

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

Hour: \_\_\_\_\_

November 9, 2020 – December 22, 2020

# **Accelerated Geometry**

# **Hybrid/Remote Warm-Up Booklet**

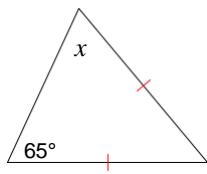


## 4.6 Warm-Up

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

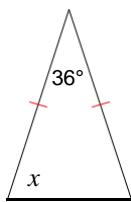
**Find the value of  $x$ .**

1)



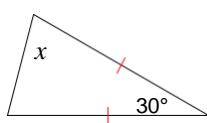
- A)  $57^\circ$   
B)  $70^\circ$   
C)  $76^\circ$   
D)  $65^\circ$

2)



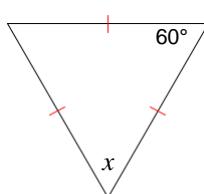
- A)  $72^\circ$   
B)  $66^\circ$   
C)  $67^\circ$   
D)  $70^\circ$

3)



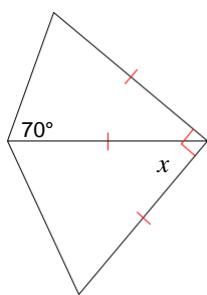
- A)  $50^\circ$   
B)  $67^\circ$   
C)  $79^\circ$   
D)  $75^\circ$

4)



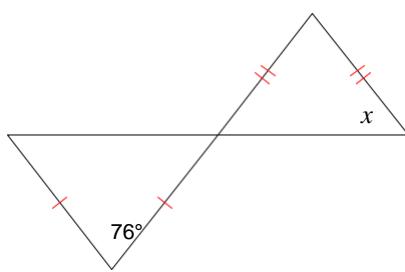
- A)  $74^\circ$   
B)  $53^\circ$   
C)  $39^\circ$   
D)  $60^\circ$

5)



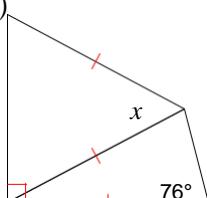
- A)  $54^\circ$   
B)  $50^\circ$   
C)  $36^\circ$   
D)  $68^\circ$

6)



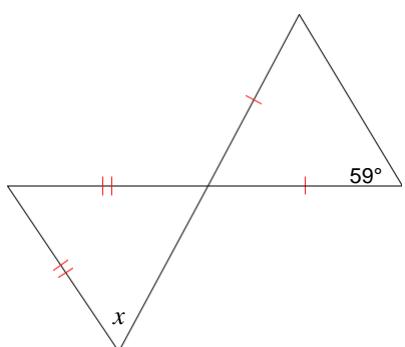
- A)  $67^\circ$   
B)  $60^\circ$   
C)  $52^\circ$   
D)  $37^\circ$

7)



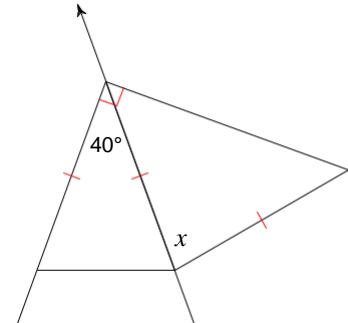
- A)  $60^\circ$   
B)  $52^\circ$   
C)  $42^\circ$   
D)  $56^\circ$

8)



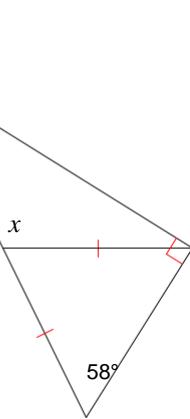
- A)  $65^\circ$   
B)  $79^\circ$   
C)  $76^\circ$   
D)  $62^\circ$

9)

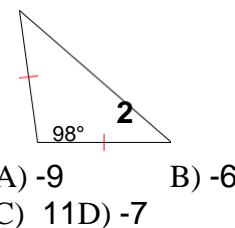


- A)  $80^\circ$   
B)  $87^\circ$   
C)  $95^\circ$   
D)  $93^\circ$

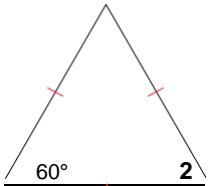
10)



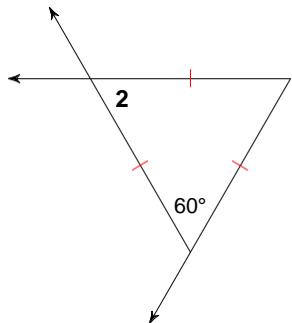
- A)  $156^\circ$   
B)  $154^\circ$   
C)  $122^\circ$   
D)  $116^\circ$

11)  $m\angle 2 = x + 47$ 

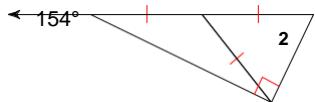
- A) -9  
B) -6  
C) 11  
D) -7

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

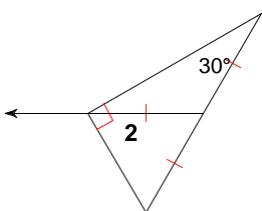
- A) 11  
B) -9  
C) 9  
D) -7

13)  $m\angle 2 = x + 71$ 

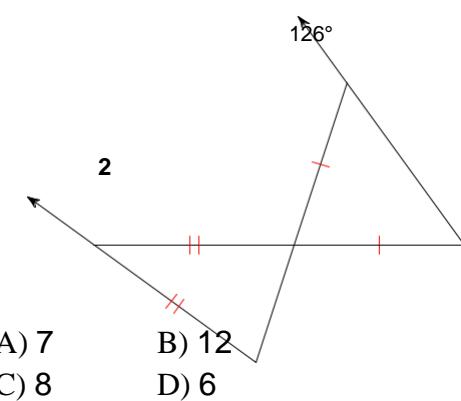
- A) -7  
B) 8  
C) 11  
D) -11

15)  $m\angle 2 = 10x + 4$ 

- A) -7  
B) 6  
C) -9  
D) 8

14)  $m\angle 2 = 7x - 10$ 

- A) 9  
B) 8  
C) 12  
D) 10

16)  $m\angle 2 = -6 + 25x$ 

- A) 7  
B) 12  
C) 8  
D) 6

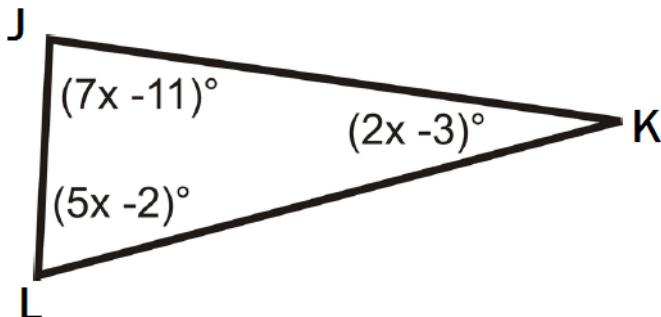
## 5.2 5.4 (Triangle Inequality) Warm-up

1. If two of the sides of a triangle are 15 and 42, what is the range of possible values for the third side?

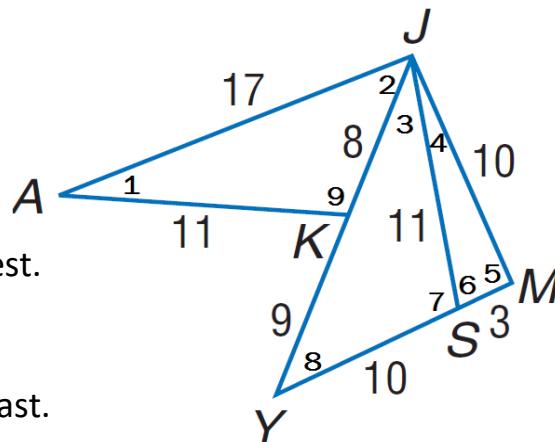
$$\underline{\hspace{2cm}} < X < \underline{\hspace{2cm}}$$

2. Determine whether a triangle can be formed by the given set of side lengths is 8ft, 12ft, 3ft. Explain why or why not.

3. List the sides in order from least to greatest.

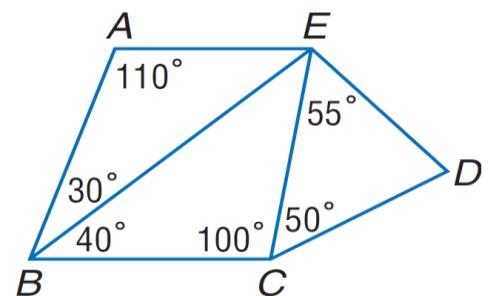


4. For  $\triangle AKJ$  list the angles from least to greatest.



5. For  $\triangle JYM$  list the angles from greatest to least.

6. List the sides of  $\triangle ABE$  in order from greatest to least.



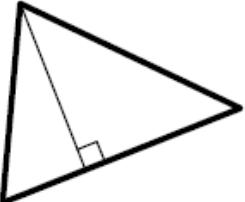
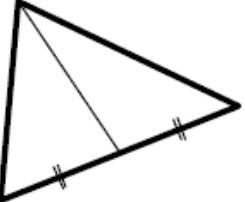
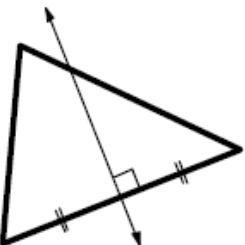
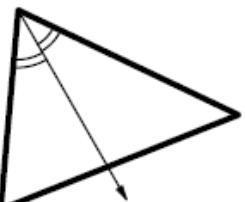
7. What is the greatest side of  $\triangle CDE$ ?

8. List the sides of  $\triangle BCE$  in order from least to greatest.

## 5.1 Special Segments in Triangles Basic Practice

Vocab Practice:

Circle the letter with the name of the segment/line/ray shown.

1.  (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude
2.  (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude
3.  (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude
4.  (a) perpendicular bisector  
(b) angle bisector  
(c) median  
(d) altitude

Name of the correct point of concurrency for each.

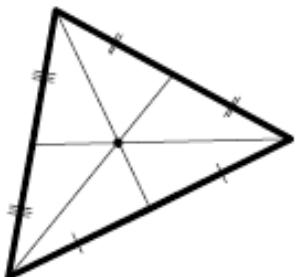
circumcenter      incenter      centroid      orthocenter

5. The three altitudes of a triangle intersect at the \_\_\_\_\_.
6. The three medians of a triangle intersect at the \_\_\_\_\_.
7. The three perpendicular bisectors of a triangle intersect at the \_\_\_\_\_.
8. The three angle bisectors of a triangle intersect at the \_\_\_\_\_.
9. It is equidistant from the three vertices of the triangle. \_\_\_\_\_.
10. It is equidistant from the three sides of the triangle. \_\_\_\_\_.
11. It divides each median into two sections at a 2:1 ratio. \_\_\_\_\_.

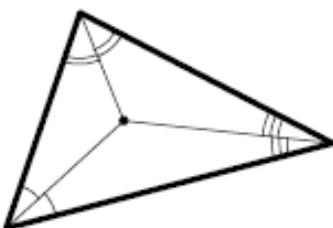
Name the special segments and the points of concurrency.

**Special lines/segments:** Perpendicular bisectors, angle bisectors, medians, altitudes  
**Points of concurrency:** circumcenter, incenter, centroid, orthocenter

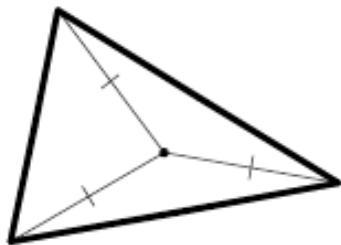
12.



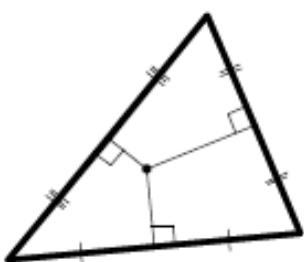
13.



