

SM2 Chapter 6&7 Practice Test

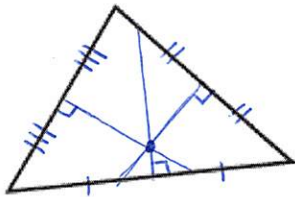
Name Answer Key

Date \_\_\_\_\_ Period \_\_\_\_\_

If you've tried and can't figure out how I got an answer, check the key with work! ☺

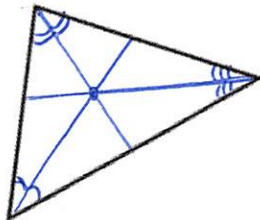
Sketch the given segments in triangles. Then label the point of intersection by the correct name. (Draw one for each side or angle—so 3 segments in each triangle)

1) Perpendicular Bisectors  
circumcenter



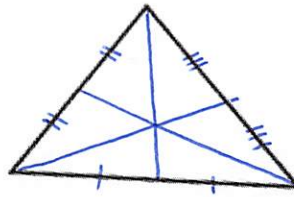
Equidistant from each vertex

2) Angle Bisectors  
incenter



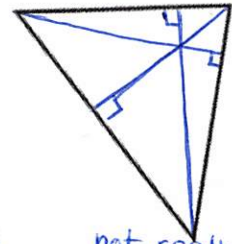
Equidistant from each side

3) Medians  
centroid



2/3 distance from vertex to midpoint of opposite side

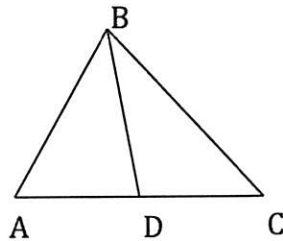
4) Altitudes  
orthocenter



not really that special (just the name)

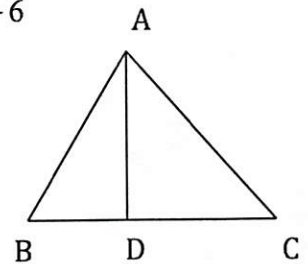
Use the given information to find the following.

5) Given:  $\overline{BD}$  is a median of  $\triangle ABC$   
 $AD = 3x + 8$   
 $AC = -2x - 24$   
 $AB = x + 9$   
 Find:  $AB$



$AB = 4$

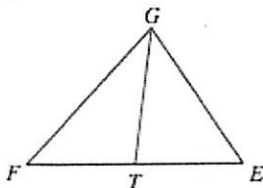
6) Given:  $\overline{AD}$  is an altitude of  $\triangle ABC$   
 $\angle ADC = 7x + 6$   
 $\overline{BD} = 4x + 3$   
 $\overline{DC} = 5x - 9$   
 Find:  $BC$



$BC = 102$

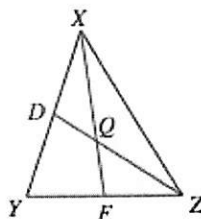
Each figure shows a triangle with one or more of its medians.

7) Find  $FE$  if  $TE = 8$



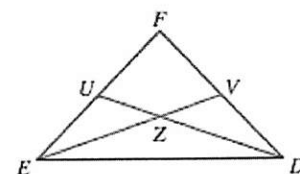
$FE = 16$

8) Find  $ZQ$  if  $ZD = 6$



$ZQ = 4$

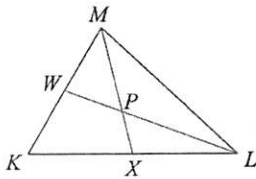
9) Find  $EZ$  if  $ZV = 12$



$EZ = 24$

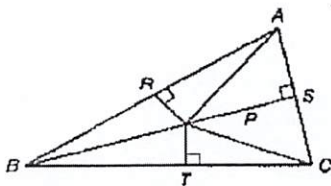
10) The figure shows a triangle with one or more of its medians.

