MATH 9 - Unit 5 Quiz - Version 1 **Name:** Solutions

Perimeter: Addition of all sides
Simplest form: Simplified (all like terms paired up)
To SUBTRACT, change the signs of all terms on the polynomial that follows the subtraction sign:
This is called "ADDING THE OPPOSITE"

Multiple Choice (2 points each)
Identify the choice that best completes the statement or answers the question.

D 1. Identify the polynomial that is "like" (equivalent to, the same to) $4-6v-7v^2$.
i) $7v^2+6v-4$
ii) $4+7v^2-6v$
iii) $-7v^2-6v+4$
iv) $-7v^2-4+6v$

4 = constant that's positive
$-6v$ = negative
$-7v^2$ = negative

a. iv b. ii c. i d. iii

A 2. Combine **like terms** (Simplify).
$3x+8+7x-2$ = $3x+7x+8-2 = 10x+6$

a. $10x+6$ b. $11x+5$ c. $16x$ d. $10x-6$

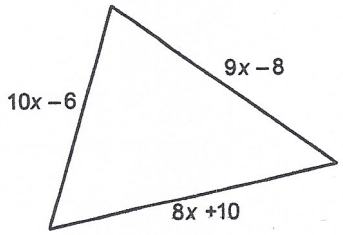
A 3. Simplify: $6x+8x-2x+4x+5$ $6x+8x=14x$ $-2x+4x=2x \Rightarrow 14x+2x+5 = 16x+5$

a. $16x+5$ b. $8x+9$ c. $12x+9$ d. $16x^4+5$

A 4. Add: $(-3x-7)+(5-2x)$ $-3x-7+5-2x = -3x-2x-7+5 = -5x-2$

a. $-5x-2$ b. $-5x+12$ c. $-5x+2$ d. $5x+2$

D 5. Write the **perimeter** of this triangle as a polynomial in **simplest form.**



$= (10x-6)+(9x-8)+(8x+10)$
$= 10x-6+9x-8+8x+10$
$= 10x+9x+8x-6-8+10 = 27x-4$

a. $27x-24$ b. $27x+4$ c. $27x+24$ d. $27x-4$

D 6. Add: $(-4x^2+3-7x)+(7+x^2+10x)$ $= -4x^2+3-7x+7+x^2+10x = -4x^2+x^2$
$-7x+10x$
$3+7$
$= -3x^2+3x+10$

a. $-3x^2-3x+10$
b. $-5x^2-3x+10$
c. $-5x^2+3x+10$
d. $-3x^2+3x+10$

B 7. Subtract: $(6x-3)-(11x-8)$ $= 6x-3-11x+8 = 6x-11x-3+8$
$= -5x+5$

a. $-5x+11$ b. $-5x+5$ c. $-5x-5$ d. $-5x-11$

A 8. Which of the following expressions are **monomials** with **degree 2**?

i) $2x^2 + 2x$
ii) $2x^2$
iii) x^2
iv) $2x$

- Monomial is one Term
- Degree is the exponent

a. ii and iii b. ii and iv c. iii and iv d. i and ii

B 9. A large white square represents an x^2-tile, a large black square represents a $-x^2$-tile, a small white square represents a 1-tile, and a small black square represents a -1-tile.
How would you model the polynomial $-3x^2 - 4$ with algebra tiles?

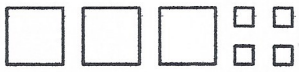
a.

b.

3

4

c.



d.

3 + 4

D 10. Add the polynomials.

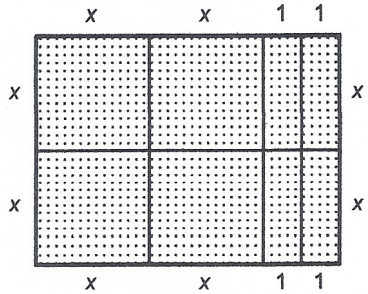
$$\begin{array}{r} 4x - 6 \\ + \underline{-8x + 11} \end{array}$$

$4x - 8x = -4x$
$-6 + 11 = +5$

a. $4x + 5$ b. $4x - 5$ c. $-4x - 5$ d. $-4x + 5$

Short Answer (3 points each)

11. Write a polynomial to represent the perimeter of the rectangle.



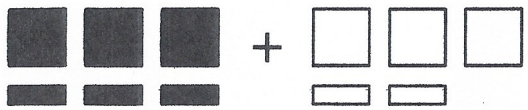
Perimeter is the sum of all sides:

$x + x + 1 + 1 + x + x + 1 + 1 + x + x + x + x$

group the x $= x + x + x + x + x + x + x + x$
group the numbers $= 1 + 1 + 1 + 1$
$= 8x + 4$

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, and a black rectangle represents a $-x$-tile.

