

**First Half of the Unit...** Polynomial Operations

Classifying Polynomials. Write the following polynomials in standard form.

Name them using the degree and number (#) of terms.

1)  $5x^2 - 3x^3 + 4$

2)  $x^4 + 2.2x^3 - 3.1x^2 + x - 10$

3)  $3x - 4$

Standard form

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

Degree Cubic (3)

# of terms Trinomial (3)

Standard form

Already in SF

Degree Quartile (4)

# of terms 5 term polynomial

Standard form

Already in SF

Degree Linear (1)

# of terms Binomial (2)

**Learning Target:** I can Classify Polynomials by Degree and number of terms.

How do you feel about **THIS** stuff?  
(circle one)

Got it!!

Kinda Got it...

Need help : (

**Simplify**

Add or subtract the following polynomials (Combine like terms). Write answer in standard form.

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

$3x^3 + 6x^2 - 4x + 7$

5)  $(10x^2 + 4x - 8) - (7x + 12)$   
 $+ -7x - 12$

$10x^2 - 3x - 20$

Multiply the following polynomials (Distribute everything). Write answer in standard form.

6)  $(x+3)(x-7)$

$x^2 - 7x + 3x - 21$

$x^2 - 4x - 21$

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

	$2x^2$	$4x$	$-3$
$2x$	$4x^3$	$8x^2$	$-6x$
$-5$	$-10x^2$	$-20x$	$15$

~~$4x^3$~~   
 $4x^3 - 2x^2 - 26x + 15$

8)  $(2x - 3)^2$

$(2x-3)(2x-3)$

$4x^2 + 2 \cdot 2x \cdot (-3) + 9$

$4x^2 - 12x + 9$

**Learning Target:** I can simplify polynomials by adding, subtracting, and multiplying.

How do you feel about **THIS** stuff?  
(circle one)

Got it!!

Kinda Got it...

Need help : (

**Second Half of the Unit... Factoring Polynomials (and solving with ZPP)**

**Factor**

Write in factored form by dividing out the greatest common factor (GCF)

9)  $20x^2 - 15x^4$

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

10)  $3x^4 + 9x^3 - 120x^2$

$3x^2(x^2 + 3x - 40)$

Factor by grouping (group first 2 and last 2 terms, find GCF of each)

11)  $(x^3 + 2x^2)(9x - 18)$

$x^2(x+2) + -9(x+2)$

$(x+2)(x^2 - 9)$

12)  $(3x^3 - 5x^2)(27x - 45)$

$x^2(3x-5) + -9(3x+5)$

$x^2(3x-5) - 9(3x-5)$

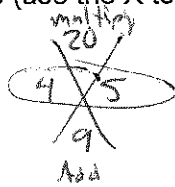
$(3x-5)(x^2 - 9)$

*to make this work, the 45 needs to be positive*

Factor the Trinomials (use the X to help split up the middle term, then grouping)

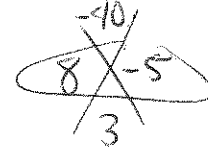
13)  $x^2 + 9x + 20$

$(x+5)(x+4)$

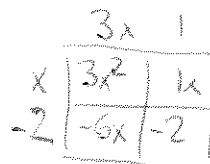


14)  $x^2 + 3x - 40$

$(x-5)(x+8)$



15)  $3x^2 - 5x - 2$

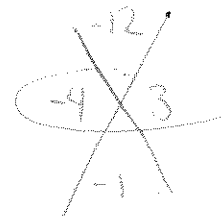
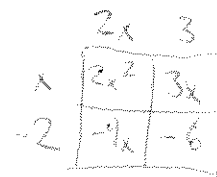


$(x-2)(3x+1)$



16)  $2x^2 - x - 6$

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



17)  $6x^2 + 6x - 36$

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

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



18)  $12x^2 - 6x + 42$

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

Not Factorable



*14 · 1  
7 · 2  
that's it*

*\* Take out GCF first*

<b>Learning Target:</b> I can factor polynomials using GCF, Grouping, and X-box (trinomials)			
How do you feel about <b>THIS</b> stuff? (circle one)	<input checked="" type="radio"/> Got it!!	<input type="radio"/> Kinda Got it...	<input type="radio"/> Need help :(

Solve the equations for x (factor first, then use ZPP)

19)  $(x+4)(x-3) = 0$   
 $x+4=0$      $x-3=0$   
 $x=-4$      $x=3$

20)  $2x^2 - x = 0$   
 $x(2x-1) = 0$   
 $x=0$      $2x-1=0$   
 $2x=1$   
 $x = \frac{1}{2}$

21)  $x^2 + 10x + 16 = 0$   
 $x^2 + 8x + 2x + 16$   
 $(x+8)(x+2) = 0$   
 $x=-8$      $x=-2$

22)  $9x^2 - 7x = -2$      $\checkmark$  set = 0 first  
 $9x^2 - 7x + 2 = 0$   
 $18$   
 $-7$   
 Can't factor  
 \* Doesn't work ... unless was negative

23) Write an equation in factored form that has solutions of ...  $x = 3, x = -1, x = 4$

$(x-3)(x+1)(x-4) = 0$   
 $x-3=0$      $x+1=0$      $x-4=0$   
 $x=3$      $x=-1$      $x=4$

24) You throw a ball off the top of a building. The height  $h$  (in feet) of the ball above the ground is modeled by  $h = -16t^2 + 76t + 20$ , where  $t$  is the time (in seconds).

How long is the ball in the air before it hits the ground?

~~$-4(4t^2 - 19t + 5)$~~   
 $-4(4t+1)(t-5)$   
 $4t+1=0$      $t-5=0$   
 $4t=-1$      $t=5$   
 $t = \frac{-1}{4}$      $t=5$   
 negative time    5 seconds

25) A rectangular box has a volume of  $72x$  cubic inches. The width of the rectangular box is  $x$  inches, the length is  $3x$  inches, and the height is  $(3x - 1)$  inches.

a. Write a polynomial that represents the volume of the box.

$72x = (x)(3x)(3x-1)$

b. What are the dimensions of the box?

$72x = (3x^2)(3x-1)$   
 $72x = 9x^3 - 3x^2$   
 $0 = 9x^3 - 3x^2 - 72x$   
 $0 = 3x(3x^2 - x - 24)$   
 $0 = 3x(3x+8)(x-3)$   
 $x=0$      $x = \frac{-8}{3}$      $x=3$

Learning Target: I can SOLVE equations with factoring and the Zero Product Property			
How do you feel about <b>THIS</b> stuff? (circle one)	Got it!!	Kinda Got it..	Need help : (

$A = 3(3) - 1$   
 $L = 3(3)$   
 $W = 3$

Look Back Through your notes...

Write and solve 2 problems that are like the ones in any section where you didn't say "Got it!!" there was: Classify Simplify Factor + Solve

Try this...

Even just writing down some old problems might help you get a few more points on the test!