Find  $MP$  if  $MP = x - 3$  and  $PX = x - 6$



$MP = 6$

12) Point P is the circumcenter. Name any segments that are congruent to  $\overline{CP}$ .



$\overline{AP}$  and  $\overline{BP}$

14) Give the name for the polygon described.

Twelve-sided polygon: *dodecagon*

Ten-sided polygon: *decagon*

16) What is the sum of the interior angles of a 26-gon?

$4320^\circ$

18) How many sides does a heptagon have?

*Seven*

How many sides does a nonagon have?

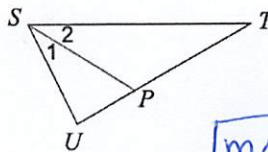
*nine*

20) What is the measure of an exterior angle for a regular 18-gon?

$20^\circ$

11)  $\overline{SP}$  is an angle bisector in the triangle.

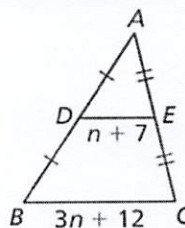
Find  $m\angle UST$  if  $m\angle 2 = 32^\circ$ .



$m\angle UST = 64^\circ$

13)  $\overline{DE}$  is a midsegment of  $\triangle ABC$ .

Find the value of n.



$n = 2$

15) What is the formula to find the sum of the interior angles for any polygon?

$180(n-2)$  or  $(n-2) \cdot 180$

(where n is the number of sides)

17) What is the measure of one interior angle in a regular 18-gon?

$160^\circ$

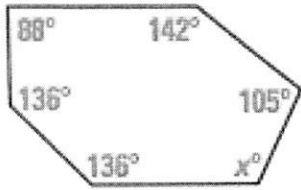
19) What properties of a polygon make it a regular polygon?

*All of the sides are congruent and all of the angles are congruent (equilateral and equiangular)*

21) Is there a regular polygon with an interior angle sum of  $9000^\circ$ ? If so, how many sides does it have?

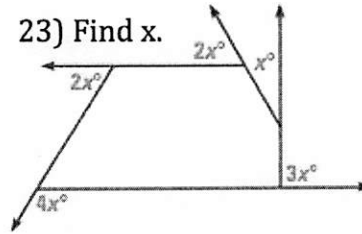
*yes, 52 sides*

22) Find x.



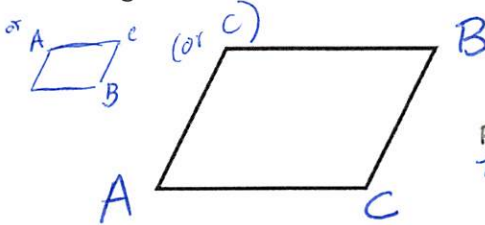
$x = 113$

23) Find x.



$x = 30$

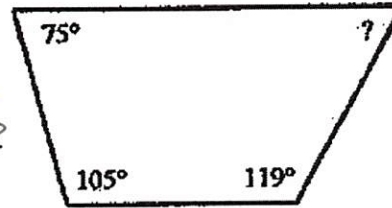
24) Label two opposite angles A and B. Locate an angle consecutive to A and label it C.



Relationship  $\angle A$  and  $\angle B$ ?  
They're congruent  
Relationship  $\angle A$  and  $\angle C$ ?  
They're supplementary (Sum 180°)

(technically 4 correct arrangements)

25) Find the measure of the missing angle.



$61^\circ$

26) Fill in the blank.

- a) If the quadrilateral is a parallelogram, then the opposite sides are parallel and congruent.
- b) If the quadrilateral is a parallelogram, then the opposite angles are congruent.
- c) If the quadrilateral is a parallelogram, then its consecutive angles are supplementary.
- d) If the quadrilateral is a parallelogram, then the diagonals bisect each other.
- e) If a quadrilateral has four congruent sides, then it is a rhombus.
- f) If a quadrilateral has four right angles, then it is a rectangle.

27) Fill each blank with *always*, *sometimes*, or *never* to make each statement true.