Write the polynomial sum modelled by this set of tiles.



$(-3x^2 - 3x) + (3x^2 + 2x) = -3x^2 - 3x + 3x^2 + 2x$

$= -3x^2 + 3x^2 - 3x + 2x = -1x$

13. The polynomial $5w + 11$ represents the cost, in dollars, of shipping a parcel with mass w kg by ground. The polynomial $9w + 14$ represents the cost of shipping a parcel with mass w kg by air.

a) Write a polynomial for the **difference** (subtraction) in the costs of the two methods of shipping. (THAT IS, the cost of shipping by air MINUS the cost of shipping by ground)

$(9w + 14) - (5w + 11)$ Add the opposite:

$9w + 14 + (-5w) + (-11) = 9w - 5w + 14 - 11 = 4w + 3$

b) How much more does it cost to ship a 15-kg parcel **by air**? (Hint: Replace w with the weight given).

How much more means the difference, which you just calculated $\Rightarrow$ $4w + 3 = 4(15) + 3 = \$63$

14. Subtract: $(5y^2 - 5x^2 + 3x - 8) - (2y^2 - 9x^2 - 7x - 7)$

Add the Opposite

$(5y^2 - 5x^2 + 3x - 8) + (-2y^2 + 9x^2 + 7x + 7)$

$= 5y^2 - 5x^2 + 3x - 8 - 2y^2 + 9x^2 + 7x + 7$

$= 5y^2 - 2y^2 - 5x^2 + 9x^2 + 3x + 7x - 8 + 7$

$3y^2 + 4x^2 + 10x - 1$

Problem

15. Write a polynomial with the given variable, degree, coefficient, and number of terms. **(6 points or 2 points each)**

a) Variable: p; degree: 2; coefficients: 2, –4; number of terms: 2

$2p^2 - 4p$ or $-4p^2 + 2p$

b) Variable: c; degree: 1; coefficient: 6; number of terms: 1

$6c$

c) Variable: t; degree 2, coefficients: –3, 7; number of terms: 3; constant: 5

$-3t^2 + 7t + 5$ or $7t^2 - 3t + 5$

16. The box below contains the terms in a polynomial. Group like terms, then simplify.

-2		8		
$-5x$				
	$3x^2$			
$-4x$		$-4x^2$		$5x$
$3x^2$				
			$-2x$	
9	$3x$			x^2
$-7x$				
	$6x^2$	-5		$5x$
$-3x^2$				

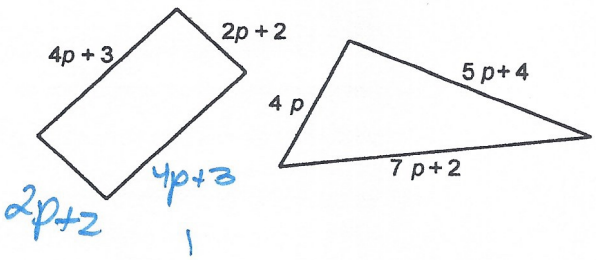
$= 3x^2 - 3x^2 + 6x^2 + 3x^2 - 4x^2 + x^2 + 10x^2 - 4x^2 = \boxed{6x^2}$

$= 5x - 4x - 7x + 3x - 2x + 5x + 5x - 13x + 8x = \boxed{-5x}$

$9 - 2 + 8 - 5 = 17 - 7 = \boxed{+10}$

$6x^2 - 5x + 10$

17. a) Write a simplified polynomial for the **perimeter of each shape below.** (Be careful to add a total of 4 sides for the rectangle, and 3 sides for the triangle!)



Rectangle: $(4p+3) + (2p+2) + (4p+3) + (2p+2)$
$= 12p + 10$

Triangle $= (4p) + (5p+4) + (7p+2)$
$= 4p + 5p + 4 + 7p + 2$
$= 4p + 5p + 7p + 4 + 2 = 16p + 6$

b) Subtract the perimeter of the rectangle from the perimeter of the triangle.

$(16p+6) - (12p+10) = (16p+6) + (-12p-10)$
$= 16p + 6 - 12p - 10 = 4p - 4$

c) If $p = 4$, which shape has the greater perimeter? (That is, in each perimeter polynomial on a), substitute p with 4)

Triangle $= 16p + 6 = 16(4) + 6 = 64 + 6 = \boxed{70}$

Rectangle $= 12p + 10 = 12(4) + 10 = 48 + 10 = \boxed{58}$

the greatest perimeter belongs to the triangle