**Review: Polynomial Operations**
**I will be able to add, subtract, multiply.**

Name Answer Key Per

**Part 1:** Classify each as **M** (monomial), **B** (binomial), **T** (trinomial), **P** (polynomial), or **C** (constant).

1). B $2x+1$

2). B $17x^2+11$

3). P $8x^3+2x^2+3x-7$

4). C M $-130$

5). T $4a^2+7a-10$

6). T $10x^3-2x+1$

**Part 2: Standard Form of Polynomials**

**7.)** Circle the problems that are in **standard form**. If it is not in standard form, re-write in standard form.

a. $x^3-11x^2$

b. $2+3x+4x^2+3x^3$ ↓ $3x^3+4x^2+3x+2$

c. $-3x+17x^4+2x^2$ ↓ $17x^4+2x^2-3x$

d. $-1+3x+2x^2$ $2x^2+3x-1$

8. Given: $2x^3-5x^2-2x+12$

How many terms are there? 4

What is the coefficient of the 3rd term? -2

What is the constant? 12

**Part 3: Add these polynomials. Only combine things that are alike (have the same exponent).**

9.) $14x+5+10x+5$

$24x+10$

10.) $10x+12+6x+20$

$16x+32$

11.) $17x^2+11+8x^2+11$

$25x^2+22$

12.) $(19x^2+12x+12)+(7x^2+10x+13)$

$26x^2+22x+25$

13.) $(\cancel{4x^2}-\cancel{6x}+7)+(\cancel{-19x^2}-\cancel{15x}-18)$

$-15x^2-21x-11$

14.) $(\cancel{20x^2}+\cancel{15x}+13)+(\cancel{-19x^2}+\cancel{17x}+5)$

$x^2+32x+18$

15.) $(\cancel{9x^6}-\cancel{4x^5})+(\cancel{10x^6}-15x^4+14)$

$9x^6+6x^5-15x^4+14$

16.) $(\cancel{9x^2}+12)+(\cancel{7x^2}+\cancel{10x}+13)$

$16x^2+10x+25$

17.) $(\cancel{5x^6}+\cancel{9x^3}-6x)+(\cancel{-9x^6}-\cancel{20x^3}-6x)$

$-4x^6+9x^3-20x^2-12x$

**Part 4: Subtract these polynomials.**

18.) $(6x + 14) - (9x + 5)$

$6x+14-9x-5$

$-3x+9$

19.) $(14x^2 + 13x + 12) - (7x^2 + 20x + 4)$

$\cancel{14x^2}+\cancel{13x}+12-\cancel{7x^2}-\cancel{20x}-4$

$7x^2-7x+8$

20.) $(19x^2 + 9x + 16) - (5x^2 + 12x)$

$\cancel{19x^2}+9x+16-\cancel{5x^2}-12x$

$14x^2-3x+16$

21.) $(17x^2 + 7x - 14) - (-6x^2 - 5x - 18)$

$\cancel{17x^2}+\cancel{7x}-14+\cancel{6x^2}+\cancel{5x}+18$

$23x^2+12x+4$

22.) $(-18x^2 + 4x - 16) - (15x^2 + 4x - 13)$

$-\cancel{18x^2}+\cancel{4x}-16-\cancel{15x^2}-\cancel{4x}+13$

$-33x^2-3$

**Part 5: Multiplying Monomials**

23.) $2x(4x^2)$

$8x^3$

24.) $17x^2(2x^5)$

$34x^7$

25.) $-3x^3(4x^2)$

$-12x^5$

26.) $-12x^2(-2x)$

$24x^3$

**Part 6: Use the distributive property (FOIL) to find the product (multiply).**

27.) $4(x+2)$

$4x+8$

28.) $-3(2x^2+1)$

$-6x^2-3$

29.) $6(x^2+2x+7)$

$6x^2+12x+42$

30.) $4x(1-x)$

$4x-4x^2$

$\boxed{-4x^2+4x}$

30.) $-x^2(x+5)$

$-x^3-5x^2$

31.) $3x^2(4x^3-5x+10)$

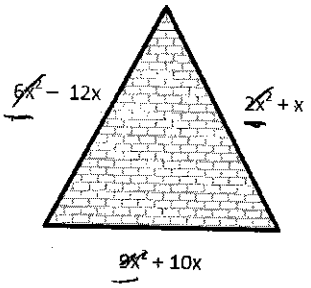
$12x^5-15x^3+30x^2$

32.) $3x(-x^2+2x-12)$

$-3x^3+6x^2-36x$

**Part 7: Write an expression to model each situation.**

33. Find the perimeter of the triangle.




P = $17x^2-x$

34. If Jon has -2x+5 baseball cards and Tim has -6x – 2 baseball cards, how many more cards does Jon have than Tim?

Jon – Tim

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

$-2x+5+6x+2$

$\boxed{4x+7}$

**Part 4: Subtract these polynomials.**

18.) $(6x + 14) - (9x + 5)$

19.) $(14x^2 + 13x + 12) - (7x^2 + 20x + 4)$

20.) $(19x^2 + 9x + 16) - (5x^2 + 12x)$

21.) $(17x^2 + 7x - 14) - (-6x^2 - 5x - 18)$

22.) $(-18x^2 + 4x - 16) - (15x^2 + 4x - 13)$

**Part 5: Multiplying Monomials**

23.) $2x(4x^2)$

24.) $17x^2(2x^5)$

25.) $-3x^3(4x^2)$

26.) $-12x^2(-2x)$

**Part 6: Use the distributive property (FOIL) to find the product (multiply).** [3rd + 7th]

27.) $4(x+2)$

$\boxed{4x+8}$

28.) $-3(2x^2+1)$

$\boxed{-6x^2-3}$

29.) $(6-x^2)(-2x+7)$

$12x+42-2x^3-7x^2$

$\boxed{-2x^3-7x^2+12x+42}$

30.) $4x(1-x)$

$4x-4x^2$

$\boxed{-4x^2+4x}$

30.) $(4-x^2)(x+5)$

$4x+20-x^3-5x^2$

$\boxed{-x^3-5x^2+4x+20}$

31.) $(3x^2+4x^3)(5x+10)$

$15x^3+30x^2+20x^4+40x^3$

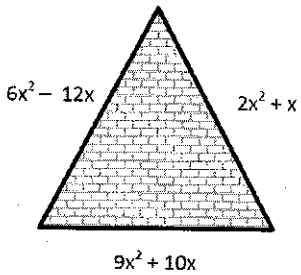
$\boxed{20x^4+55x^3+30x^2}$

32.) $3x(-x^2+2x-12)$

$\boxed{-3x^3+6x^2-36x}$

**Part 7: Write an expression to model each situation.**

33. Find the perimeter of the triangle.




P = _____

34. If Jon has -2x+5 baseball cards and Tim has -6x – 2 baseball cards, how many more cards does Jon have than Tim?