*\*see key with work for explanations of why\**

- a) The opposite angles of a parallelogram can never have different measures.
- b) The base angles of an isosceles trapezoid are never supplementary.
- c) Parallelograms are sometimes squares.
- d) Squares are always rectangles.
- e) A rhombus is never a trapezoid.
- f) One pair of opposite angles in a kite is always congruent.
- g) A quadrilateral whose diagonals are perpendicular is sometimes a rhombus.
- h) A quadrilateral whose diagonals are congruent is sometimes a rectangle.

\*see key with work for explanations\*

28) Circle the quadrilaterals which have the property described. You may need to circle more than one.

a) Both pairs of opposite sides are congruent.

Kite

Rhombus

Square

Isosceles Trapezoid

Parallelogram

b) Has at least one pair of consecutive (adjacent) sides that are congruent.

Kite

Rhombus

Square

Isosceles Trapezoid

Parallelogram

c) Diagonals are perpendicular.

Kite

Rhombus

Square

Isosceles Trapezoid

Parallelogram

d) Diagonals bisect one another.

Kite

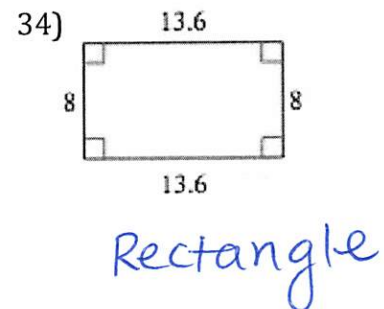
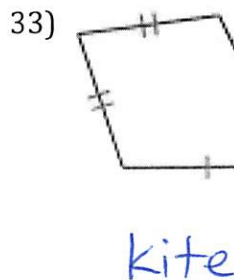
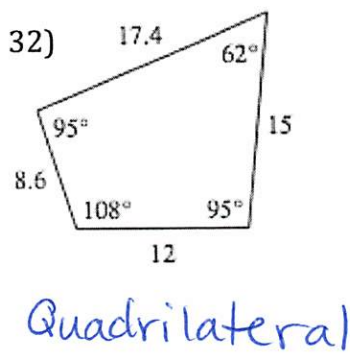
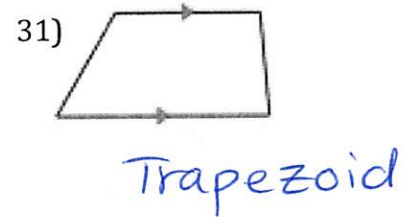
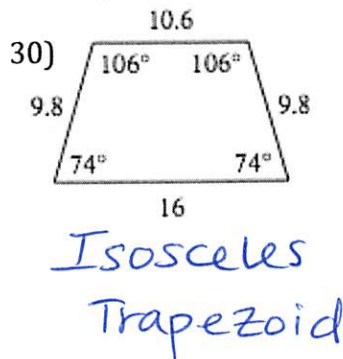
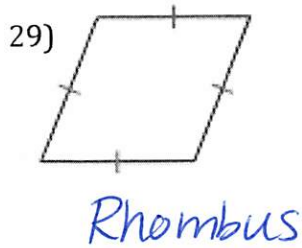
Rhombus

Square

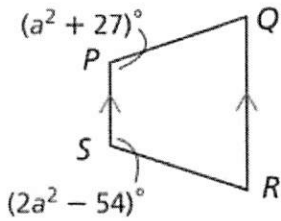
Isosceles Trapezoid

Parallelogram

State the most specific name for each figure.

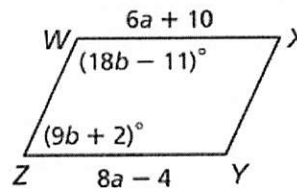


35) Find the value of  $a$  so that PQRS is an isosceles trapezoid.



$$a = 9$$

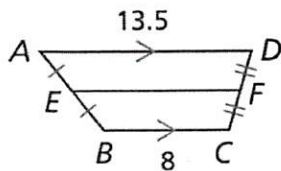
36) Find  $m\angle Z$  and  $ZY$  if WXYZ is a parallelogram.



$$ZY = 52$$

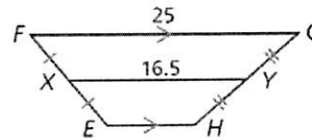
$$m\angle Z = 65^\circ$$

37) Find the length of EF.



$$EF = 10.75$$

38) Find the length of EH.