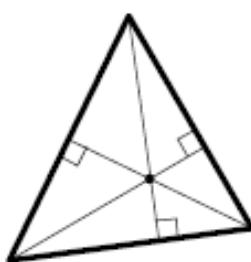
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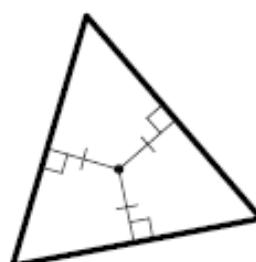
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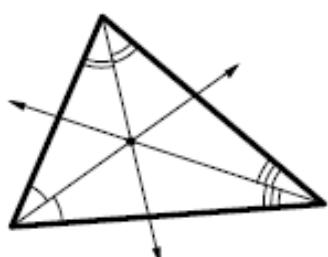
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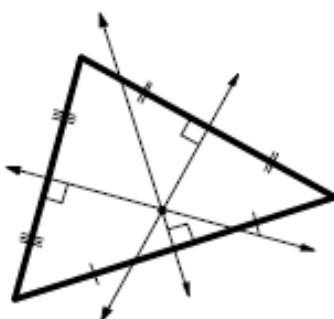
17.



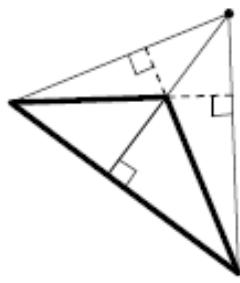
18.



19.



20.



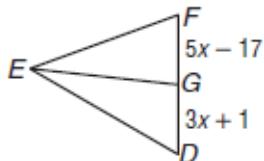
# 5–1 Skills Practice and Practice

(out of work book)

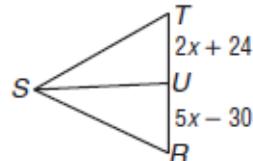
## Bisectors, Medians and Altitudes (OH MY!)

**ALGEBRA** For Exercises 1–4, use the given information to find each value.

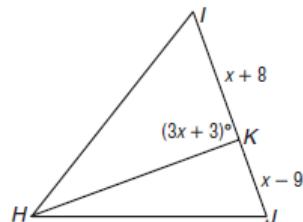
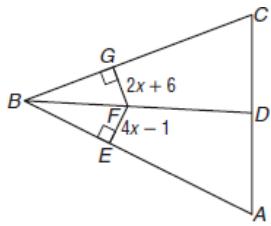
1. Find  $x$  if  $\overline{EG}$  is a median of  $\triangle DEF$ .



2. Find  $x$  and  $RT$  if  $\overline{SU}$  is a median of  $\triangle RST$ .



3. Find  $x$  and  $EF$  if  $\overline{BD}$  is an angle bisector.    4. Find  $x$  and  $IJ$  if  $\overline{HK}$  is an altitude of  $\triangle HIJ$ .



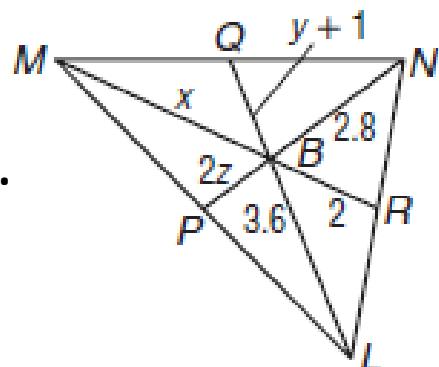
**ALGEBRA** For Exercises 5–7, use the following information.

In  $\triangle LMN$ ,  $P$ ,  $Q$ , and  $R$  are the midpoints of  $\overline{LM}$ ,  $\overline{MN}$ , and  $\overline{LN}$ , respectively.

5. Find  $x$ .

6. Find  $y$ .

7. Find  $z$ .

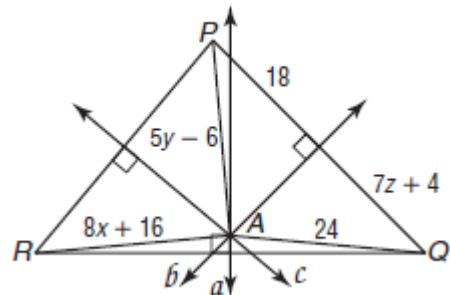


**ALGEBRA** Lines  $a$ ,  $b$ , and  $c$  are perpendicular bisectors of  $\triangle PQR$  and meet at  $A$ .

8. Find  $x$ .

9. Find  $y$ .

10. Find  $z$ .

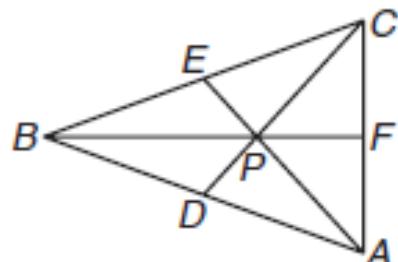


5-1 Practice (out of work book)

Bisectors, Medians and Altitudes (OH MY!)

**ALGEBRA** In  $\triangle ABC$ ,  $\overline{BF}$  is the angle bisector of  $\angle ABC$ ,  $\overline{AE}$ ,  $\overline{BF}$ , and  $\overline{CD}$  are medians, and  $P$  is the centroid.

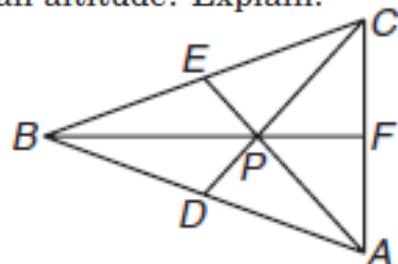
1. Find  $x$  if  $DP = 4x - 3$  and  $CP = 30$ .



2. Find  $y$  if  $AP = y$  and  $EP = 18$ .

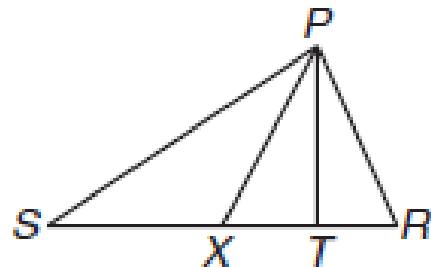
3. Find  $z$  if  $FP = 5z + 10$  and  $BP = 42$ .

4. If  $m\angle ABC = x$  and  $m\angle BAC = m\angle BCA = 2x - 10$ , is  $\overline{BF}$  an altitude? Explain.



**ALGEBRA** In  $\triangle PRS$ ,  $\overline{PT}$  is an altitude and  $\overline{PX}$  is a median.

5. Find  $RS$  if  $RX = x + 7$  and  $SX = 3x - 11$ .

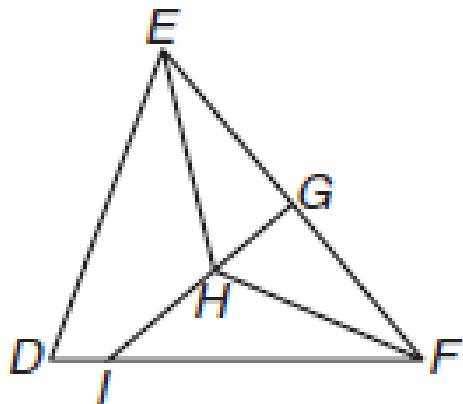


For #5-6

6. Find  $RT$  if  $RT = x - 6$  and  $m\angle PTR = 8x - 6$ .

**ALGEBRA** In  $\triangle DEF$ ,  $\overline{GI}$  is a perpendicular bisector.

7. Find  $x$  if  $EH = 16$  and  $FH = 6x - 5$ .



For #s 7-9

8. Find  $y$  if  $EG = 3.2y - 1$  and  $FG = 2y + 5$ .

9. Find  $z$  if  $m\angle EGH = 12z$ .

## 5.1 Special Segments Advanced Warm-Up

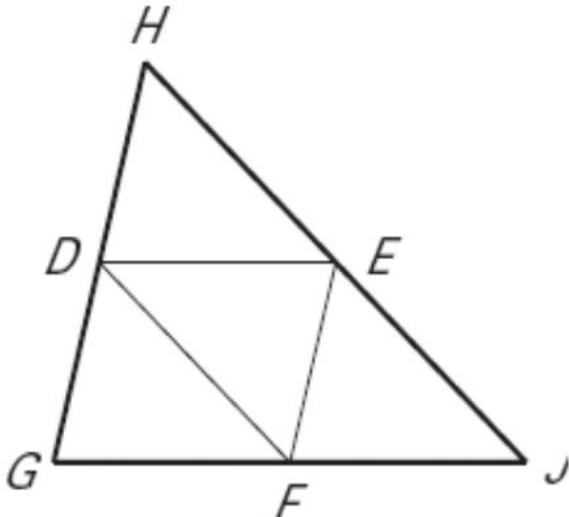
Use the diagram for the next 4 problems. D, E, and F are midpoints.

1. If  $DE = 4x + 5$  and  $GJ = 3x + 25$ , find DE.

2. If  $EF = 2x + 7$  and  $GH = 5x - 1$ , find EF.

3. If  $HJ = 8x - 2$  and  $DF = 2x + 11$ , find HE.

4. If  $HD = 3x + 29$  and  $DG = 14x + 7$ , find EF.



**USING MEDIANAS OF A TRIANGLE** In Exercises 8–12, use the figure below and the given information.

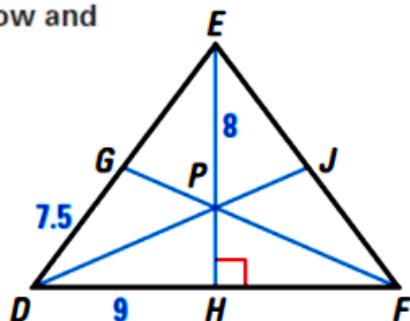
P is the centroid of  $\triangle DEF$ ,  $\overline{EH} \perp \overline{DF}$ ,  
 $DH = 9$ ,  $DG = 7.5$ ,  $EP = 8$ , and  $DE = FE$ .

5. Find the length of  $\overline{FH}$ .

6. Find the length of  $\overline{EH}$ .

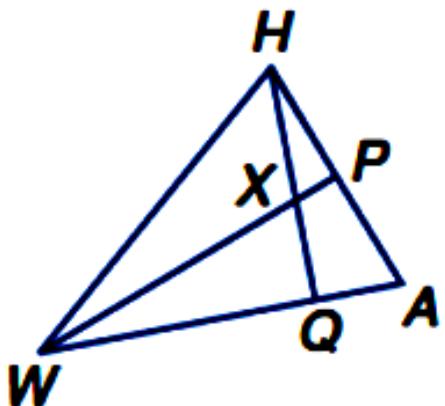
7. Find the length of  $\overline{PH}$ .

8. Find the perimeter of  $\triangle DEF$ .



Use the triangle WHA for #9-10.

9. If  $\overline{WP}$  is a median and an angle bisector,  $AP = 3y + 11$ ,  $PH = 7y - 5$ ,  $m\angle HWP = x + 12$ ,  $m\angle PAW = 3x - 2$ , and  $m\angle HWA = 4x - 16$ , find  $x$  and  $y$ . Is  $\overline{WP}$  also an altitude? Explain.



10. If  $\overline{WP}$  is a perpendicular bisector,  $m\angle WHA = 8q + 17$ ,  $m\angle HWP = 10 + q$ ,  $AP = 6r + 4$ , and  $PH = 22 + 3r$ , find  $r$ ,  $q$ , and  $m\angle HWP$ .

