

Chapter 1: Essentials of Geometry

1) Point B is between A and C on \overline{AC} . Use the given information to write an equation in terms of x . Solve the equation. Then find AB and BC, and determine whether \overline{AB} and \overline{BC} are congruent.

a) $AB = 4x - 5$

b) $AB = x + 3$

$BC = 2x - 7$

$BC = 2x + 1$

$AC = 54$

$AC = 10$

2) Find the coordinates of the midpoint of the segment with the given endpoints.

$A(2, -4), B(7, 1)$

3) Use the endpoint and midpoint M of the segment to find the coordinates of the other endpoint.

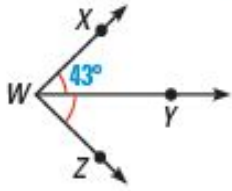
$A(3, -7), M(1, 1)$

4) Find the length of the segment with given endpoint and midpoint M.

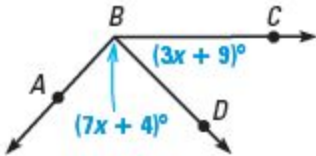
$A(-3, -4), M(9, 5)$

5) Use the given information to find the indicated angle measures.

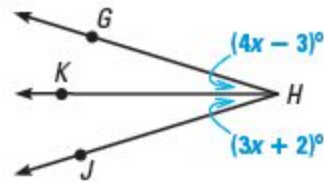
$$m\angle XWZ = \underline{\quad? \quad}$$



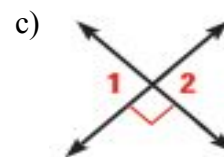
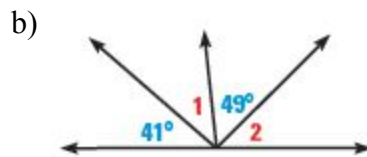
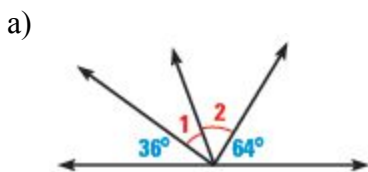
6) Given $m\angle ABC = 133^\circ$, find $m\angle ABD$.



7) Given $m\angle GHK = 17^\circ$, find $m\angle KHJ$.



8) Tell whether $\angle 1$ and $\angle 2$ are *vertical angles*, *adjacent angles*, a *linear pair*, *complementary*, or *supplementary*. There may be more than one answer.



Chapter 2: Reasoning and Proof

1) For the statement “Soccer players are athletes.” Write the:

a) If-then form:

b) Converse:

2) Use the diagram to determine if the statement is true or false.

___ a) $\overline{SV} \perp \text{plane Z}$

___ b) \overline{XU} intersects plane Z at point Y.

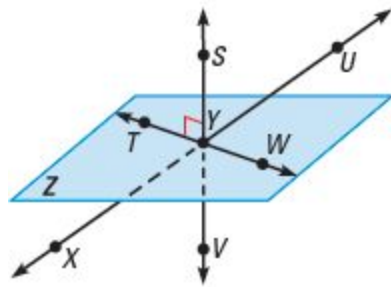
___ c) \overline{TW} lies in plane Z.

___ d) $\angle SYT$ and $\angle WYS$ are vertical angles.

___ e) $\angle SYT$ and $\angle TYV$ are complementary angles.

___ f) $\angle TYU$ and $\angle UYW$ are a linear pair.

___ g) $\angle UYV$ is acute.

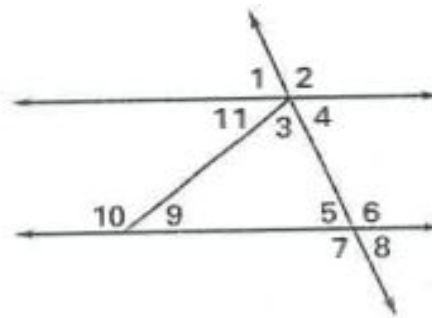


3) Write the converse of the true statement. Determine if the converse is also true. If it is combine the statements to write a true biconditional statement.

If two circles have the same diameter, then they have the same circumference.

4) Use the diagram and the given information to solve for each of the angles.