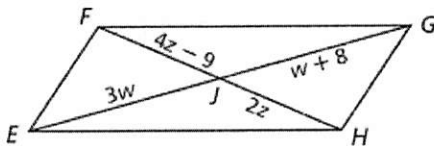


$$EH = 8$$

39) FGHE is a parallelogram.

a) Find FH.

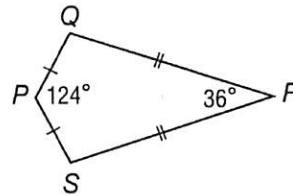
$$18$$



b) Find JG.

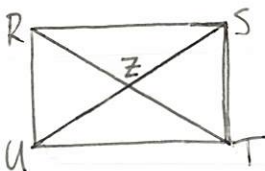
$$12$$

40) PQRS is a kite. Find  $m\angle S$ .



$$m\angle S = 100^\circ$$

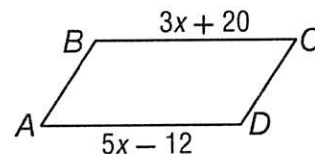
41) Quadrilateral RSTU is a rectangle. If  $US = x + 21$  and  $RT = 3x - 15$ , find  $ZS$ .



$$ZS = 19.5$$

(this one has quite a few steps, think carefully!)

42) Find the values of  $x$  so that ABCD will be a parallelogram.

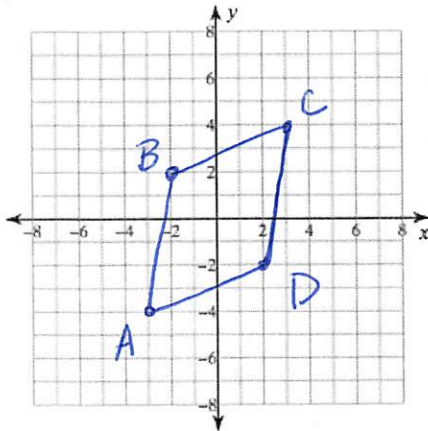


$$x = 16$$

Prove the following using the given formula.

43) Prove whether or not  $A(-3, -4)$ ,  $B(-2, 2)$ ,  $C(3, 4)$  and  $D(2, -2)$  is a rhombus.

**Distance Formula**

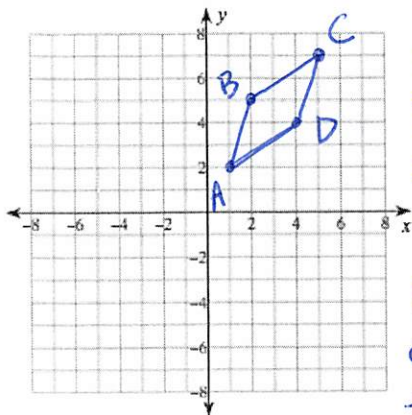


$$AB = \sqrt{37}$$
$$BC = \sqrt{29}$$

A rhombus must have four congruent sides. Since  $AB \neq BC$ , ABCD is not a rhombus.

44) Prove whether or not  $A(1, 2)$ ,  $B(2, 5)$ ,  $C(5, 7)$  and  $D(4, 4)$  is a parallelogram.

**Slope Formula**



$$\text{slope } AB = 3$$
$$\text{slope } BC = \frac{2}{3}$$
$$\text{slope } CD = 3$$
$$\text{slope } AD = \frac{2}{3}$$

Because they have the same slopes,  $AB \parallel CD$  and  $BC \parallel AD$ . ABCD is a parallelogram because two pairs of opposite sides are parallel.