

8.1 Substituting Values into Algebraic Expressions

Example 1: Calculate $3m + 6$ if you are given that $m = 2$

Answer: You have to "substitute" or "replace" the variable "m" with given value for "m", which in this case is 2.

$$\begin{aligned} & 3m + 6 \\ &= 3(2) + 6 \\ &= 6 + 6 \\ &= 12 \end{aligned}$$

MAKE SURE YOU
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NOTE: You must follow BEDMAS when calculating the value:

Example 2: Calculate $3x + 8$ if you are given $x = -2$

Answer: $3x + 8$ if $x = -2$

$$\begin{aligned} &= 3(-2) + 8 \\ &= -6 + 8 \\ &= 2 \end{aligned}$$

Now try a few of these on your own. Remember to follow your order of operations. (BEDMAS)

Calculate the following:

| | | |
|---------------------------|------------------------------|---|
| a) $12 - 2p$ when $p = 2$ | b) $9 + 2r - 6$ when $r = 4$ | c) $a + \frac{6b}{2}$ when $a = 2$ $b = 3$ |
|---------------------------|------------------------------|---|

HOMEWORK: Substitution into Algebraic Expressions Worksheet

Substitution into Algebraic Expressions Worksheet

Directions: Please answer the following in your binders/ scribblers. Do not do the work on the sheet there is not enough room.

1. If $a = 2$, $b = 5$, and $c = 7$, evaluate the following by substituting these values into the following:

- | | | | | |
|--------------|--------------|--------------|----------------|----------|
| a) $3b$ | b) $6a$ | c) $2c$ | d) $4b$ | e) $3c$ |
| f) $2b + 3$ | g) $3a + 1$ | h) $2c - 3$ | i) $5a + 7$ | j) $9b$ |
| k) $a + b$ | l) $a + c$ | m) $c - b$ | n) $a + b + c$ | o) $-a$ |
| p) $3a + 2b$ | q) $5c + 2a$ | r) $3b + 2c$ | s) $9a - 2b$ | t) $-3c$ |

2. If $a = 3$, $b = 4$, and $c = 10$, evaluate the following by substituting these values into the following:

- | | | | | |
|--------------|--------------|--------------|----------------|----------|
| a) $3b$ | b) $6a$ | c) $2c$ | d) $4b$ | e) $3c$ |
| f) $2b + 3$ | g) $3a + 1$ | h) $2c - 3$ | i) $5a + 7$ | j) $9b$ |
| k) $a + b$ | l) $a + c$ | m) $c - b$ | n) $a + b + c$ | o) $-a$ |
| p) $3a + 2b$ | q) $5c + 2a$ | r) $3b + 2c$ | s) $9a - 2b$ | t) $-3c$ |

3. If $a = 0$, $b = 20$, and $j = 0$, evaluate the following by substituting these values into the following:

- | | | | | |
|--------------|--------------|--------------|----------------|----------|
| a) $3b$ | b) $6a$ | c) $2c$ | d) $4b$ | e) $3c$ |
| f) $2b + 3$ | g) $3a + 1$ | h) $2c - 3$ | i) $5a + 7$ | j) $9b$ |
| k) $a + b$ | l) $a + c$ | m) $c - b$ | n) $a + b + c$ | o) $-a$ |
| p) $3a + 2b$ | q) $5c + 2a$ | r) $3b + 2c$ | s) $9a - 2b$ | t) $-3c$ |

4. If $x = 3$, $y = 2$ and $z = 5$, try to complete the following algebraic expressions: HINT: substitute the variables (letters) for the ??? marks.

- a) $? + ? = 7$ b) $? + ? = 5$ c) $? - ? = 2$ d) $?? + 3? = 16$

5. A builder rents a digger. He pays a fixed charge of \$30 plus \$10 per hour to rent the digger. Work out how much he pays to rent the digger for:

- a) 1 hour b) 3 hours c) 4 hours d) 10 hours e) n hours

HINT: for part e) can you write an algebraic expression.