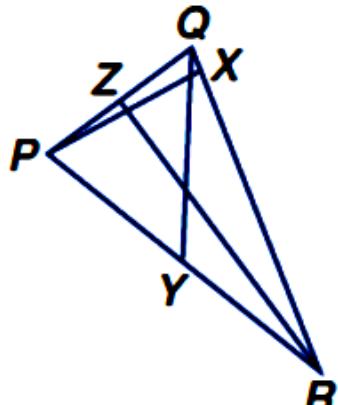
Use The following with the figure to the right.

In  $\triangle PQR$ ,  $ZQ = 3a - 11$ ,  $ZP = a + 5$ ,  $PY = 2c - 1$ ,  $YR = 4c - 11$ ,  $m\angle PRZ = 4b - 17$ ,  $m\angle ZRQ = 3b - 4$ ,  $m\angle QYR = 7b + 6$ , and  $m\angle PXR = 2a + 10$ .

11.  $\overline{PX}$  is an altitude of  $\triangle PQR$ . Find  $a$ .
12. If  $\overline{RZ}$  is an angle bisector, find  $m\angle PRZ$ .

13. Find  $PR$  if  $\overline{QY}$  is a median.

14. If  $\overleftrightarrow{QY}$  is a perpendicular bisector of  $\overline{PR}$ , find  $b$ .



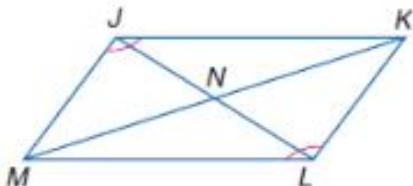
Mixed Review:

**ACC GEOMETRY**

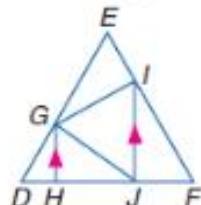
Pg. 206 #13-18, 23-27, 29-34

**4.1, 4.2 & 5.4 EXTRA PRACTICE**

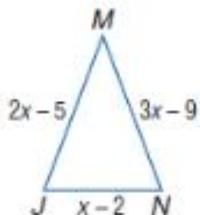
- 13.** Identify the obtuse triangles if  $\angle MJK \cong \angle KLM$ ,  $m\angle MJK = 126$ , and  $m\angle JNM = 52$ .



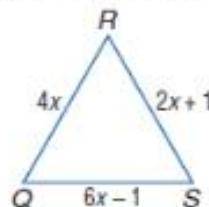
- 14.** Identify the right triangles if  $\overline{IJ} \parallel \overline{GH}$ ,  $\overline{GH} \perp \overline{DF}$ , and  $\overline{GI} \perp \overline{EF}$ .



- 15. ALGEBRA** Find  $x$ ,  $JM$ ,  $MN$ , and  $JN$  if  $\triangle JMN$  is an isosceles triangle with  $\overline{JM} \cong \overline{MN}$ .



- 16. ALGEBRA** Find  $x$ ,  $QR$ ,  $RS$ , and  $QS$  if  $\triangle QRS$  is an equilateral triangle.



**COORDINATE GEOMETRY** Find the measures of the sides of  $\triangle ABC$  and classify each triangle by its sides.

**17.**  $A(5, 4)$ ,  $B(3, -1)$ ,  $C(7, -1)$

**18.**  $A(-4, 1)$ ,  $B(5, 6)$ ,  $C(-3, -7)$

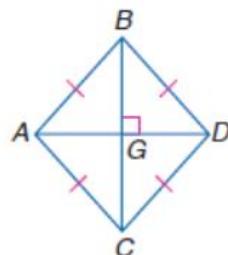
Identify the indicated triangles in the figure if  $\overline{AB} \cong \overline{BD} \cong \overline{DC} \cong \overline{CA}$  and  $\overline{BC} \perp \overline{AD}$ .

**23.** right

**24.** obtuse

**25.** scalene

**26.** isosceles



- 27. ASTRONOMY** On May 5, 2002, Venus, Saturn, and Mars were aligned in a triangular formation. Use a protractor or ruler to classify the triangle formed by sides and angles.



**ALGEBRA** Find  $x$  and the measure of each side of the triangle.

29.  $\triangle GHJ$  is isosceles, with  $\overline{HG} \cong \overline{GJ}$ ,  $GH = x + 7$ ,  $GJ = 3x - 5$ , and  $HJ = x - 1$ .

30.  $\triangle MPN$  is equilateral with  $MN = 3x - 6$ ,  $MP = x + 4$ , and  $NP = 2x - 1$ .

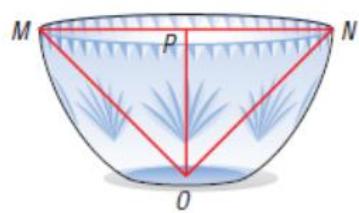
31.  $\triangle QRS$  is equilateral.  $QR$  is two less than two times a number,  $RS$  is six more than the number, and  $QS$  is ten less than three times the number.

$\triangle JKL$  is isosceles with  $\overline{KJ} \cong \overline{LJ}$ .  $JL$  is five less than two times a number.  $JK$  is three more than the number.  $KL$  is one less than the number. Find the measure of each side.

33. **ROAD TRIP** The total distance from Charlotte to Raleigh to Winston-Salem and back to Charlotte is about 292 miles. The distance from Charlotte to Winston-Salem is 22 miles less than the distance from Raleigh to Winston-Salem. The distance from Charlotte to Raleigh is 60 miles greater than the distance from Winston-Salem to Charlotte. Classify the triangle that connects Charlotte, Raleigh, and Winston-Salem.



34. **CRYSTAL** The top of the crystal bowl pictured at the right is circular. The diameter at the top of the bowl is  $\overline{MN}$ .  $P$  is the midpoint of  $\overline{MN}$ , and  $\overline{OP} \perp \overline{MN}$ . If  $MN = 24$  and  $OP = 12$ , determine whether  $\triangle MPO$  and  $\triangle NPO$  are equilateral.



Pg 229 #7-1 Determine whether the given measures can be the lengths of the sides of a triangle. Write *yes* or *no*. Explain.

7. 1, 2, 3

8. 2, 6, 11

9. 8, 8, 15

10. 13, 16, 29

11. 18, 32, 21

12. 9, 21, 20

Find the range for the measure of the third side of a triangle given the measures of two sides.

13. 5 and 11

14. 7 and 9

15. 10 and 15

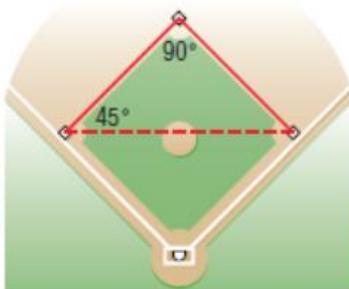
16. 12 and 18

17. 21 and 47

18. 32 and 61

Pg 284 #10

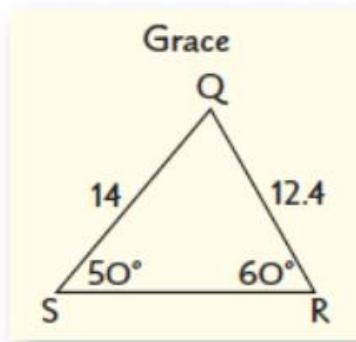
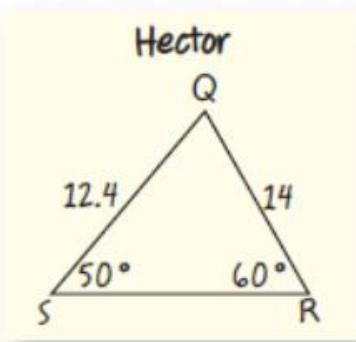
10. **BASEBALL** During a baseball game, the batter hits the ball to the third baseman and begins to run toward first base. At the same time, the runner on first base runs toward second base. If the third baseman wants to throw the ball to the nearest base, to which base should he throw? Explain.



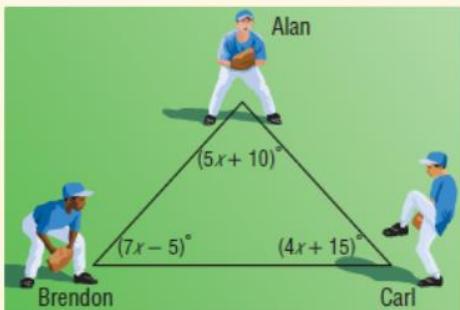
**REASONING** Is the following statement *always*, *sometimes*, or *never* true? Justify your answer.

*In  $\triangle JKL$  with right angle  $J$ , if  $m\angle J$  is twice  $m\angle K$ , then the side opposite  $\angle J$  is twice the length of the side opposite  $\angle K$ .*

**FIND THE ERROR** Hector and Grace each labeled  $\triangle QRS$ . Who is correct? Explain.



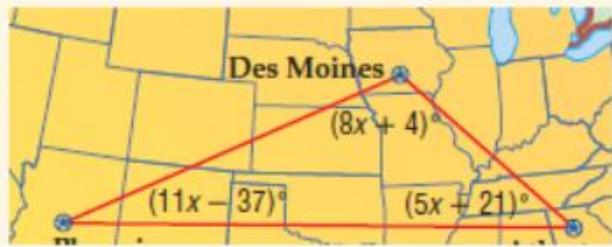
**BASEBALL** Alan, Brendon, and Carl were standing in the triangular shape shown below, throwing a baseball to warm up for a game. Between which two players was the throw the longest? (Lesson 5-2)



Pg 294

In  $\triangle QRS$ ,  $m\angle Q = x + 15$ ,  $m\angle R = 2x + 10$ , and  $m\angle S = 4x + 15$ . (Lesson 5-2)

7. Determine the measure of each angle.
8. List the sides in order from shortest to longest.
  
9. **TRAVEL** A plane travels from Des Moines to Phoenix, on to Atlanta, and then completes the trip directly back to Des Moines, as shown in the diagram. Write the lengths of the legs of the trip in order from greatest to least. (Lesson 5-2)

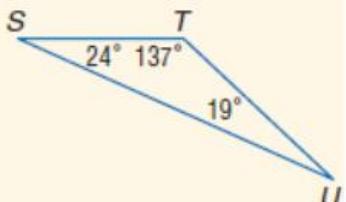


Phoenix

Atlanta

**6. MULTIPLE CHOICE**

Which list gives the sides of  $\triangle STU$  in order from longest to shortest? (Lesson 5-2)

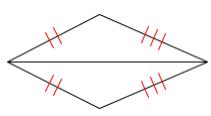


- A  $\overline{TU}, \overline{ST}, \overline{SU}$       C  $\overline{SU}, \overline{ST}, \overline{TU}$   
 B  $\overline{SU}, \overline{TU}, \overline{ST}$       D  $\overline{ST}, \overline{TU}, \overline{SU}$

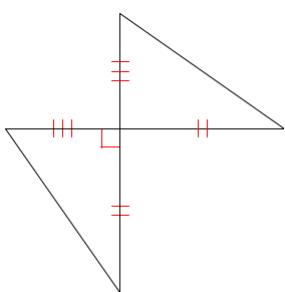
Then complete evens on 5-1 Skills practice from earlier in the booklet.

