WORKSHEET 3.1: WRITING EQUATIONS

An equation is a number sentence that shows two expressions are equal. An expression may be a number, a variable, or several variables and numbers. To write equations follow the steps below:

1. Choose a variable for the unknown quantity. Try to choose a letter that easily represents the quantity you are trying to find. For example, use n for a number, a for age, or t for ticket.

2. Identify the phrases and values you will represent as expressions.

3. Write two expressions.

4. Use an equal sign to show that the expressions are equal.

EXAMPLE

Write an equation for 12 more than a number is 16.

$n =$ a number. The phrase and value are "12 more than a number" and "16." The equation is $12 + n = 16$.

DIRECTIONS: Write an equation for each sentence. Choose a variable and tell what it represents.

1. 5 less than a number is 12.

2. Twice a number is 24.

3. In 3 years Marie will be 15.

4. The value of the number of quarters is $2.25.

5. A number decreased by 12 is 24.

6. 8 years ago Quinn was 6.

7. 3 more than twice a number is 27.

8. 10 student tickets cost $50.

CHALLENGE: Jason does not always pay attention in class the way he should. He vaguely remembered his teacher saying that when writing equations, the word "is" usually represents the equal sign. On his test, Jason was asked to represent "4 is less than 5" algebraically. He wrote $4 =< 5$. Why was his answer wrong?

Name __Answer Key__ Date _____

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EXAMPLE
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n = a number. The phrase and value are "12 more than a number" and "16." The equation is $12 + n = 16$.

DIRECTIONS: Write an equation for each sentence. Choose a variable and tell what it represents.

1. 5 less than a number is 12.
$$n = a \text{ number}$$
$$n - 5 = 12$$

2. Twice a number is 24.
$$n = a \text{ number}$$
$$2n = 24$$

3. In 3 years Marie will be 15.
$$n = \text{Marie's age}$$
$$n + 3 = 15$$

4. The value of the number of quarters is $2.25.
$$n = \text{number of quarters}$$
$$0.25n = 2.25$$

5. A number decreased by 12 is 24.
$$n = a \text{ number}$$
$$n - 12 = 24$$

6. 8 years ago Quinn was 6.
$$n = \text{Quinn's age}$$
$$n - 8 = 6$$

7. 3 more than twice a number is 27.
$$n = a \text{ number}$$
$$2n + 3 = 27$$

8. 10 student tickets cost $50.
$$n = \text{cost a student's ticket}$$
$$10n = 50$$

CHALLENGE: Jason does not always pay attention in class the way he should. He vaguely remembered his teacher saying that when writing equations, the word "is" usually represents the equal sign. On his test, Jason was asked to represent "4 is less than 5" algebraically. He wrote $4 = < 5$. Why was his answer wrong?

Jason's answer is wrong because 4 is less than 5 is an inequality, not an equation. It should be written as $4 < 5$.