$\angle 4 \cong \angle 5$, $m\angle 3 = 40^\circ$, $m\angle 6 = 120^\circ$, and
 $m\angle 3 + m\angle 5 + m\angle 9 = 180^\circ$.



a) $m\angle 1 =$ _____

b) $m\angle 2 =$ _____

c) $m\angle 3 =$ _____

d) $m\angle 4 =$ _____

e) $m\angle 5 =$ _____

f) $m\angle 6 =$ _____

g) $m\angle 7 =$ _____

i) $m\angle 8 =$ _____

h) $m\angle 9 =$ _____

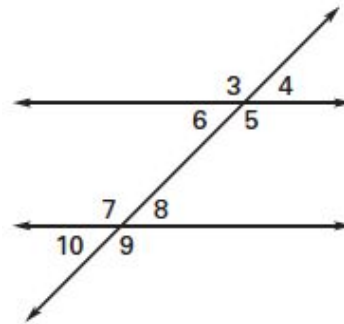
j) $m\angle 10 =$ _____

k) $m\angle 11 =$ _____

Chapter 3: Parallel and Perpendicular Lines

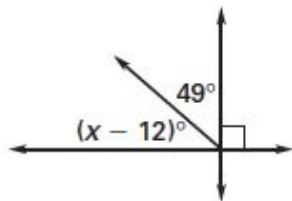
1) Complete the statement with *corresponding*, *alternate interior*, *alternate exterior*, or *consecutive interior*.

- a) _____ $\angle 3$ and $\angle 7$ are _____ angles.
 b) _____ $\angle 4$ and $\angle 10$ are _____ angles.
 c) _____ $\angle 5$ and $\angle 8$ are _____ angles.
 d) _____ $\angle 8$ and $\angle 6$ are _____ angles.
 e) _____ $\angle 9$ and $\angle 5$ are _____ angles.
 f) _____ $\angle 5$ and $\angle 7$ are _____ angles.

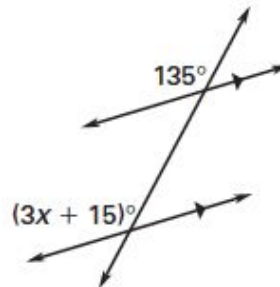


2) Find the value of x .

a)

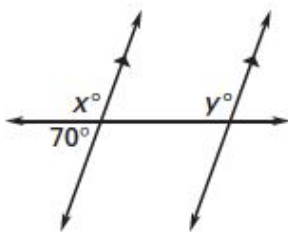


b)

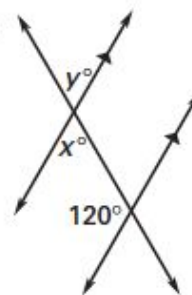


Find the values of x and y .

c)

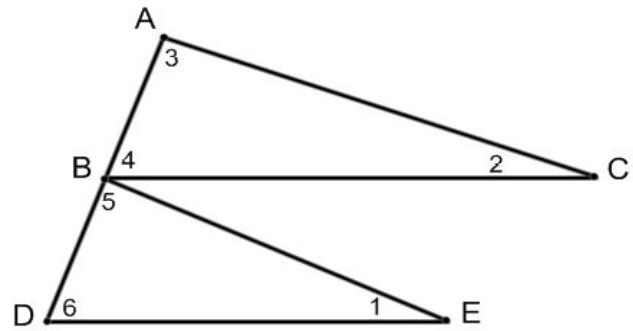


d)



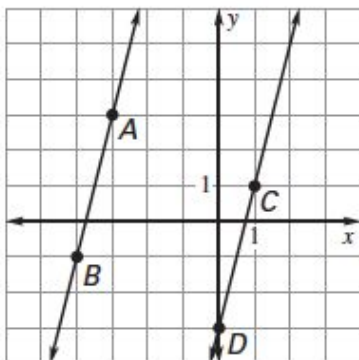
3 Given: B is the midpoint of \overline{AD}
 $\overline{AC} \parallel \overline{BE}$ and $\overline{BC} \parallel \overline{DE}$

Prove: $\angle 1 \cong \angle 2$

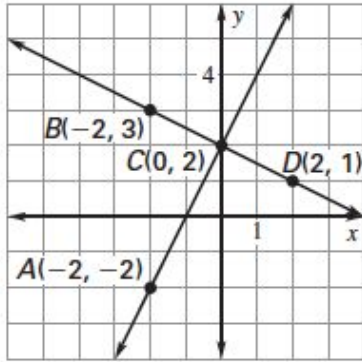


Statements	Reasons
1. B is the midpoint of \overline{AD}	1. _____
2. _____	2. Definition of _____
3. $\overline{AC} \parallel \overline{BE}$ and $\overline{BC} \parallel \overline{DE}$	3. _____
4. $\angle 3 \cong$ _____ and $\angle 4 \cong$ _____	4. _____
5. $\triangle ABC \cong$ _____	5. _____
6. $\angle 1 \cong \angle 2$	6. _____

4 Find the slope of each line. Are the lines parallel?



- 5) Find the slope of \overleftrightarrow{AC} and \overleftrightarrow{BD} . Decide whether \overleftrightarrow{AC} is perpendicular to \overleftrightarrow{BD} .