### Congruent Triangle Practice

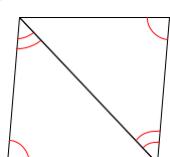
1)



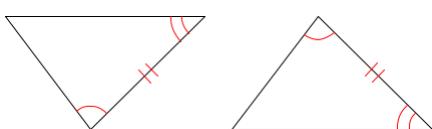
2)



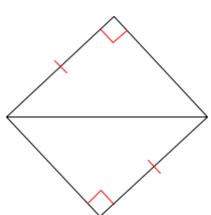
3)



4)



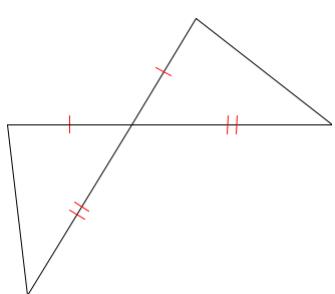
5)



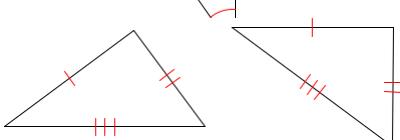
6)



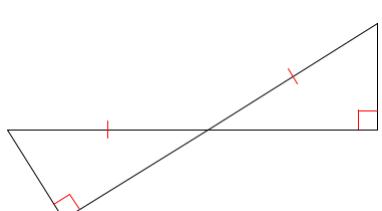
7)



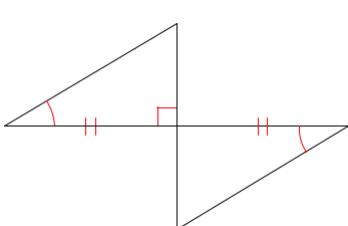
8)



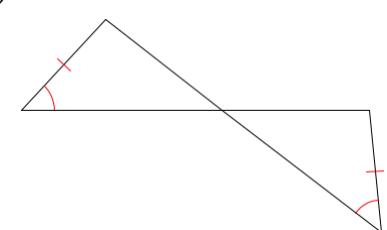
9)



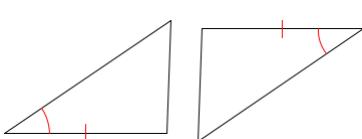
10)



11)



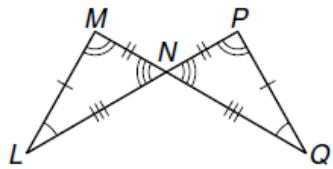
12)



## Congruent Triangle Warm-Up

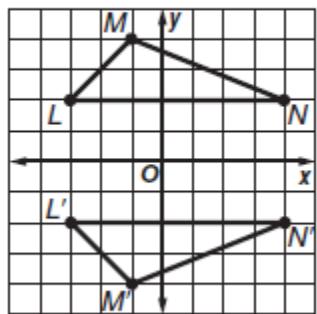
### Congruent Triangles In-Class Practice

- Identify the congruent triangles in the given figure



- Verify that the following transformation preserves congruence.

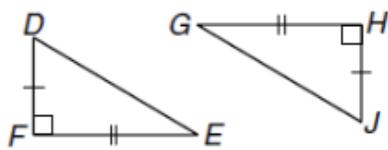
$$\triangle LMN \cong \triangle L'M'N'$$



### Congruent Triangle Shortcuts Warm-up

Use the given information to identify the congruent triangles. Describe what congruence shortcut you used and what angles or sides you know are congruent.

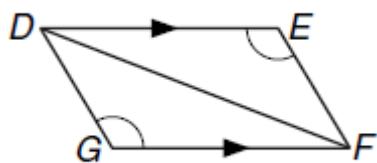
3.



a. Short cut congruence used \_\_\_\_\_

b. Name the 3 congruent corresponding parts:

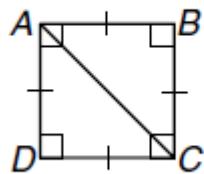
4.



a. Short cut congruence used \_\_\_\_\_

b. Name the 3 congruent corresponding parts:

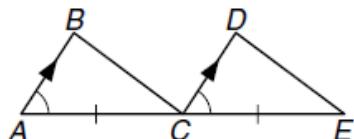
5.



a. Short cut congruence used \_\_\_\_\_

b. Name the 3 congruent corresponding parts:

6.



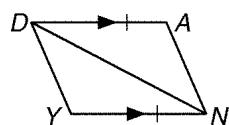
a. Short cut congruence used \_\_\_\_\_

b. Name the 3 congruent corresponding parts

## Mixed Review of Congruent Triangles and Coordinate Geometry (4.3, 4.4, 4.5, 4.7)

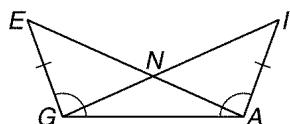
**Directions:** Answer the questions below. Use the figure to help answer the questions.

1. Which shortcut proves the triangles congruent?



\_\_\_\_\_ (Mark & list the corresponding parts used)

2. Which shortcut proves the triangles congruent?

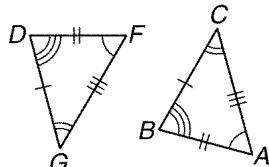


\_\_\_\_\_ (Mark & list the corresponding parts used)

3. If  $\triangle TGS \cong \triangle KEL$ , which angle in  $\triangle KEL$  corresponds to  $\angle T$ ? \_\_\_\_\_

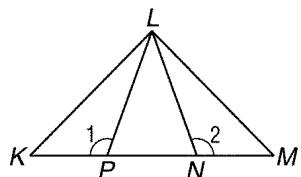
4. Identify the congruent triangles and name their corresponding congruent angles.

Congruent Triangles: \_\_\_\_\_

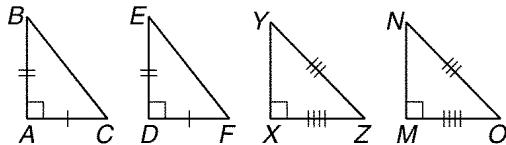


Congruent Angles: \_\_\_\_\_

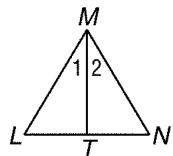
5.  $\triangle KLM$  is an isosceles triangle and  $\angle 1 \cong \angle 2$ . Name the shortcut that could be used to prove  $\triangle LKP \cong \triangle LMN$ . Choose from SSS, SAS, ASA, and AAS. (Be sure to mark & list the corresponding parts used for the shortcut)



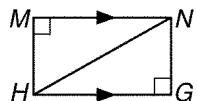
6. Without finding any other angles or sides congruent, circle the pair of triangles can be proved to be congruent by the HL Theorem.



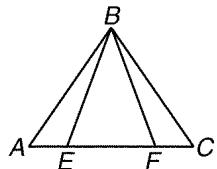
7. If  $\triangle LMN$  is isosceles and  $T$  is the midpoint of  $LN$ , which shortcut can be used to prove  $\triangle MLT \cong \triangle MNT$ ? (Be sure to mark & list the corresponding parts used for the shortcut)



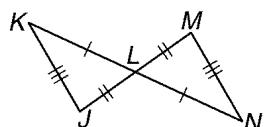
8. Which triangles are congruent in the figure below?  
 (Write out the congruence statement) \_\_\_\_\_



9. If  $\triangle ABC$  is isosceles and  $AE \cong FC$ , which shortcut can be used to prove  $\triangle AEB \cong \triangle CFB$ ? (Be sure to mark & list the corresponding parts used for the shortcut)

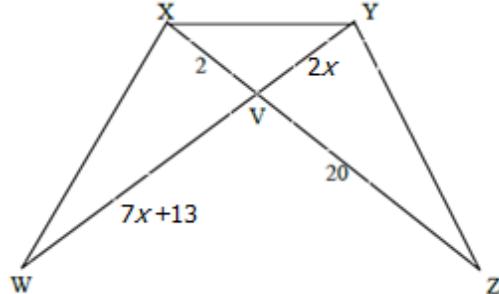


10. Which triangles are congruent in the figure?  
 (Write out the congruent statement) \_\_\_\_\_

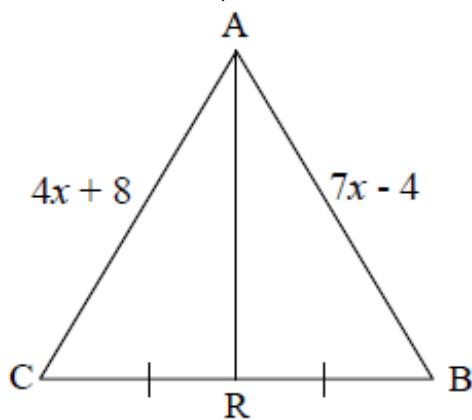


11. If  $\triangle DJL \cong \triangle EGS$ , which segment in  $\triangle EGS$  corresponds to  $DL$ ? \_\_\_\_\_

12. If  $\triangle WXY \cong \triangle ZYX$ , find  $x$ .



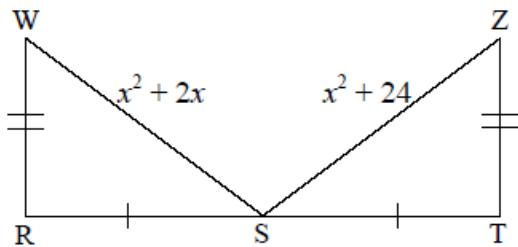
13. If  $\triangle ACR \cong \triangle ABR$ , find  $x$ .



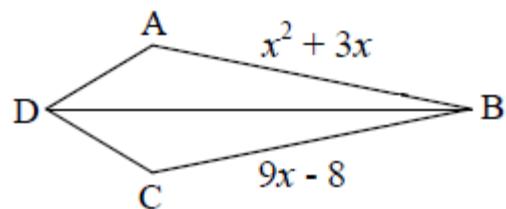
$$x = \underline{\hspace{2cm}}$$

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

14. If  $\triangle WRS \cong \triangle ZTS$ , find the value(s) of  $x$ .



15. If  $\triangle ADB \cong \triangle CDB$ , find the value(s) of  $x$ .

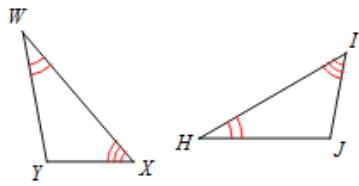


$$X = \underline{\hspace{2cm}}$$

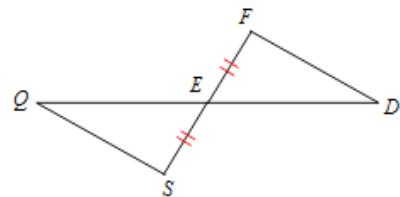
$$X = \underline{\hspace{2cm}}$$

**State what additional information is required in order to know that the triangles are congruent for the reason given.**

- 16) AAS

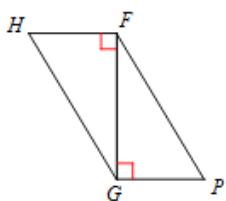


- 17) AAS



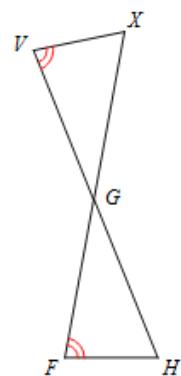
- 18) HL

$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$



- 19) ASA

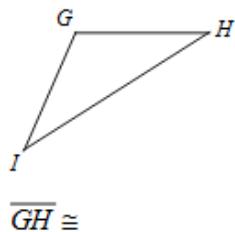
$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$



$$\underline{\hspace{2cm}} \cong \underline{\hspace{2cm}}$$

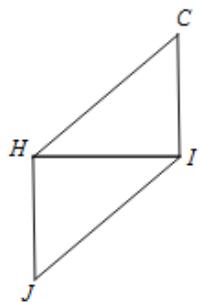
Complete each congruence statement by naming the corresponding angle or side.

20)  $\triangle GHI \cong \triangle MLK$



$$\overline{GH} \cong \underline{\hspace{2cm}}$$

21)  $\triangle HIJ \cong \triangle IHC$



$$\angle JHI \cong \underline{\hspace{2cm}}$$

22)  $\triangle IJK \cong \triangle UVK$

$$\overline{KI} \cong \underline{\hspace{2cm}}$$

23)  $\triangle RST \cong \triangle SRG$

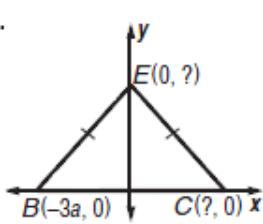
$$\angle TRS \cong \underline{\hspace{2cm}}$$

## Mixed Practice Continued: Practice Triangle Coordinate Geometry

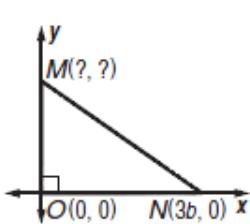
Find the missing coordinates of each triangle

Find the missing coordinates of each triangle.

