

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

ID: A

## Math 9 Unit 5 Polynomials Practice Test

## Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. A large white square represents an  $x^2$ -tile, a black rectangle represents a  $-x$ -tile, and a small white square represents a 1-tile.

Write the polynomial represented by this set of algebra tiles.



- a.  $4x^2 - x^3 + 6$       b.  $-4x^2 + 3x + 6$       c.  $4x - 3x^2 + 6$       d.  $4x^2 - 3x + 6$
- \_\_\_\_\_ 2. Identify the polynomials that can be represented by the same set of algebra tiles.
- i)  $3x^2 - 5 + 2x$   
 ii)  $3x^2 - 2x + 5$   
 iii)  $-5 + 2x - 3x^2$   
 iv)  $2x - 5 + 3x^2$
- a. iii and iv      b. i and ii      c. i and iv      d. ii and iv
- \_\_\_\_\_ 3. Combine like terms. Sketch algebra tiles if it helps.
- $10x^2 - 7x + 3x - 8x^2$
- a.  $2x^2 + 4x$       b.  $-2x^2$       c.  $2x^2 - 4x$       d.  $3x^2 - 5x$
- \_\_\_\_\_ 4. Add:  $(4x^2 - 5) + (5x^2 - 9x - 7)$
- a.  $9x^2 - 9x + 12$       c.  $20x^2 - 9x - 35$   
 b.  $9x^2 - 9x - 12$       d.  $9x^2 - 14x - 7$
- \_\_\_\_\_ 5. Subtract:  $(2r^2 - 3) - (5r^2 + 8r + 8)$
- a.  $3r^2 - 8r - 11$       c.  $3r^2 + 8r + 5$   
 b.  $-3r^2 + 8r + 5$       d.  $-3r^2 - 8r - 11$
- \_\_\_\_\_ 6. Divide:  $\frac{15w^2 - 12w + 9}{3}$
- a.  $5w^2 - 4w + 3$       c.  $12w^2 - 12w + 9$   
 b.  $12w^2 - 9w + 6$       d.  $5w^2 - 12w + 9$

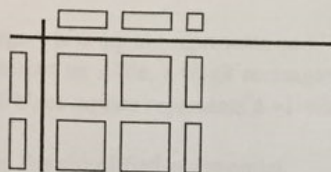
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7. A large white square represents an  $x^2$ -tile, a white rectangle represents an  $x$ -tile, and a small white square represents a 1-tile.

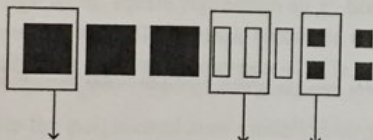
Which of these multiplication sentences is modelled by the algebra tiles below?

- i)  $2x(2x + 1)$
- ii)  $2(2x^2 + 1)$
- iii)  $x(2x + 1)$
- iv)  $2x(4x^2 + 2x)$



- a. iv
  - b. ii
  - c. i
  - d. iii
8. Multiply:  $(-q)(5p - 8q)$
- a.  $-5pq + 8q^2$
  - b.  $5p + 9q$
  - c.  $4pq - 9q^2$
  - d.  $-5pq - 8q$
9. A large black square represents a  $-x^2$ -tile, a white rectangle represents an  $x$ -tile, and a small black square represents a  $-1$ -tile.

Write the subtraction sentence that these algebra tiles represent.



- a.  $(3x^2 - 3x + 4) - (-x^2 + 2x - 2)$
- b.  $(-3x^2 + 3x - 4) - (-x^2 - 2x - 2)$
- c.  $(-x^2 + 2x - 2) - (-3x^2 + 3x - 4)$
- d.  $(-3x^2 + 3x - 4) - (-x^2 + 2x - 2)$

**Short Answer**

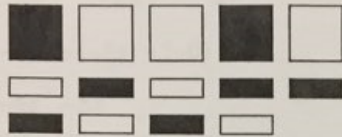
10. Name the coefficients, variable, degree, and constant term in the polynomial  $4x^2 - 8x + 6$ .

