Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ March 9, 2016

Math 7R Period: \_\_\_\_\_\_

**Warm-up**

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| 1. Use the diagram below to answer each part.    A. What angle is vertical to ∠3? \_\_\_\_\_\_\_\_\_  B. What angle is supplementary to ∠4? \_\_\_\_\_\_\_\_  C. What angle is complementary to ∠2? \_\_\_\_\_\_\_\_ | 2. Evaluate the expression 2x + 16 when x = 20.  1. Rewrite the expression  2. Substitute 20 in for x.  3. Solve. |



**Learning Target:** Today, I will be able to find the measures of each angle formed

by vertical angles, complementary angles, and supplementary angles.

**Tying it all together……**

**Directions:** Find the value of x in the figure. Then find the unknown angle measures.

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| **Example 1.**  **(3x)°**  **(5x – 14)°**  The angle relationship shown in the diagram are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles. Their sum is \_\_\_\_\_\_\_\_\_\_.  Set up: 5x – 14 + 3x = \_\_\_\_\_\_  Solve:  Substitute:  **∠1 = 5x – 14 ∠2 = 3x**  = 5( ) – 14 = 3( )  = \_\_\_\_\_\_ = \_\_\_\_\_\_°  The measures of the two angles are \_\_\_\_\_\_\_ and \_\_\_\_\_\_. | **Where to start???????**  **Step 1:** Determine the angle relationship between the two angles.  • Since they are complementary angles, they add up to 90 degrees.  **Step 2:** Set up an equation to solve for x.    **Step 3:** Solve for x.  **Step 4:** Substitute the value of x into each angle equation to get the  measurement of the angles. |

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| **Example 2:**  **60°**  **(2x + 36)°**  The angle relationship shown in the diagram are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles. They are \_\_\_\_\_\_\_\_\_\_\_\_.  Set up: 2x + 36 = \_\_\_\_\_\_  Solve:  Substitute: **2x + 36**  **2( ) + 36**  **\_\_\_\_\_\_°** | **Where to start???????**  **Step 1:** Determine the angle relationship between the two angles.  • Since they are vertical angles, they are congruent.  **Step 2:** Set up an equation to solve for x.    **Step 3:** Solve for x.  **Step 4:** Substitute the value of x into each angle to get the measurement of the angle(s). |
| **Example 3:**  **(6x)°**  **(2x + 36)°**  The angle relationship shown in the diagram are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles. Their sum is \_\_\_\_\_\_\_\_\_\_.  Set up: 2x + 36 + 6x = \_\_\_\_\_\_  Solve:  Substitute:  **∠1 = 2x + 36 ∠2 = 6x**  = 2( ) + 36 = 6( )  = \_\_\_\_\_\_ = \_\_\_\_\_\_°  The measures of the two angles are \_\_\_\_\_\_\_ and \_\_\_\_\_\_. | **Where to start???????**  **Step 1:** Determine the angle relationship between the two angles.  • Since they are supplementary angles, they add up to 180 degrees.  **Step 2:** Set up an equation to solve for x.      **Step 3:** Solve for x.  **Step 4:** Substitute the value of x into each angle to get the measurement of the angles. |

Your turn:

Directions: Determine the angle relationship. Solve for x and then find the measure of each angle.

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| 4.  120°  (75 + 5x)°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. | 5.  (2x + 42)°  (7x + 75)°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. |
| 6.  (2x)°  (5x + 6)°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. | 7.  (7x + 6)°  (9x – 28)°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. |

**Homework**

**Directions:**

1. Name the angles as **Complementary** (90°), **Supplementary** (180°), or **Vertical** (=).

2. Set up an equation to solve for x. Then solve for x.

3. Once you have x, find the measure of each angle.

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| 1. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  12x + 28  76°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. | 2. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  5x – 14  3x  **Answer:** x = \_\_\_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. |
| 3. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  6x  3x – 18  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. | 4. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3(2x + 6)  132°  **Answer:** x = \_\_\_\_\_\_. The measures of the two angles are \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_. |