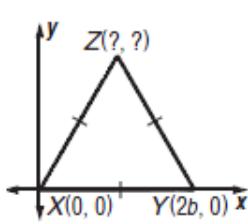
1.



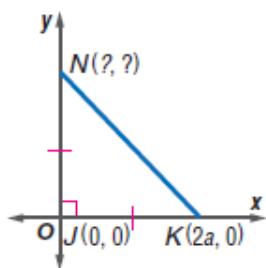
2.



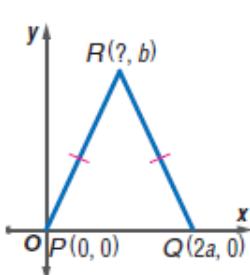
3.



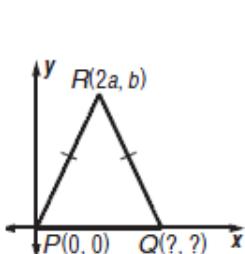
4.



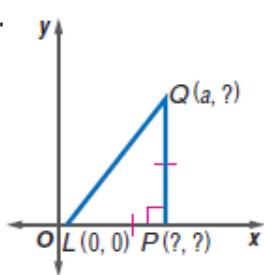
5.



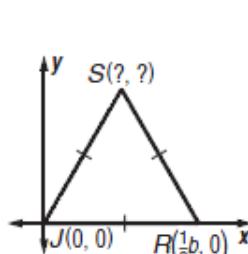
6.



7.



8.



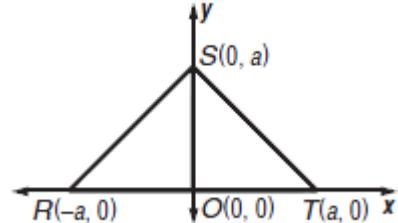
Use the triangle to the right to answer the following questions.

9. a). Find the slope of SR and ST.

b). What does this tell you about triangle RST?

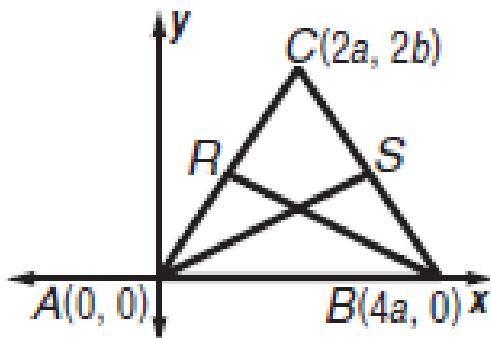
c). Find the length of SR and ST.

d). What does this tell you about triangle RST?



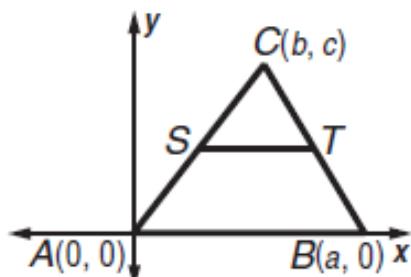
10. Given: isosceles  $\triangle ABC$  with  $\overline{AC} \cong \overline{BC}$   
R and S are midpoints of legs  $\overline{AC}$  and  $\overline{BC}$ .

Find points S and R.



- Given:  $\triangle ABC$   
S is the midpoint of  $\overline{AC}$ .  
T is the midpoint of  $\overline{BC}$ .

11.



Find S and T.

12. Katrina lives 6 miles east and 4 miles north of her high school. The mall is 2 miles west and 3 miles north of the school. Write a coordinate proof to prove that Katrina's high school, home and the mall form a right triangle.

## 6.1 Practice

1. What is the sum of the interior angle measures of a 32-gon? What is the sum of the exterior angle measures?

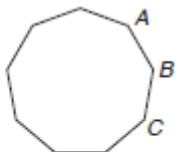
If the polygon shown is regular, what is  $m\angle ABC$ ?

F  $140^\circ$

G  $144^\circ$

H  $162^\circ$

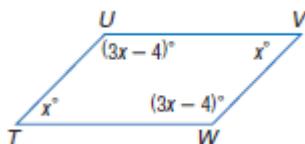
J  $180^\circ$



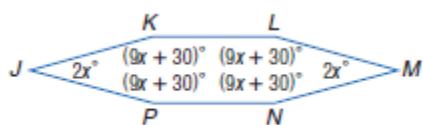
2.

For 3-4, Find x and the measure of each angle.

3.



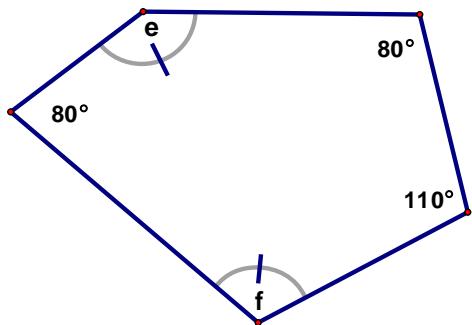
4.



5 . Find x.

decagon in which the measures of the interior angles are  $x + 5$ ,  $x + 10$ ,  $x + 20$ ,  $x + 30$ ,  $x + 35$ ,  $x + 40$ ,  $x + 60$ ,  $x + 70$ ,  $x + 80$ , and  $x + 90$

6. Find the measures of  $\angle e$  and  $\angle f$ . Show all your work.

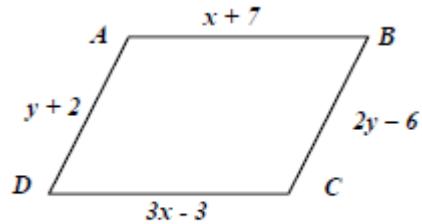


7. What is the sum of the measures of the exterior angles of a nonagon?
8. What is the measure of an exterior angle of an equiangular hexagon?
9. How many sides does a regular polygon have if each exterior angle measures  $36^\circ$ ?
10. How many sides does a polygon have if the sum of its interior angle measure is  $4140^\circ$ ?
11. If a regular polygon has 24 sides, what is the measure of each interior and exterior angle?
12. What is the measure of an individual angle of a regular 25-gon?
13. What is the measure of an individual interior angle of a regular dodecagon?
14. The measure of an interior angle of a regular polygon is  $140^\circ$ . Find the number of sides the regular polygon has.
15. What is the sum of the measures of the exterior angles of a dodecagon?
16. What is the measure of an exterior angle of an equiangular pentagon?
17. How many sides does a regular polygon have if each exterior angle measures  $22.5^\circ$ ?
18. The measure of an interior angle of a regular polygon is  $140^\circ$ . Find the number of sides the regular polygon has.
19. The measure of an interior angle of a regular polygon is  $108^\circ$ . Find the number of sides the regular polygon has.
20. How many sides does a regular polygon have if each exterior angle measures  $14.4^\circ$ ?

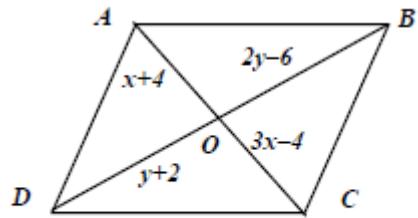
# Parallelograms Extra Practice

1. List all properties of parallelograms:

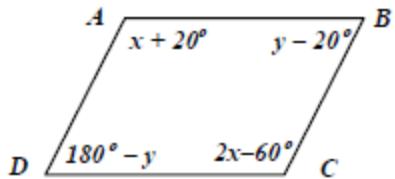
2. ABCD is a parallelogram. Find x, y and the perimeter. Show your geometry and justifications for all steps.



3. ABCD is a parallelogram. Find x, y, BD and AC. Show your geometry and justifications for all steps.

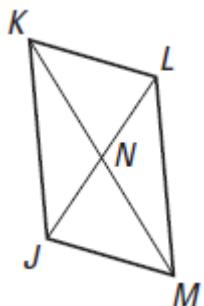


4. ABCD is a parallelogram. Find x, y and  $\angle C$ . Show your geometry and justifications for all steps.



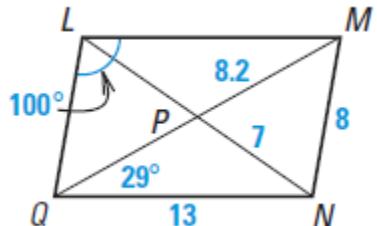
5. Complete the statement and justify your reasoning.

- a. JK = \_\_\_\_\_ because \_\_\_\_\_
  - b. MN = \_\_\_\_\_ because \_\_\_\_\_
  - c. <MLK= \_\_\_\_\_ because \_\_\_\_\_
  - d. <JKL= \_\_\_\_\_ because \_\_\_\_\_
  - e. JN= \_\_\_\_\_ because \_\_\_\_\_
  - f. KL= \_\_\_\_\_ because \_\_\_\_\_
  - g. <MNL= \_\_\_\_\_ because \_\_\_\_\_
  - h. <MKL = \_\_\_\_\_ because \_\_\_\_\_



6. LMNQ is a parallelogram. Find the measures and explain your reasoning.

- a. LM= \_\_\_\_\_ b. LP= \_\_\_\_\_  
because: because:



- c.  $LQ =$  \_\_\_\_\_  
because:

d.  $QP =$  \_\_\_\_\_  
because:

e.  $\angle LMN =$  \_\_\_\_\_  
because:

f.  $\angle NQL =$  \_\_\_\_\_  
because:

g.  $\angle MNQ =$  \_\_\_\_\_  
because:

h.  $\angle LMQ =$  \_\_\_\_\_  
because:

## 6.2 PARALLELOGRAM WARM-UP

Ex1: ABCD is a parallelogram. Given  $m\angle ABD = 65^\circ$ ,  $m\angle CBD = 45^\circ$ , AE = 5, BC = 8. Find the measure of the following:

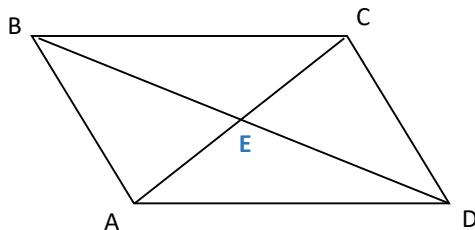
$$AD = \underline{\hspace{2cm}}$$

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

$$m\angle ADC = \underline{\hspace{2cm}}$$

$$m\angle BCD = \underline{\hspace{2cm}}$$

$$m\angle BDA = \underline{\hspace{2cm}}$$



Ex2: **Find the indicated measure in  $\square ABCD$ .**

**12.**  $m\angle AEB$

**13.**  $m\angle BAE$

**14.**  $m\angle AED$

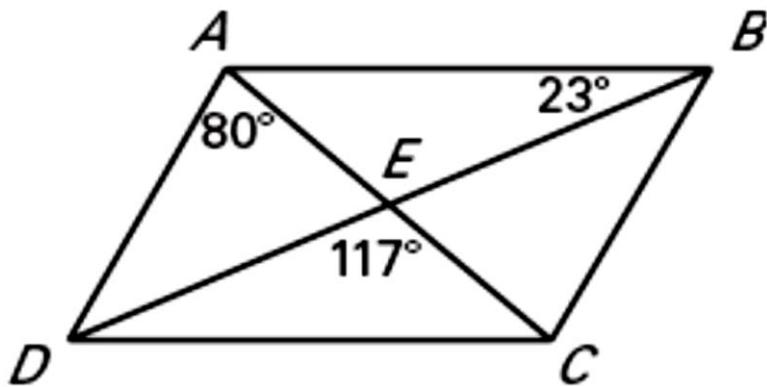
**15.**  $m\angle ECB$

**16.**  $m\angle BAD$

**17.**  $m\angle DCE$

**18.**  $m\angle ADC$

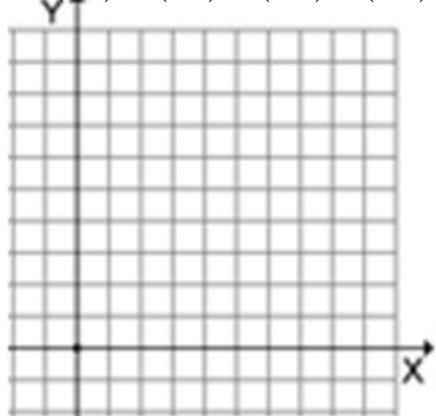
**19.**  $m\angle DCB$



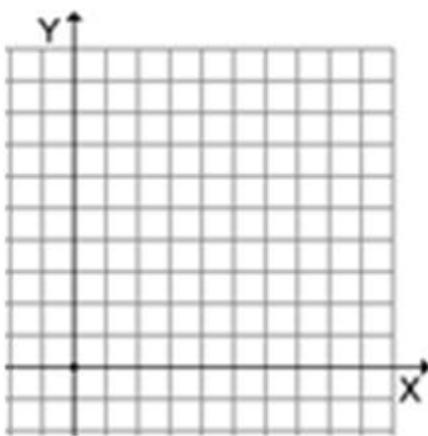
## **6.3 Warm-Up Tests for Parallelograms**