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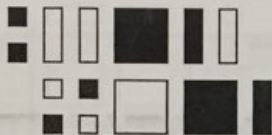
11. A large white square represents an  $x^2$ -tile, a large black square represents a  $-x^2$ -tile, a white rectangle represents an  $x$ -tile, and a black rectangle represents a  $-x$ -tile.

Write the simplified polynomial.



12. A large white square represents an  $x^2$ -tile, a large black square represents a  $-x^2$ -tile, a white rectangle represents an  $x$ -tile, a black rectangle represents a  $-x$ -tile, a small white square represents a 1-tile, and a small black square represents a  $-1$ -tile.

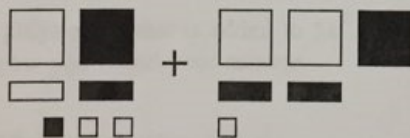
Write the simplified polynomial.



13. Group like terms, then simplify.  
 $4 + 3x - 6 + 5x^2 + 2x - 5x^2 + 3 - 5x$

14. A large white square represents an  $x^2$ -tile, a large black square represents a  $-x^2$ -tile, a white rectangle represents an  $x$ -tile, a black rectangle represents a  $-x$ -tile, a small white square represents a 1-tile, and a small black square represents a  $-1$ -tile.

Write the polynomial sum modelled by this set of tiles.



15. Subtract:  $(8y^2 - 2x^2 + 5x - 11) - (5y^2 - 6x^2 - 9x - 10)$

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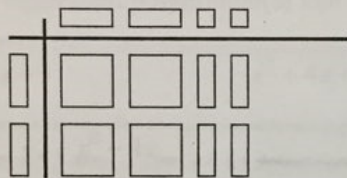
16. Here is a student's solution for this question:

$$\begin{aligned}
 & (12x^2 - 15x - 3) \div (-3) \\
 &= \frac{12x^2}{-3} + \left(\frac{-15x}{-3}\right) + \left(\frac{-3}{-3}\right) \\
 &= -4x^2 + (-5x) + (-0) \\
 &= -4x^2 - 5x
 \end{aligned}$$

Identify the errors in the solution.

17. A large white square represents an
- $x^2$
- tile, a white rectangle represents an
- $x$
- tile, and a small white square represents a 1-tile.

Write a division sentence that is modelled by these algebra tiles.



18. Determine the product:
- $(-4x)(5x + 6y - 4z)$

**Problem**

19. A box contains 4
- $x$
- tiles, 2
- $-x$
- tiles, 5
- $y$
- tiles, 10
- $-y$
- tiles, and 5
- $-1$
- tiles. Write the polynomial represented by these tiles, then simplify.

20. Create a polynomial that is added to
- $5x^2 + 6x + 9$
- to get
- $7x^2 + 9x + 14$
- . Explain how you found your answer.

21. Divide:
- $\frac{10x^2 - 45x + 75y - 250y^2}{5}$

Show your work.



Master 5.17

## PRACTICE Test: Unit 5 Polynomials

(ver.11-09-A)

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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(2 marks for each question, unless otherwise noted)

- 1). Identify the polynomials in the following expressions.

$2m^2 + 1$

$3x^{\frac{1}{2}}$

$-4x$

$\frac{1}{x^2+x}$

$0.25y^2$

- 2). Identify each polynomial as a monomial, binomial, or trinomial.

$19t$

$g - 4g^2 + 5$

$-1 + xy + y^2$

$4 - 11w$

- 3). Circle the equivalent polynomial(s) that are equivalent to:
- $x^2 - 4x - 3$
- .

$x^2 - 4x + 3$

$-x^2 + 4x + 3$

$-4x - 3 + x^2$

$3 - 4x - x^2$

$-3 + x^2 - 4x$

$x^3 - 4x - 3$

$-4x - x^2 - 3$

$-3 - 4x + x^2$

- 4). Write a polynomial using the given information.

