

Activating Prior Knowledge

Writing Expressions and Equations

Quick Review

We use a variable, such as x or n , to represent a number.

We can write an algebraic expression to represent a word statement.

For example, "a number plus five," or "five more than a number" can be written as $n + 5$, or $5 + n$.

When we write an algebraic expression as equal to a number or another expression, we have an equation.

For example, $n + 5 = 8$ is an equation.

Example 1

a) Write an algebraic expression for this statement:

Four times a number

b) Write an equation for this sentence:

A number divided by four is 5.

Solution

a) Four times a number

Let x represent the number.

Then, four times a number is $4x$.

b) A number divided by four is 5.

Let z represent the number.

z divided by four is: $\frac{z}{4}$

The equation is: $\frac{z}{4} = 5$

Check

1. Write an algebraic expression for each statement.

a) a number multiplied by seven

b) six less than a number

c) a number divided by 2

d) four more than a number

e) nine subtracted from a number

2. Write an equation for each sentence.

a) A number divided by seven is 6.

b) The sum of eight and a number is 17.

c) Five times a number is 35.

d) A number subtracted from eleven is 4.

e) The product of 3 and a number is 21.

Evaluating Expressions**Quick Review**

To evaluate an algebraic expression for a particular value of the variable, replace the variable with a number. Then, find the value of the expression.

Example 2

Evaluate each expression for $y = 8$.

a) $3y + 3$

b) $\frac{y}{2} - 1$

Solution

a) $3y + 3$

Substitute: $y = 8$

$$\begin{aligned} 3y + 3 &= 3 \times 8 + 3 \\ &= 24 + 3 \\ &= 27 \end{aligned}$$

Multiply first.
Then add.

b) $\frac{y}{2} - 1$

Substitute: $y = 8$

$$\begin{aligned} \frac{y}{2} - 1 &= \frac{8}{2} - 1 \\ &= 4 - 1 \\ &= 3 \end{aligned}$$

Divide first.
Then subtract.

Check

3. Evaluate each expression.

a) $3 + x$ for $x = 5$

b) $11 - x$ for $x = 2$

c) $3x$ for $x = 6$

4. Evaluate each expression.

a) $5 + 5x$ for $x = 3$

b) $\frac{5x}{3} - 7$ for $x = 6$

c) $8x - 17$ for $x = 5$

5. Evaluate each expression for $n = 4$.

a) $n + 5$

b) $\frac{6n}{8}$

c) $14 - 3n$

d) $7n + 3$

e) $11n$

6. A parallelogram has base 9 cm.

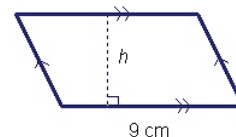
The area of the parallelogram is given by the expression $9h$, where h is the height of the parallelogram.

Evaluate the expression to find the area of a parallelogram with each height.

a) $h = 4$ cm

b) $h = 7$ cm

c) $h = 13$ cm



Sample Answers: Activating Prior Knowledge

Unit 6

Writing Expressions and Equations

1. Let n represent the number.

- a) $7n$ b) $n - 6$ c) $\frac{n}{2}$ d) $n + 4$ e) $n - 9$

2. Let n represent the number.

- a) $\frac{n}{7} = 6$ b) $8 + n = 17$ c) $5n = 35$ d) $11 - n = 4$ e) $3n = 21$

Evaluating Expressions

3. a) 8 b) 9 c) 18
4. a) 20 b) 3 c) 23
5. a) 9 b) 3 c) 2 d) 31 e) 44
6. a) 36 cm^2 b) 63 cm^2 c) 117 cm^2