Algebra: Evaluating Algebraic Expressions

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Name: _____ Date: _____ Score: ____ / 10

DIRECTIONS

Substitute the given value(s) for each variable, then simplify using the order of operations.

1. Evaluate when $x = 4$:

   $3x + 5$

   Answer: _____

2. Evaluate when $x = -2$:

   $2x - 7$

   Answer: _____

3. Evaluate when $a = 5$:

   $a^2 - 3a$

   Answer: _____

4. Evaluate when $n = -3$:

   $n^2 + 2n - 1$

   Answer: _____

5. Evaluate when $x=3$, $y=-5$:

   $2x - 3xy + 4y$

   Answer: _____

6. Evaluate when $x=2$, $y=-1$:

   $x^2 - 4xy + 3y^2$

   Answer: _____

7. Evaluate when $a=3$, $b=-2$:

   $a^2 + ab - b^2$

   Answer: _____

8. Evaluate when $p=2$, $q=-3$:

   $p^2 + 2pq - q$

   Answer: _____

9. Evaluate when $r=5$, $s=-2$:

   $2r - s^2 + rs$

   Answer: _____

10. Evaluate when $m=4$, $n=-1$:

    $3m^2 - 2mn + n^2$

    Answer: _____

Based on the Numberbender lesson "ALGEBRA: Evaluating Algebraic Expressions" • youtu.be/ODXWMglNUYg

Answer Key & Solutions

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TEACHER NOTES

Items 1–4: single-variable substitution. Items 5–10: two-variable substitution with negative values — watch sign rules carefully.

1. Evaluate when $x = 4$: $3x + 5$

Answer: 17

$3(4)+5 = 12+5 = 17$.

2. Evaluate when $x = -2$: $2x - 7$

Answer: −11

$2(-2)-7 = -4-7 = -11$.

3. Evaluate when $a = 5$: $a^2 - 3a$

Answer: 10

$(5)^2-3(5) = 25-15 = 10$.

4. Evaluate when $n = -3$: $n^2 + 2n - 1$

Answer: 2

$(-3)^2+2(-3)-1 = 9-6-1 = 2$.

5. Evaluate when $x=3$, $y=-5$: $2x - 3xy + 4y$

Answer: 31

$2(3)-3(3)(-5)+4(-5) = 6+45-20 = 31$.

6. Evaluate when $x=2$, $y=-1$: $x^2 - 4xy + 3y^2$

Answer: 15

$(2)^2-4(2)(-1)+3(-1)^2 = 4+8+3 = 15$.

7. Evaluate when $a=3$, $b=-2$: $a^2 + ab - b^2$

Answer: −1

$(3)^2+(3)(-2)-(-2)^2 = 9-6-4 = -1$.

8. Evaluate when $p=2$, $q=-3$: $p^2 + 2pq - q$

Answer: −5

$(2)^2+2(2)(-3)-(-3) = 4-12+3 = -5$.

9. Evaluate when $r=5$, $s=-2$: $2r - s^2 + rs$

Answer: −4

$2(5)-(-2)^2+(5)(-2) = 10-4-10 = -4$.

10. Evaluate when $m=4$, $n=-1$: $3m^2 - 2mn + n^2$

Answer: 57

$3(16)-2(4)(-1)+(-1)^2 = 48+8+1 = 57$.