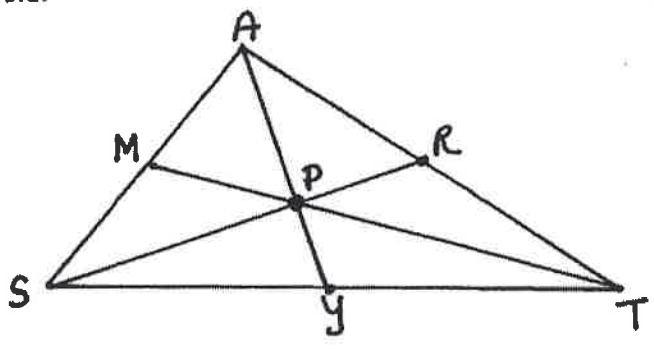
- $AC = 12$
- $MP = 16$
- $TM = 8$
- $AD = 6$

Find  
AT = \_\_\_\_\_  
CM = \_\_\_\_\_  
DP = \_\_\_\_\_



14. P is a centroid.

- $PR = 14$
- $PT = 6$
- $AR = 7$
- $AY = 15$



Find:  
SP = \_\_\_\_\_  
TM = \_\_\_\_\_  
AT = \_\_\_\_\_  
PY = \_\_\_\_\_

True or False?

- 15. \_\_\_\_\_ The perpendicular bisectors of a right triangle intersect on the triangle.
- 16. \_\_\_\_\_ The center of balance of the triangle is the incenter.
- 17. \_\_\_\_\_ To find the point that is equidistant from the sides, you need to find the circumcenter.

Fill in the blank.

18. The \_\_\_\_\_ is  $\frac{2}{3}$  the distance of the median from the vertex.

To find the point that is equidistant from the vertices of a triangle, we need to draw or construct the three \_\_\_\_\_ of a triangle.