1: Points  $P$ ,  $Q$ ,  $R$ , and  $S$  are the vertices of a quadrilateral. Determine if the quadrilateral is a parallelogram. Show all work.

a)  $P(1,0), Q(1,2), R(6,5), S(3,0)$



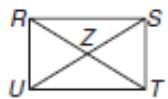
b)  $P(2,1), Q(6,1), R(5,8), S(3,8)$



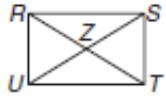
## 6.4 Rectangles Practice

**ALGEBRA**  $RSTU$  is a rectangle.

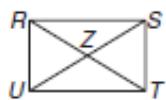
1. If  $UZ = x + 21$  and  $ZS = 3x - 15$ , find  $US$ .



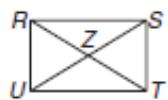
2. If  $RZ = 3x + 8$  and  $ZS = 6x - 28$ , find  $UZ$ .



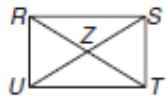
3. If  $RT = 5x + 8$  and  $RZ = 4x + 1$ , find  $ZT$ .



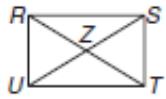
4. If  $m\angle SUT = 3x + 6$  and  $m\angle RUS = 5x - 4$ , find  $m\angle SUT$ .



5. If  $m\angle SRT = x^2 + 9$  and  $m\angle UTR = 2x + 44$ , find  $x$ .



6. If  $m\angle RSU = x^2 - 1$  and  $m\angle TUS = 3x + 9$ , find  $m\angle RSU$ .



$GHJK$  is a rectangle. Find each measure if  $m\angle 1 = 37$ .

7.  $m\angle 2$

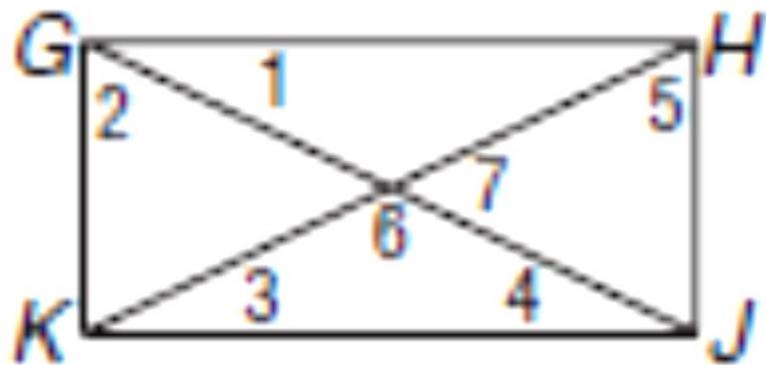
8.  $m\angle 3$

9.  $m\angle 4$

10.  $m\angle 5$

11.  $m\angle 6$

12.  $m\angle 7$

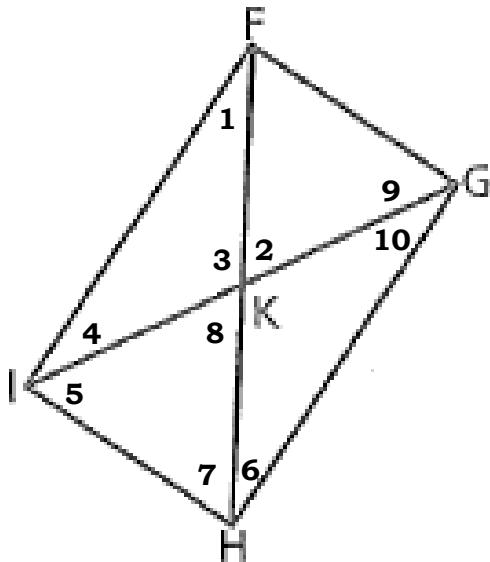


## 6.4 RECTANGLE WARM-UP

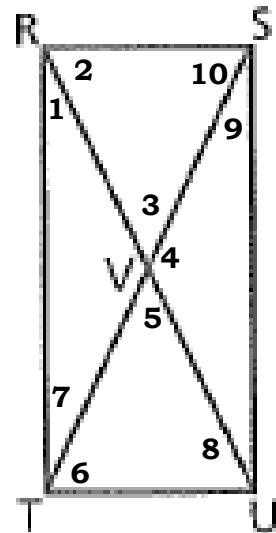
Properties of Rectangles – a parallelogram with four right angles.

- Opposite sides of a parallelogram are congruent
- Opposite angles of a parallelogram are congruent
- Consecutive angles of a parallelogram are supplementary
- The sum of the angles of a parallelogram are  $180(4-2) = 180 \cdot 2 = 360^\circ$
- The diagonals of a parallelogram bisect each other
- The diagonals are congruent

1. If  $m\angle HFG = 74^\circ$ , fill in all of the other angle measures, if FGHI is a rectangle.



2. If  $m\angle RTV = 150^\circ$ , fill in all of the other angle measure if RSTU is a rectangle .



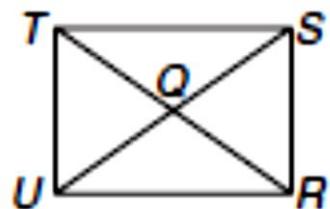
3. Use rectangle RSTU and state the property you used.

a.) If  $TR = 3x + 8$  and  $US = 6x - 28$ . Find  $x$ ,  $US$  and  $SQ$ .

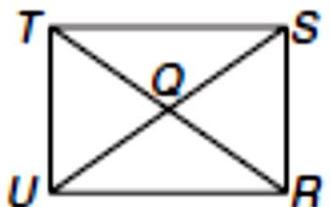
$$x = \underline{\hspace{2cm}}$$

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

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



b.) If  $m\angle SUR = 3x + 6$  and  $m\angle SUT = 5x - 4$ . Find  $x$  and  $m\angle SUT$ .



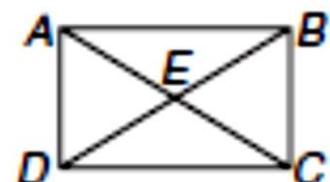
4. Use rectangle ABCD and state the property you used.

a.) If  $EB = 5x - 8$  and  $DE = 4x - 1$ . Find  $x$ ,  $DE$  and  $BD$ .

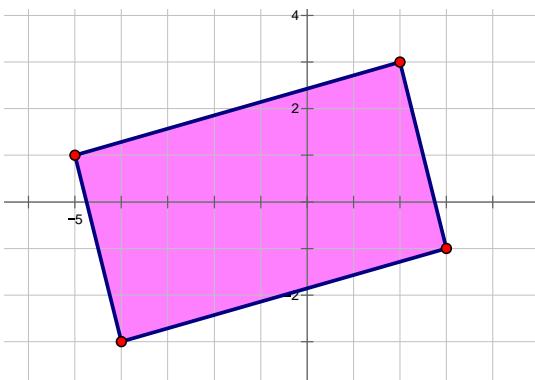
$$x = \underline{\hspace{2cm}}$$

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

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



5. Determine whether the figure with vertices F(-4,-3), G(3,-1), H(2,3) and J(-5,1) is a rectangle.

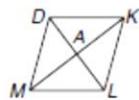


## 6.5 Rhombi/Squares Practice

Use rhombus  $DKLM$  with  $AM = 4x$ ,  $AK = 5x - 3$ , and  $DL = 10$ .

1. Find  $x$ .

2. Find  $AL$ .



3. Find  $m\angle KAL$ .

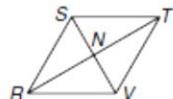
4. Find  $DM$ .

$$\angle STN = 30 \text{ and } \angle RVT = 120$$

Use rhombus  $RSTV$  with  $RS = 5y + 2$ ,  $ST = 3y + 6$ , and  $NV = 6$ .

5. Find  $y$ .

6. Find  $TV$ .



7. Find  $m\angle NTV$ .

8. Find  $m\angle SVT$ .

9. Find  $m\angle RST$ .

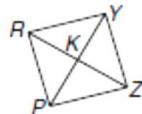
10. Find  $m\angle SRV$ .

## Rhombi/Squares Continued

Use rhombus  $PRYZ$  with  $RK = 4y + 1$ ,  $ZK = 7y - 14$ ,  $PK = 3x - 1$ , and  $YK = 2x + 6$ .

1. Find  $PY$ .

2. Find  $RZ$ .



3. Find  $RY$ .

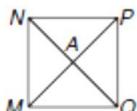
4. Find  $m\angle YKZ$ .

$$NQ = 6$$

Use rhombus  $MNPQ$  with  $PQ = 3\sqrt{2}$ ,  $PA = 4x - 1$ , and  $AM = 9x - 6$ .

5. Find  $AQ$ .

6. Find  $m\angle APQ$ .



7. Find  $m\angle MNP$ .

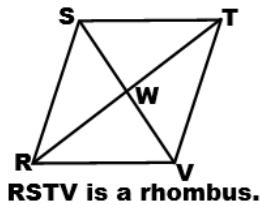
8. Find  $PM$ .

## 6.5 Rhombi and Square Warm-Up

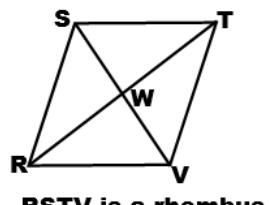
Rhombi

**You must state the property you used for EACH answer!**

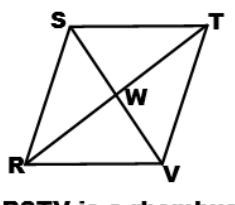
1. If  $m\angle RST = 67^\circ$ , find  $m\angle RSW$ .



2. Find  $m\angle SVT$  if  $m\angle STV = 135^\circ$ .



3. If  $m\angle SWT = (2x + 8)^\circ$ , find 'x'.



4. If you are given the following information of RSTV, can it be classified as a rhombus? Why or why not?

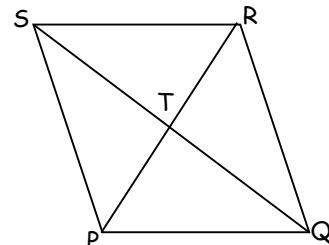
$$ST = 5\sqrt{2} \text{ units} \quad VT = 5\sqrt{2} \text{ units}$$

$$SR = 5\sqrt{2} \text{ units} \quad RV = 5\sqrt{2} \text{ units}$$

**You must state the geometry and justification!!!**

Use rhombus PQRS and the given information to find each value.