- 6) Find the value of k so that the line through the given points has the given slope. Check your solution.
 $(0, k)$ and $(3, 4)$ $m = \frac{1}{2}$

- 7) Write an equation of a line that passes through the given point and has the given slope. **Put your answers in all three forms for a and b.** (point-slope, slope-intercept and standard)

a) $(-4, 3)$, $m = 2$

b) $(7, -3)$, $m = -\frac{4}{7}$

c) $(-11, 4)$, $m = 0$

d) $(5, -12)$, $m = \text{undefined}$

8) Write an equation of the line that passes through the given point and satisfies the given condition. **Put your answers in all three forms.**

a) $(-3, -5)$; parallel to $y = -3x + 1$

b) $(-6, 2)$; perpendicular to $y = 5x + 1$

9) Find the x- and y-intercepts of each equation

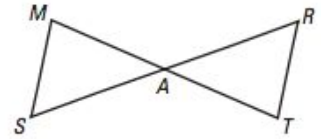
a) $y = \frac{2}{3}x - 5$

b) $4x - 2y = 12$

c) $y - 3 = -\frac{3}{4}(x - 12)$

Chapter 4: Congruent Triangles

1) Given: A is the midpoint of \overline{MT}
 A is the midpoint of \overline{SR}
 Prove: $\overline{MS} \parallel \overline{RT}$

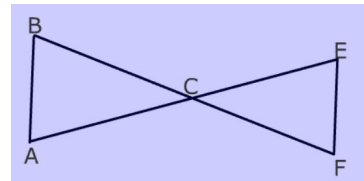


Statements	Reasons
1).	1).
2).	2).
3).	3).
4).	4).
5).	5).
6).	6).
7).	7).

2)

Given: Point C is the midpoint of \overline{BF} and $\overline{AC} \cong \overline{CE}$

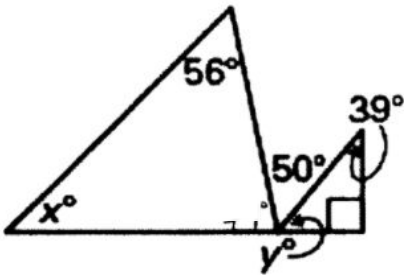
Prove: $\triangle ABC \cong \triangle EFC$



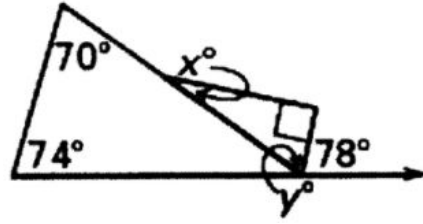
Statements	Reasons
1). Point C is the midpoint of \overline{BF}	1). Given
2).	2).
3).	3). Vertical Angles
4).	4).
5).	5).

3) Find the values of x and y .

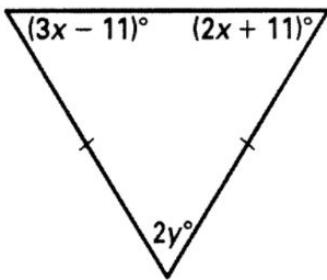
a)



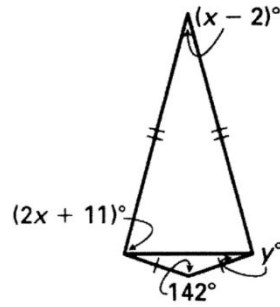
b)



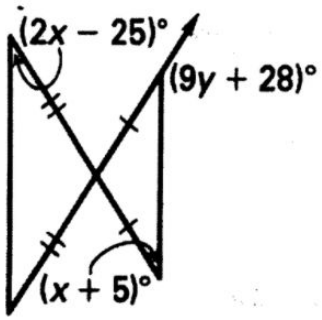
c)



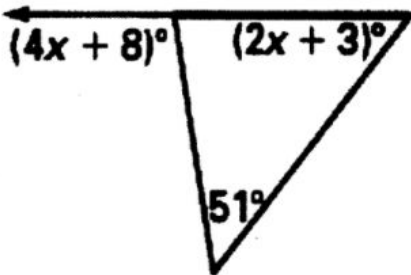
d)



e)



4) Find the measure of the exterior angle.



Chapter 5: Relationships within Triangles

1) Define, write the formula, give the formula, or draw and label a picture to help you remember the following terms, formulas, and/or theorems.

a) Midsegment:

b) Midpoint Formula:

c) Distance Formula:

d) Perpendicular Bisector Theorem:

e) Converse of Perpendicular Bisector Theorem:

f) Angle Bisector Theorem:

g) Converse of Angle Bisector Theorem:

h) Circumcenter:

I) Incenter:

j) Concurrency of Perpendicular Bisectors of a Triangle Theorem:

k) Concurrency of Angle Bisectors of a Triangle Theorem:

l) Median:

m) Altitude:

n) Centroid:

o) Orthocenter:

p) Slope Formula:

2)

Use the diagram. \overline{DE} is the perpendicular bisector of \overline{AC} . Find the indicated measure.

Find AB .