A.) A binomial that contains the variable  $x$ , with constant term  $-2$ , and the coefficient of the other term is  $-3$ B.) A trinomial that contains the variable  $k$ , the coefficient of the second degree term is  $-1$ , the coefficient of the first degree term is  $5$ , and the constant term is  $-8$ .

- 5). Use algebra tiles to model each polynomial. Sketch the tiles.

A.)  $2x - 1$

B.)  $-3a^2 - 2a + 1$

9). Simplify each polynomial.

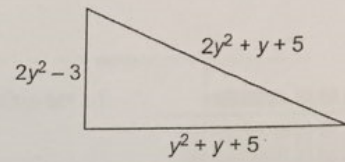
A.)  $3a^2 - 2a - 4 + 3a - 2a^2 - 1$

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B.)  $-6x^2 + 10x - 4 + 3 - 12x - 7x^2$

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10). Write an expression for the perimeter of this triangle. Simplify the polynomial.



11). Determine the perimeter of the triangle in the previous question if  $y = 3$  cm.

12). Use algebra tiles, sketch your tile model representing:  $(4x + 2) - (-2x + 1)$ .  
Record your answer symbolically.

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13). Add or subtract as indicated.

A.)  $(3x + 6) - (x - 2) =$

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C.)  $(x - 3x^2) + (7 + 3x - 3x^2)$

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B.)  $(3y + 7y^2 + 9) - (3y^2 + 4y)$

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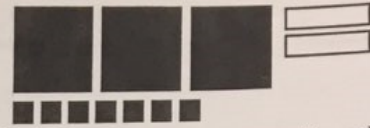
D.)  $(-5y^2 - y + 9) - (-2y^2 - y - 4)$

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11). Create one addition and one subtraction question that gives this result.

Addition

\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_



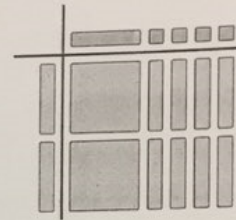
(4 marks)

Subtraction

12). Write the multiplication sentence and the division sentence modelled by this set of algebra tiles.

Multiplication

( ) ( ) =



(4 marks)

Division

13). Multiply or divide as indicated.

A.)  $2(-5r - 3)$

D.)  $(8y^2 - 6y + 2) \div (-2)$

B.)  $\frac{12p^2 - 18p + 24}{-6}$

E.)  $3c(5c - 2)$

C.)  $(1 + 3f - 4f^2)(-6)$

F.)  $(-1 - 10r)(-r)$

$$G.) \frac{8v^2 + 4v}{2v} =$$

$$H.) (-6x + 9xy) \div (-3x) =$$

- 4.) Identify the error(s) in the solution. Complete the correct solution on the right.

$$\begin{aligned} & 3x(2x + 1) \\ &= 6x + 3x \\ &= 9x \end{aligned}$$

- 5.) The perimeter of a rectangle is  $8s^2 + 12s$ . If the width of the rectangle is  $4s$ , what is the length?  
**Explain your strategy.**

Length = \_\_\_\_\_

- 6.) Here is a student's solution for a division question.

$$\begin{aligned} & (-12x^2 - 9x) \div (-3x) \\ &= \frac{-12x^2 - 9x}{-3x} \\ &= \frac{-12x^2}{-3x} - \frac{9x}{-3x} \\ &= 4x^2 - 3 \end{aligned}$$

- A.) Explain why the student's solution is incorrect.

- B.) Complete a correct solution on the space to the right of the student's solution.



Math 9

Name \_\_\_\_\_ ID: 1

## Polynomial Review

Date \_\_\_\_\_ Period \_\_\_\_\_

Simplify each expression.

