Chapter 3 and 6-4 Review Worksheet

Complete.
1) If the measure of each angle of a triangle is less than 90°, then the triangle is called ___________.

2) If a triangle has no congruent sides, it is called _______________.

3) Each angle of an equilateral triangle has measure _____.

4) If the measures of the acute angles of a right triangle are $2x + 4$ and $3x - 9$, then $x = _______

5) The lengths of the sides of a triangle are $2x + 5$, $3x + 10$, and $x + 12$. Find all the values of $x$ that make the triangle isosceles.

6) A nonagon has _______ sides.

7) A regular polygon is both ______________ and _______________.
   (hint: one word describes the sides, the other the angles.)

8) In a regular decagon, the sum of the measures of the exterior angles is _____ and the measure of each interior angle is ______

9) If the measure of each interior angle of a polygon is 174, then the measure of each exterior angle is _______ and the polygon has _______ sides
Use the given diagram to identify the type of angles (corresponding, same-side interior, or alternate interior), the transversal, and the parallel lines for each pair of angles if they exist. If not, write none.

10) \( \angle 1 = \angle 8 \)

11) \( \angle 15 + \angle 16 = \angle 2 \)

12) \( \angle 10 = \angle 18 \)

13) \( \angle 9 + \angle 10 = 180 - \angle 17 \)

14) \( \angle 9 = \angle 16 \)

15) \( \angle 2 + \angle 3 = 180^\circ \)

16) \( \angle 8 = \angle 17 \)

Complete each statement with the word always, sometimes, or never.

17) Two lines that have no points in common are ________ parallel.

18) If a line is perpendicular to one of two parallel lines, then it is ________ perpendicular to the other one.

19) If two lines are cut by a transversal and same-side interior angles are complementary, then the lines are ________ parallel.

20) An obtuse triangle is ________ a right triangle.
21) In $\triangle ABC$, if $\overline{AB}$ is perpendicular to $\overline{BC}$, then $\overline{AC}$ is ________ perpendicular to $\overline{BC}$.

22) As the number of sides of a regular polygon increases, the measure of each exterior angle ________ decreases.

Find the measures of each numbered angle in the following diagrams.

23) $\triangle XYZ$ is regular

24) $\overline{AC} \parallel \overline{BD}$ and $\overline{AB} \parallel \overline{CD}$

25) $\overline{ABCDE}$ is regular

26) The two horizontal lines are parallel

27) The measure of the largest angle of a triangle is twice the measure of the smallest angle and the third angle is 20 less than the largest angle. Find the measure of all three angles.

On the next page, solve for $x$ and $y$ using each diagram.
28) the two horizontal lines are parallel

![Diagram of two parallel horizontal lines with angles x° and y°.]

29) all horizontal lines are parallel

![Diagram of all horizontal lines with angles 2y° and 4x°.]

30) AB || CD and AD || BC

![Diagram of parallelogram with angles (5x + 3y)°, 6y°.]

31) AB || CD

![Diagram of triangle with angles 20° and 115°.]

32) AB || CD

![Diagram of triangle with angles x° and y°.]

33) 

![Diagram of triangle with angles 50° and 30°.]

34) the two horizontal lines are parallel

![Diagram of intersecting lines with angles 45° and 50°.]

35) the two horizontal lines are parallel

![Diagram of triangle with angles y° and x°.]

36) all horizontal lines are parallel

![Diagram of intersecting lines with angles 70° and 50°.]

37) 

![Diagram of triangle with angles 50°, 140°, and 125°.]

x + 2y°

2x + y°
Chapter 3 Review Worksheet Answer Key:

1) acute
2) scalene
3) 60°
4) 19
5) \(x = 1 \) and \(7\)
6) 9
7) equilateral, equiangular
8) 360°, 144°
9) 6°, 60°
10) none
11) corresponding <s; trans = b; f \parallel e
12) alt.int. <s; trans = d; a \parallel c
13) same-side int. <s; trans = d; e \parallel f
14) alt. int. <s; trans = a; f \parallel e
15) same-side int. <s; trans = f; b \parallel d
16) none
17) sometimes (could be skew)
18) sometimes (could be skew)
19) never (must be supplementary)
20) never (would be > 180° total)
21) never (at most one right < in a ∆)
22) always

23) \(< 1 = < 2 = 60; \ < 3 = 120\>
24) \(<1 = 58; <2 = 90; <3 = 32\>
25) \(<1 = < 2 = 72; \ < 3 = 36\>
26) \(<1 = 60; <2 = <3 = 50\>
27) smallest = 40°
28) \(x = 70; \ y = 90\)
29) \(x = 15; \ y = 40\)
30) \(x = -3.6; \ y = 22\)
31) \(x = 45; \ y = 45\)
32) \(x = 70; \ y = 70\)
33) \(x = 80; \ y = 100\)
34) \(x = 45; \ y = 95\)
35) \(x = 40; \ y = 50\)
36) \(x = 30; \ y = 5\)
37) \(x = 25; \ y = 5\)
Review of lesson 6-4

Is it possible for a triangle to have sides with the length indicated? Write yes or no and show your work to support your answer.

1) 21, 25, 40
2) 12, 29, 17

The lengths of two sides of a triangle are given. Write the numbers that best complete the statement: The length of the third side must be greater than _____, but less than ____.

3) 33, 67

Put the angles in order from smallest to largest.

4) < A, < B, < C

Put the sides in order from smallest to largest.

6) \( \overrightarrow{AC} , \overrightarrow{CB} , \overrightarrow{AB} \)

7) \( \overrightarrow{DE} , \overrightarrow{FE} , \overrightarrow{DF} \)

Answer Key:

1) 21 + 25 > 40 yes
2) 12 + 17 = 29 no
3) 34 < x < 100
4) < A, < B, < C
5) < 3, < 2, < 1