5. If  $SQ = 24$ ,  $RP = 10$ , find  $SR$ .

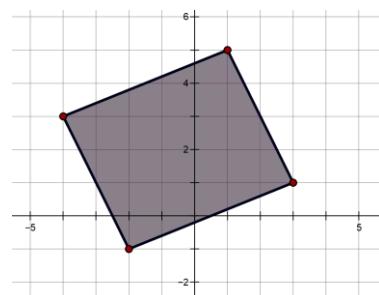


6. If  $m\angle PRS = 17$ , find  $m\angle QRS$ .

7. Find  $m\angle STR$ .

8. If  $SP = 4x - 3$  and  $PQ = 18 + x$ , find the value of  $x$ .

9. Determine whether the figure with vertices E(-2,-1), F(-4,3), G(1,5) H(3,1) is a rhombus.



## Squares:

10 MATH is a square.

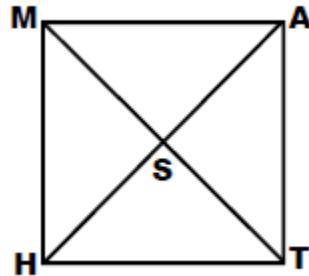
a) If  $MA = 8$ , then  $AT = \underline{\hspace{2cm}}$

b)  $m\angle HST = \underline{\hspace{2cm}}$

c)  $m\angle MAT = \underline{\hspace{2cm}}$

d) If  $HS = 2$ , then  $HA = \underline{\hspace{2cm}}$  and  $MT = \underline{\hspace{2cm}}$

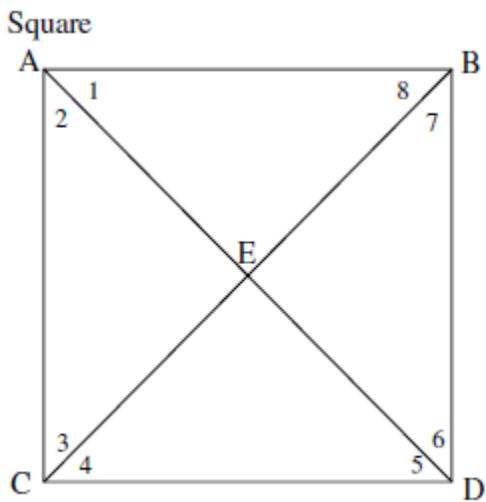
e)  $m\angle HMT = \underline{\hspace{2cm}}$



11. Use square ABDC.

a. If  $AB = 2x + 5$  and  $BD = 5x - 20$ , find  $x$ .

b. Find the measures of the numbered angles.



You must show all of your work:

12. Determine whether the figure with vertices  $A(0,3)$ ,  $B(-3,0)$ ,  $C(0,-3)$ , and  $D(3,0)$  is a square.

13. Determine whether the figure with vertices  $A(-4,0)$ ,  $B(-3,3)$ ,  $C(2,2)$ , and  $D(1,-1)$  is a square.

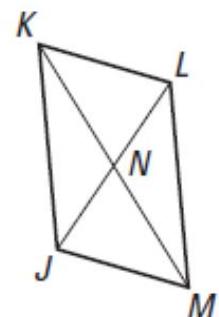
## **ACC REVIEW Special Parallelogram Practice**

Name the complete each statement about parallelogram JKLM. Show your justification for each.

1.  $\angle LMJ \cong \underline{\hspace{2cm}}$  because \_\_\_\_\_

2.  $LK // \underline{\hspace{2cm}}$  because \_\_\_\_\_

3.  $KN \cong \underline{\hspace{2cm}}$  because \_\_\_\_\_

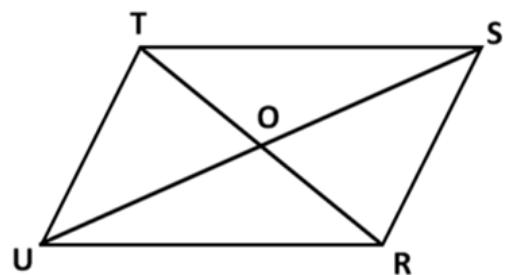


4. RSTU is a parallelogram.  $RO = y + 3$ ,  $SO = 2x$ ;  $TO = 3y - 7$ ;  $UO = x + 5$ . Find x and y. You MUST show your geometry and justify.

Find x:

Geometry:

Justify:

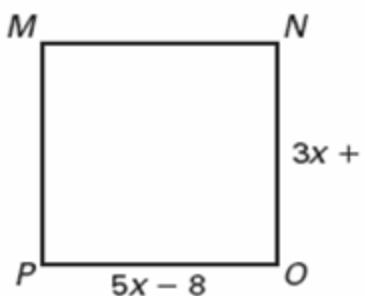


Find y:

Geometry:

Justify:

5. MNOP is a square. Find x. You MUST show your geometry and justify.



Find x:

Geometry:

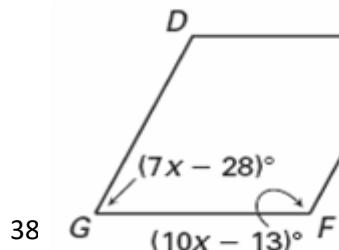
Justify:

6. DEFG is a rhombus. Find x. You MUST show your geometry and justify.

Find x:

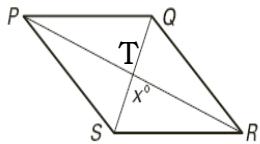
Geometry:

Justify:



7. PQRS is a rhombus. Find x. You MUST show your geometry and justify.

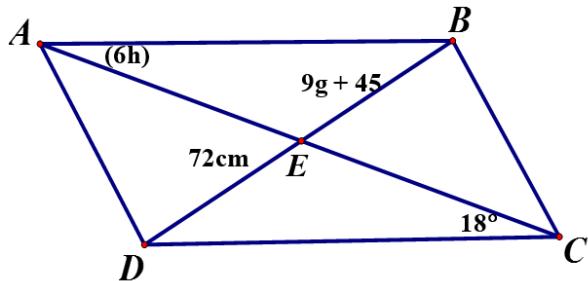
Find x:



Geometry:

Justify:

8. ABCD is a parallelogram. Solve for **h** and **g** and show your geometry and justifications for your set up.



Find g:

Geometry:

Justify:

Find h:

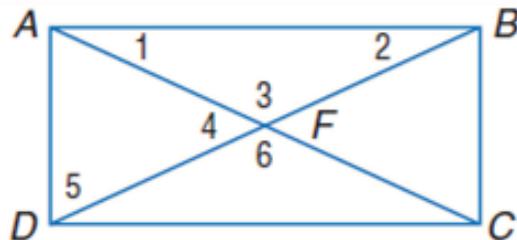
Geometry:

Justify:

9. If  $m\angle 1 = 12x + 4$  and  $m\angle 2 = 16x - 12$  in rectangle ABCD, find x.

You MUST show your geometry and justify.

Find x:



Geometry:

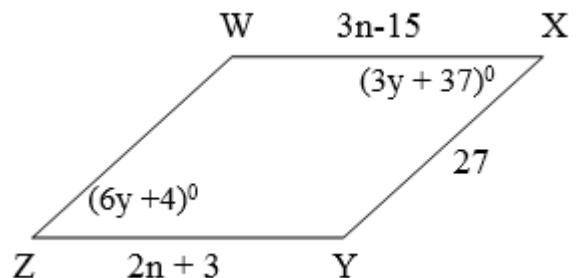
Justify:

10. WXYZ is a parallelogram. Find n, y, and  $m\angle Z$ . You MUST show your geometry and justify.

Find n:

Geometry:

Justify:



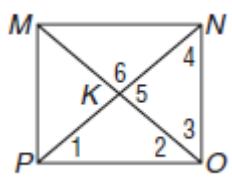
Find y:

Geometry:

Justify:

Find  $m\angle Z$ . (No geo or just)

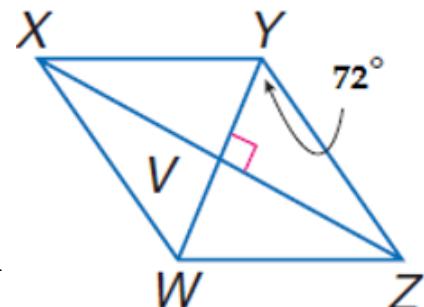
11. MNOP is a square. Find all numbered angles and justify your reasoning.



- m∠ 1 = \_\_\_\_\_ because \_\_\_\_\_  
 m∠ 2 = \_\_\_\_\_ because \_\_\_\_\_  
 m∠ 3 = \_\_\_\_\_ because \_\_\_\_\_  
 m∠ 4 = \_\_\_\_\_ because \_\_\_\_\_  
 m∠ 5 = \_\_\_\_\_ because \_\_\_\_\_  
 m∠ 6 = \_\_\_\_\_ because \_\_\_\_\_

12. Use Rhombus WXYZ.

- a. Find  $m\angle WYX$ . \_\_\_\_\_ because \_\_\_\_\_  
 b. Find  $m\angle YZX$ . \_\_\_\_\_ because \_\_\_\_\_  
 c. Find  $m\angle WZX$ . \_\_\_\_\_ because \_\_\_\_\_  
 d. Find  $m\angle YZW$ . \_\_\_\_\_ because \_\_\_\_\_  
 e. If  $WZ = 19m$ , find  $YZ$ . \_\_\_\_\_ because \_\_\_\_\_  
 f. If  $WZ = 19m$  and  $VW = 4m$ , find  $VZ$ .

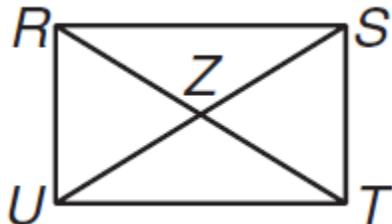


$$VZ = \underline{\hspace{2cm}}$$

13. If  $m\angle SUT = 3x + 6$  and  $m\angle RUS = 5x - 4$ , find  $m\angle SUT$  if URST is a rectangle.  
 You MUST show your geometry and justify.

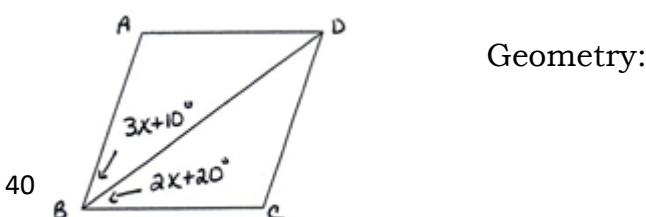
Geometry:

Justify:



14. ABCD is a rhombus. Find x. You MUST show your geometry and justify.

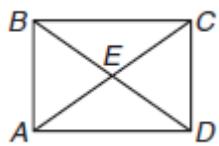
Find x:



Geometry:

Justify:

15. ABCD is a rectangle. If  $m\angle AED = 12x$  and  $m\angle BEC = 10x + 20$ , find  $m\angle EDA$ .  
You MUST show your geometry and justify.



Geometry:

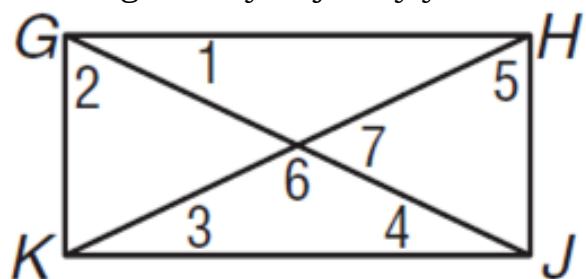
Find x:

Justify:

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

$$m\angle EDA = \underline{\hspace{2cm}}$$

16. GHJK is a rectangle. If  $m\angle 1 = 23^\circ$ , find all remaining numbered angles. You do not need to show geometry or justify your work.



$$m\angle 2 = \underline{\hspace{2cm}} \quad m\angle 3 = \underline{\hspace{2cm}}$$

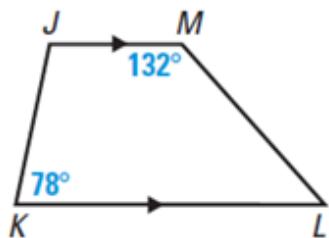
$$m\angle 4 = \underline{\hspace{2cm}} \quad m\angle 5 = \underline{\hspace{2cm}}$$

$$m\angle 6 = \underline{\hspace{2cm}} \quad m\angle 7 = \underline{\hspace{2cm}}$$

## Trapezoid and Kites Practice

**Find the missing angle measures for each trapezoid.**

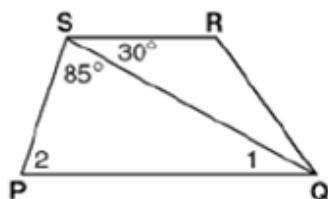
1. Find  $m\angle J$  and  $m\angle L$ .