1)  $(x + 3 - 7x^2) - (2x + 3x^2 + 8)$

2)  $(3k - 7k^4 + 5k^3) - (8k^3 - 2 + 2k)$

3)  $(7p + 3 + 7p^2) + (6p^2 + 5p - 6)$

4)  $(1 - 2k - 8k^4) + (3k^4 - 8k - 2)$

5)  $(7x^2y^4 + 7x^3y^4) + (3x^3y^4 + x^2y^4)$

6)  $(5y^3 - 5y^4) + (2y^3 - 8y^4)$

7)  $(5x^4y^2 - 5y^3) - (3x^4y^2 + 6y)$

8)  $(2 + 3y^4) - (8 + 6y^4)$

Find each product.

9)  $-3a(a + 3)$

10)  $3x^4(-6x + 5)$

11)  $-(-8x - 1)$

12)  $5a(-a - 1)$

13)  $2m^2(8m^2 + 7mn + 4n^2)$

14)  $-5x(2x^2 + 3xy - 8y^2)$

15)  $-7xy(2x^2 + 5xy + 7y^2)$

16)  $-6x(-4x^2 + 4xy - 7y^2)$

gebra 1

Name \_\_\_\_\_

Assignment

Date \_\_\_\_\_ Period \_\_\_\_\_

Solve.

$$(10n^3 + 5n^2 + 5n) \div 10n^2$$

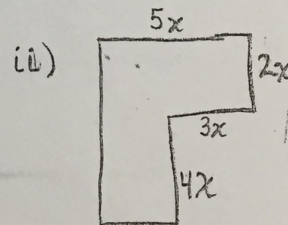
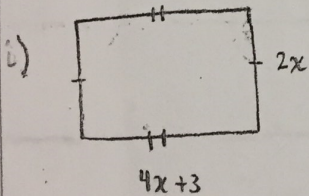
$$2) (18n^6 + 2n^5 + 2n^4) \div 6n^2$$

$$(45x^3 + 36x^2 + 9x) \div 9x$$

$$4) (4v^3 + 24v^2 + 8v) \div 8v$$

Perimeter questions

What is the area and perimeter of the following shapes

If  $x=2$  then what is the value of the Area and Perimeter from (i) & (ii)

## Math 9 Practice Test

1) D      2) C      3) C      4) B      5) D

6) A      7) C      8) A      9) D

## Short answers

10)	Coeff	var	deg	const
	4, -8	x	2	6

$$11) x^2 - x \quad 12) -x^2 + x - 2 \quad 13) 1$$

$$14) x^2 - 2x + 2 \quad 15) 3y^2 + 4x^2 + 14x - 1$$

$$16) -4x^2 + 5x + 1 \quad 17) \frac{4x^2 + 4}{2x} = 2x + 2$$

$$18) -20x^2 - 24xy + 16xz$$

$$20) 2x^2 + 3x + 5$$

$$21) 2x^2 - 9x + 15y - 50y^2$$





6a)  $a^2 + a - 5$

b)  $-13x^2 - 2x - 1$

7a)  $5y^2 + 2y + 7$

8) 58

10) a)  $2x + 8$

c)  $-6x^2 + 4x + 7$

b)  $4y^2 - y + 9$

d)  $-3y^2 + 13$

11) answers may vary

$$12) \quad (2x)(x+4) = 2x^2 + 8x$$

$$\frac{2x^2 + 8x}{2x} = x + 4$$

$$13) \quad a) \quad -10r - 6$$

$$d) \quad -4y^2 + 3y - 4$$

$$b) \quad -2p^2 + 3p - 4$$

$$e) \quad 15c^2 - 6c$$

$$c) \quad 24f^2 - 18f - 6$$

$$f) \quad 10r^2 + r$$

$$g) \quad 4v + 2$$

$$h) \quad 2 - 3y$$

$$14) \quad 6x^2 - 3x$$

$$15) \quad 4s^2 + 2$$

$$16) \quad 4x + 3$$