MPM1D Name: _____

Polynomials Review Assignment

1. Fill in the following information for each polynomial.

	3	$-a^2+2a^2b$	x^2y-y^2+4y	a^2b-b	$3s^4t^3$
	↑ constant term				
Coefficients:		-1, 2	1, -1, 4	1, -1	3
Variables:		a & b	x & y	a & b	s & t
# of Terms:		3	3	2	1
Name:		trinomial	trinomial	binomial	monomial
Degree of Each Term:		n/a, 2, 3	3, 2, 1	3, 1	7
Degree of Polynomial:		3	3	3	7

2. Which expression represents the result of simplifying $(4x-1)-(x+1)$? (multiple choice)

A) $5x+2$ **B)** $3x-2$ C) $5x$ D) $3x$

$= 4x-1-x-1$
$= 4x-x-1-1$
$= 3x-2$

3. Remove brackets and collect like terms. Then, simplify.

a) $(x+3)+(x+5)$

$= x+3+x+5$
$= x+x+3+5$
$= 2x+8$

b) $(2y-5)+(y+9)$

$= 2y-5+y+9$
$= 2y+y-5+9$
$= 3y+4$

c) $(3v-2)+(6-v)$

$= 3v-2+6-v$
$= 3v-v-2+6$
$= 2v+4$

d) $(k+4)+(2-3k)+(6k-1)$

$= k+4+2-3k+6k-1$
$= k-3k+6k+4+2-1$
$= 4k+5$

MPM1D Name: _____

4. Simplify

a) $(6k-4)+(2k+4)$

$= 6k - 4 + 2k + 4$

$= 6k + 2k - 4 + 4$

$= 8k$

b) $(b-6)-(2-5b)+(b+4)$

$= b - 6 - 2 + 5b + b + 4$

$= b + 5b + b - 6 - 2 + 4$

$= 7b - 4$

c) $(x+2)-(1-x)-(5+x)$

$= x + 2 - 1 + x - 5 - x$

$= x + x - x + 2 - 1 - 5$

$= x - 4$

d) $(g+12)+(g-7)-(2-3g)$

$= g + 12 + g - 7 - 2 + 3g$

$= g + g + 3g + 12 - 7 - 2$

$= 5g + 3$

e) $(1-b)+(3+2b)-(b-8)$

$= 1 - b + 3 + 2b - b + 8$

$= -b + 2b - b + 1 + 3 + 8$

$= -2b + 2b + 12$

$= 12$

f) $(x^2+2x+1)+(2x^2+4)$

$= x^2 + 2x + 1 + 2x^2 + 4$

$= x^2 + 2x^2 + 2x + 1 + 4$

$= 3x^2 + 2x + 5$

MPM1D Name: _____

5. Simplify the following to a single power. Then evaluate.

a) $\left(-\frac{3}{7}\right)^6 \div \left(-\frac{3}{7}\right)^3$

same base

$= \left(-\frac{3}{7}\right)^{6-3}$

$= \left(-\frac{3}{7}\right)^3$

$= \frac{-3^3}{7^3}$

$= \frac{-27}{343}$

b) $\frac{0.2^4 \times 0.2^3 \div 0.2^2}{(0.2^2)^2}$

$= \frac{0.2^{4+3-2}}{0.2^{2\times 2}}$

$= \frac{0.2^5}{0.2^4}$

$= 0.2^{5-4}$

$= 0.2^1$

$= 0.2$

6. Simplify using the exponent laws, then evaluate the expression.

a) $\left[\left(\frac{1}{3}\right)^3\right]^3$

$= \left(\frac{1}{3}\right)^{3\times 3}$

$= \left(\frac{1}{3}\right)^9$

$= \frac{1^9}{3^9}$

$= \frac{1}{19683}$

b) $[(-3)^4]^2 \times (-3)^5 \div [(-3)^2]^5$

$= (-3)^{4\times 2} \cdot (-3)^5 \div (-3)^{2\times 5}$

$= (-3)^8 \cdot (-3)^5 \div (-3)^{10}$

$= (-3)^{8+5-10}$

$= (-3)^3$

$= -27$

7. Simplify.

a) $(-x^3)^5(4x^2)^2$

$= [-x^{3\cdot 5}][4^2 x^{2\times 2}]$

$= (-x^{15})(16x^4)$

$= -16x^{15+4}$

$= -16x^{19}$

b) $\frac{10g^4h^5 \times (3g^3h^2)^2}{(4gh^2)^2 \times 3g^3h^2}$ *challenge question

$= \frac{10g^4h^5 \cdot 3^2 g^{3\times 2} h^{2\times 2}}{4^2 g^{1\times 2} h^{2\times 2} \cdot 3g^3h^2}$