2. Find  $m\angle R$ ,  $m\angle P$  and  $m\angle Q$ .



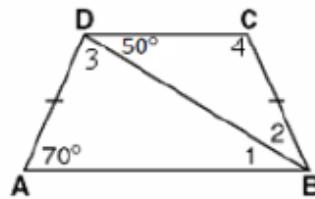
3. Trapezoid PQRS. Find the  $m\angle 1$  and  $\angle 2$ .



$$m\angle 1 = \underline{\hspace{2cm}}^\circ$$

$$m\angle 2 = \underline{\hspace{2cm}}^\circ$$

4. Isosceles Trapezoid ABCD.



$$m\angle 1 = \underline{\hspace{2cm}}^\circ$$

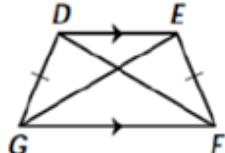
$$m\angle 2 = \underline{\hspace{2cm}}^\circ$$

$$m\angle 3 = \underline{\hspace{2cm}}^\circ$$

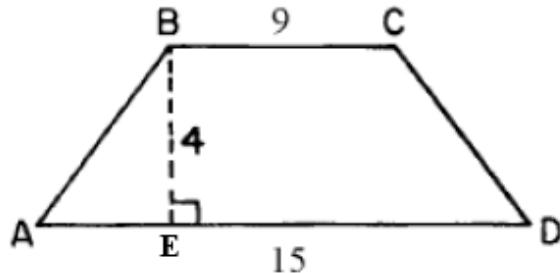
$$m\angle 4 = \underline{\hspace{2cm}}^\circ$$

5. Find the values of the variables.

$$DF = 4x, EG = 2x + 16$$

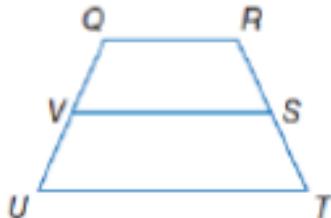


6. In the accompanying figure, isosceles trapezoid  $ABCD$  has bases of lengths 9 and 15 and an altitude of length 4. Find  $AB$ .



7. VS is the midsegment of trapezoid QRTU

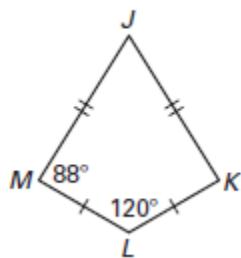
If  $RQ = 3x - 3$ ,  $UT = 4x + 2$  and  $VS = 10$ , find  $x$ .



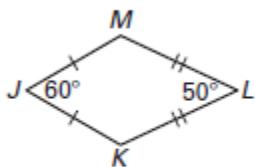
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**JKLM** is a kite. Find  $m\angle K$ .

8.



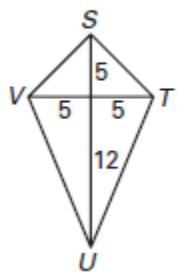
9.



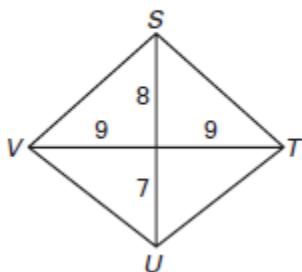
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**Use Theorem 8.18 and the Pythagorean Theorem to find the side lengths of the kite. Write the lengths in simplest radical form.**

10.



11.



## Reviewing what we know for 6.6 & 6.7 Warm Up

### Basic Review

1. M(-4, 5), N(2, 2), P(0, -2), Q(-6, 1)

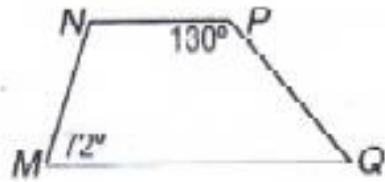
What is the most specific name of this figure?

2.

Quadrilateral MNPQ has vertices M(4, 0), N(0, 6), P(-4, 0) and Q(0, -6). Determine whether MNPQ is a trapezoid, a parallelogram, a square, a rhombus, or a quadrilateral. Choose the most specific term. Explain.

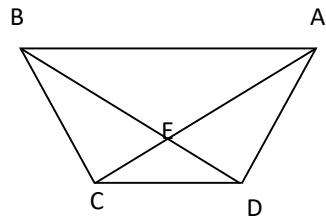
### 6.6 Review Warm Up

1. Find  $\angle N$  and  $\angle Q$ .



2. If ABCD is an isosceles trapezoid with

$AC = 5y$ ,  $BE = 4y - 1$  and  $DE = 2y - 1$ . Find  $y$ .



3. Use isosceles trapezoid ABCD from #2. If  $m\angle ACD = 39^\circ$ , and  $\angle BCA = 48^\circ$ , find  $m\angle ABD$ .

### 6.7 Review

1. ABCD is a rhombus with  $A(a, 0)$ ,  $B(0, b)$ , and  $D(0, -b)$ . Find the possible coordinates of C.

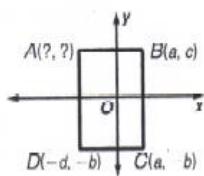
1. \_\_\_\_\_

2. ABCD is a square with  $A(a, 0)$ ,  $B(0, a)$ , and  $C(-a, 0)$ . Find the possible coordinates of D.

2. \_\_\_\_\_

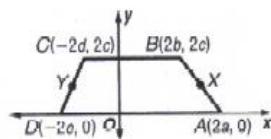
3. Given rectangle ABCD, name the coordinates of A.

3. \_\_\_\_\_



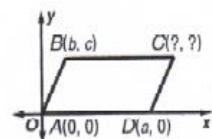
4. Name the coordinates of the endpoints of the median of trapezoid ABCD.

4. \_\_\_\_\_

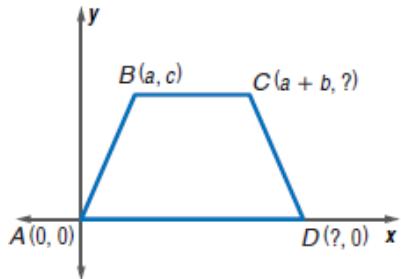


5. Name the missing coordinates of C in parallelogram ABCD.

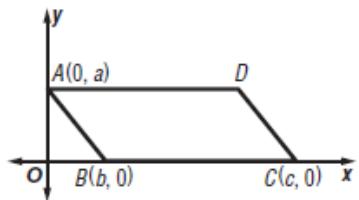
5. \_\_\_\_\_



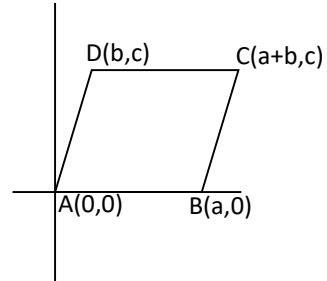
Ex6 Name the missing coordinates for the isosceles trapezoid.



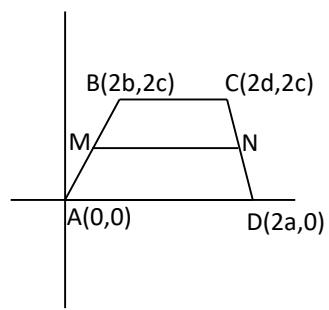
Ex7 In the figure, ABCD is a parallelogram. What are the coordinates of point D?



Ex8 Show that opposite sides of a parallelogram are congruent.

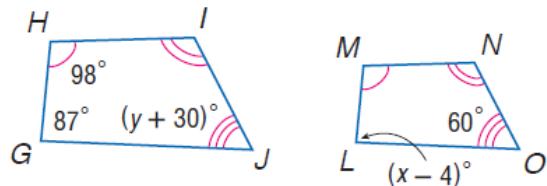


Ex9 Find the length MN



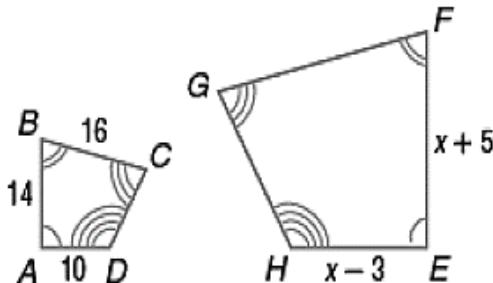
## 7.2 Ratios, Proportions, and Similar Figures Warm-up

1. Given the two polygons are similar, find  $x$  and  $y$ .



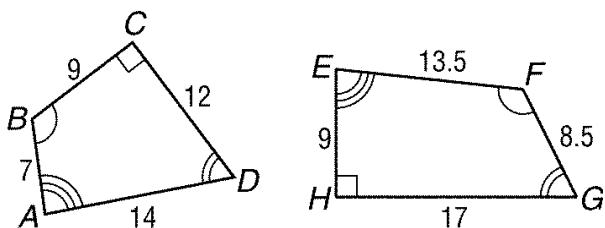
2. The two quadrilaterals are similar.

- A. Write the similarity statement.
- B. Find the scale factor.
- C. Find  $x$ .
- D. Find the measure of the indicated side.



A. Quad  $ABCD \sim$  \_\_\_\_\_ B. \_\_\_\_\_ C. \_\_\_\_\_ D.  $GF =$  \_\_\_\_\_

3. Determine whether quadrilateral  $ABCD \sim$  quadrilateral  $EFGH$ . Justify your answer.



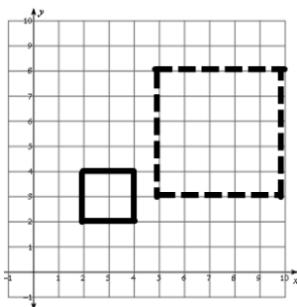
## Similarity, Dilation and Perimeter Ratio Warm Up

1. Use the dilation below to answer the following questions. The dotted figure is the dilation image.

a) Find the scale factor for the dilation below with the center at the origin.

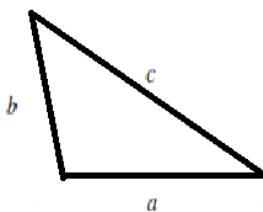
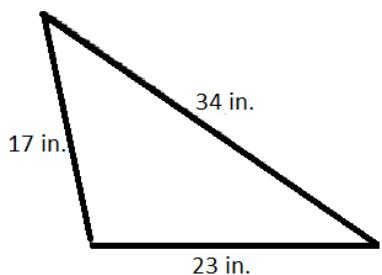
$$SF = \underline{\hspace{2cm}}$$

b) Determine whether the dilation is an **enlargement, reduction, or congruent transformation**.



Classification: \_\_\_\_\_

2. Find  $a$ ,  $b$ , and  $c$  if the two triangles below are similar and the smaller triangle has a perimeter of 56 inches. Round answers to the nearest tenth if necessary. The perimeter ratios is equal to the side length ratio.



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

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

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

3. The ratio of the sides of a triangle are 2:3:5. Find the length of each side if the perimeter is 85 cm.

Shortest Side: \_\_\_\_\_

Middle Side: \_\_\_\_\_

Longest Side: \_\_\_\_\_

4. Given that  $\Delta RST \sim \Delta XYZ$ , find the scale factor.