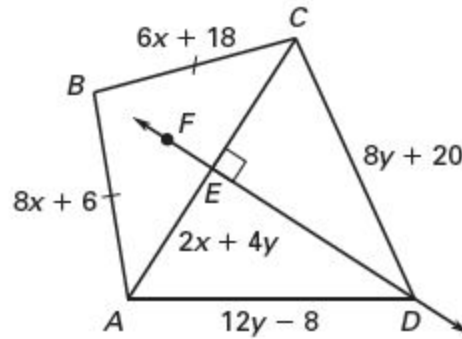
Find AE .

Find AD .

Find BC .

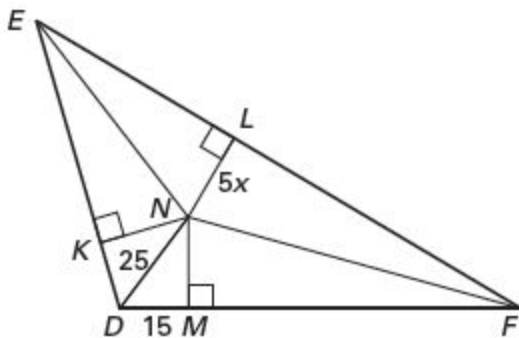
Find AC .

Find CD .



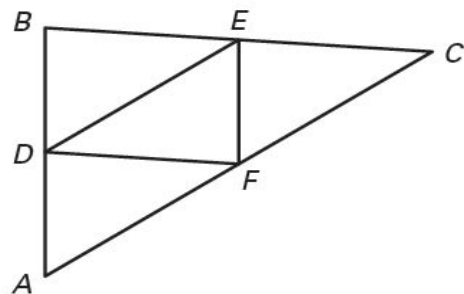
What is the point E called?

3) Find the value of x that makes N the incenter of the triangle. ($DN = 25$)



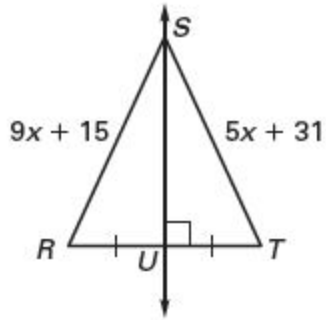
4) Use the diagram of triangle ABC where D , E , and F are the midpoints of the sides.

If $DF = 3.5x + 6$ and $BC = 3x + 36$, then $DF = \underline{\quad ? \quad}$



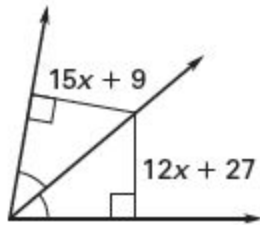
5)

Find the length of \overline{RS} .

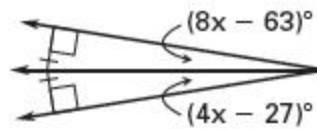


6) Find the value of x .

a)



b)

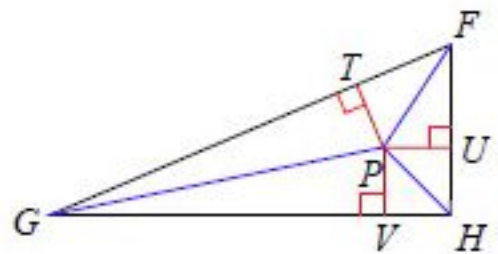


7) Suppose that P is the incenter. $FP = 50$. $PV = 2x + 4$ and $PT = 4x - 6$. Show your work.

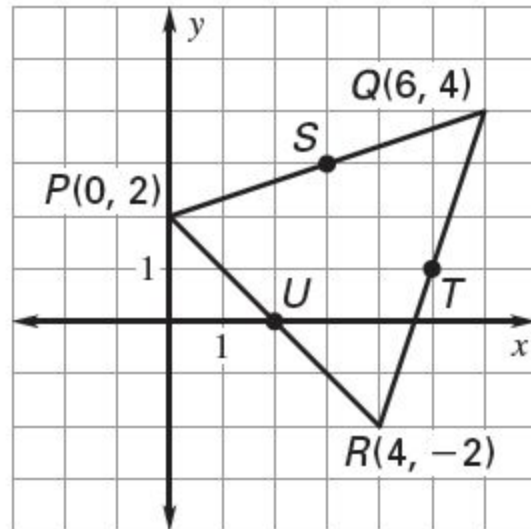
Find the value of x .

Find the length of PU .

Find the length of UF .



8) Find the coordinates of the endpoints of each midsegment of triangle PQR. You **MUST** use the midpoint formula to receive credit for your work.



Draw in the midsegments.

9) What is the length of RQ?

10) What is the length of US?

11) Point S is the centroid of triangle PQR. Use the given information to find the value of x.

$$QS = 3x + 5 \text{ and } QT = 4x + 11$$