$= \frac{10g^4h^5 \cdot 9g^6h^4}{16g^2h^4 \cdot 3g^3h^2}$

$= \frac{(10\times 9) g^{4+6} h^{5+4}}{(16\times 3) g^{2+3} h^{4+2}}$

$= \frac{90g^{10}h^9}{48g^5h^6}$

$= \frac{15}{8} g^{10-5} h^{9-6}$

$= \frac{15}{8} g^5 h^3$

MPM1D Name: _____

8. Expand by distribution.

a) $3(g+4)$

$= 3g + 12$

b) $-4(-w-5)$

$= 4w + 20$

c) $r(3r+5)$

$= 3r^2 + 5r$

d) $w(4w-5)$

$= 4w^2 - 5w$

e) $(2q+5)(6)$

$= 12q + 30$

h) $(6w-4)(-3w)$

$= -18w^2 + 12w$

9. Expand and simplify

a) $2(b+3)+5(b+4)$

$= 2b + 6 + 5b + 20$

$= 2b + 5b + 6 + 20$

$= 7b + 26$

b) $-(d-4)-4(d+2)$

$= -d + 4 - 4d - 8$

$= -d - 4d + 4 - 8$

$= -5d - 4$

c) $5[4s-(s+2)]$

$= 5[4s - s - 2]$

$= 5[3s - 2]$

$= 15s - 10$

d) $3[-2(6-t)+5t]$

$3[-12 + 2t + 5t]$

$3[-12 + 7t]$

$= -36 + 21t$

$= 21t - 36$

10. Simplify the following expressions.

a) $3(3x^2 - 2x - 1)$

$= 9x^2 - 6x - 3$

b) $2a(5a - 6)$

$= 10a^2 - 12a$

c) $4 + 6(2x - 3)$

$= 4 + 12x - 18$

$= 12x - 18 + 4$

$= 12x - 14$

d) $-5x - 3x(2x + 5) + x(6x + 2)$

$= -5x - 6x^2 - 15x + 6x^2 + 2x$

$= -6x^2 + 6x^2 - 5x - 15x + 2x$

$= -18x$

e) $1 + a(3a - 3) - 4a + 2a(2a - 1)$

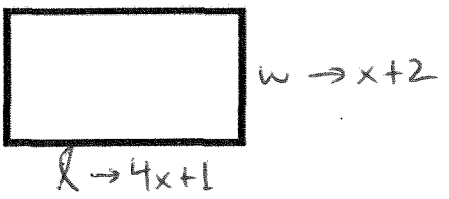
$= 1 + 3a^2 - 3a - 4a + 4a^2 - 2a$

$= 3a^2 + 4a^2 - 3a - 4a - 2a + 1$

$= 7a^2 - 9a + 1$

MPM1D Name: _____

11. A rectangle has length 4x + 1 and width x + 2.
a) Label the diagram.



b) Write a simplified expression for the perimeter of the rectangle.

$P = 2(l + w)$
$P = 2(4x + 1 + x + 2)$
$P = 2(5x + 3)$
$P = 10x + 6$

c) Find the perimeter of the rectangle when x = 5.

$P = 10x + 6$ ← $x = 5$
$P = 10(5) + 6$
$P = 50 + 6$
$P = 56$

∴ The perimeter is 56 (no units specified)

12. Three artists contributed to a coffee-table book. They each chose to be paid a different way.

Artist	Fixed Rate ($)	Royalty ($ per *n* books sold)	
Ayesha	1000	$2n$	→ $1000 + 2n = E$
Jorge	–	$5n$	→ $5n = E$
Ioana	4000	–	→ $4000 = E$

a) Write an expression for the total earnings for each artist.

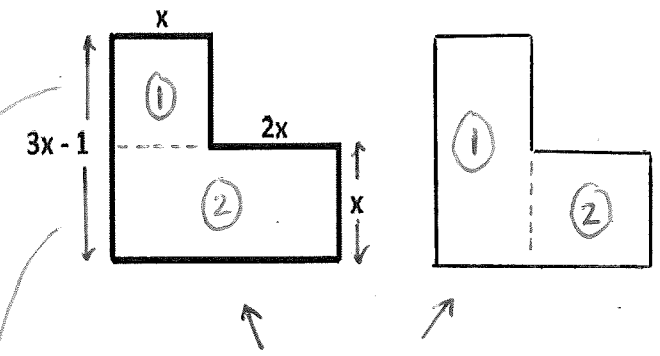
b) Write a simplified expression for the total amount paid to Ayesha, Jorge, and Ioana.

E = add all 3 together
$E = (1000 + 2n) + (5n) + (4000)$
$E = 1000 + 4000 + 2n + 5n$
$E = 7n + 5000$

MPM1D Name: _____

13. Consider the following composite figure.

a) Find a simplified expression for the **area**.



choose either method but split into 2 pieces

Area shape #1

$A = \ell \cdot w$

$A = x \cdot (2x-1)$

$A = 2x^2 - x$

Area shape #2

$A = \ell \cdot w$

$A = (3x)(x)$

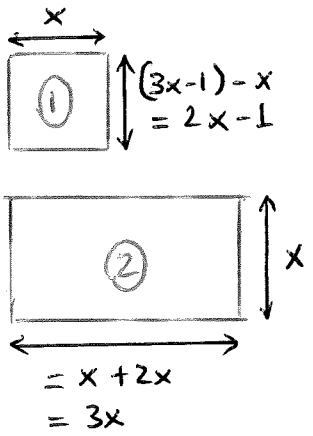
$A = 3x^2$

Add up

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

$\boxed{A = 5x^2 - x}$

b) Find a simplified expression for the **perimeter**.



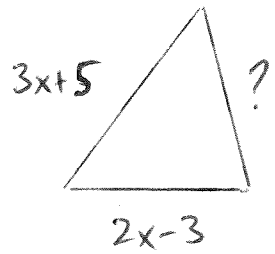
P = Add up all the sides

$P = (3x-1) + x + (2x-1) + 2x + x + 3x$

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

$\boxed{P = 12x - 2}$

14. A triangle has a perimeter of 9x + 12. If two of its sides have lengths of 3x + 5 and 2x – 3, find the missing side.



$\boxed{P = 9x + 12}$

$P = (3x+5) + (2x-3) + ?$

$9x + 12 = 3x + 5 + 2x - 3 + ?$

$9x + 12 = 3x + 2x + 5 - 3 + ?$

$9x + 12 = 5x + 2 + ?$

$9x - 5x + 12 - 2 = ?$

$\boxed{4x + 10 = ?}$