

## WORKSHEET 1.6: EVALUATING EXPRESSIONS

To evaluate an expression means to replace a variable or variables with a given number or numbers and then simplify the expression. Follow the steps below:

1. Rewrite the expression by replacing all the variables with the given values. Be sure you have substituted correctly.
2. Follow the order of operations for simplifying:
  - Simplify expressions within grouping symbols first. If there are nested grouping symbols, simplify the innermost first, then work outward.
  - Simplify powers.
  - Multiply and divide in order from left to right.
  - Add and subtract in order from left to right.

### EXAMPLES

$a = 3, b = 4, c = 5,$  and  $d = 6.$

$2a + 10c =$	$2a^2 + cd =$	$2(b + c^2) =$
$2 \times 3 + 10 \times 5 =$	$2 \times 3^2 + 5 \times 6 =$	$2(4 + 5^2) =$
$6 + 50 =$	$2 \times 9 + 5 \times 6 =$	$2(4 + 25) =$
56	$18 + 30 =$	$2(29) =$
	48	58

**DIRECTIONS:** Evaluate each expression if  $a = 3, b = 4, c = 5,$  and  $d = 6.$

- |                         |                         |
|-------------------------|-------------------------|
| 1. $ab - c$             | 2. $8d + 2c$            |
| 3. $8(a + b)$           | 4. $(a + c)^2$          |
| 5. $\frac{ab}{d} =$     | 6. $c(a + b) - d$       |
| 7. $d + 2[a + (c - b)]$ | 8. $\frac{cd}{a} + b^2$ |



**CHALLENGE:** Use the values and variables above to create an expression that equals 11.

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**DIRECTIONS:** Evaluate each expression if  $a = 3, b = 4, c = 5,$  and  $d = 6.$

1.  $ab - c = 7$

2.  $8d + 2c = 58$

3.  $8(a + b) = 56$

4.  $(a + c)^2 = 64$

5.  $\frac{ab}{d} = 2$

6.  $c(a + b) - d = 29$

7.  $d + 2[a + (c - b)] = 14$

8.  $\frac{cd}{a} + b^2 = 26$



**CHALLENGE:** Use the values and variables above to create an expression that equals 11.

Possible answer:  $c(d - a) - b$   
 $5(6 - 3) - 4$