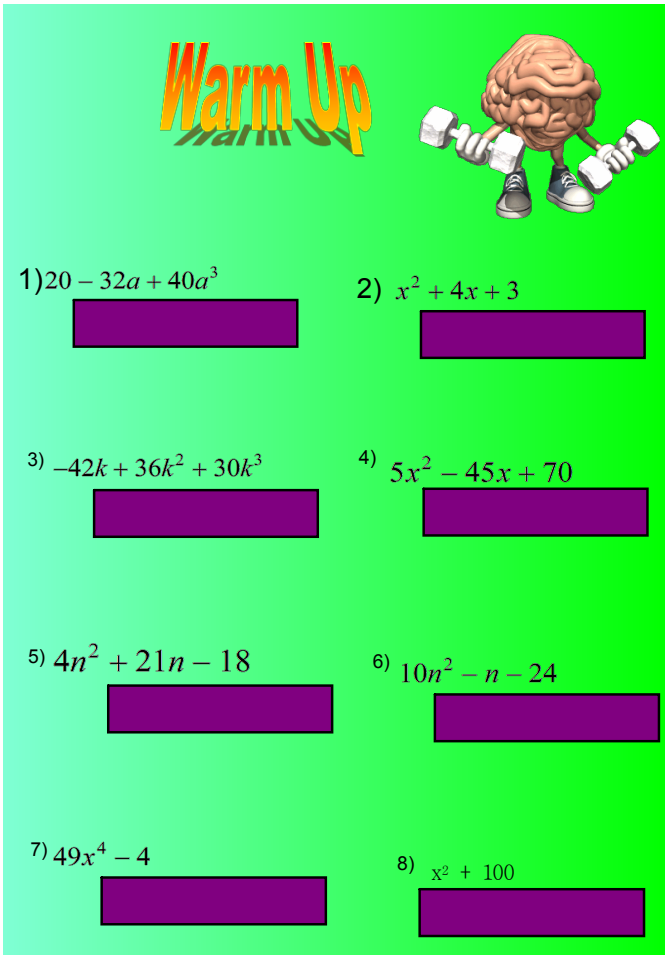


Prime Numbers

Prime Numbers

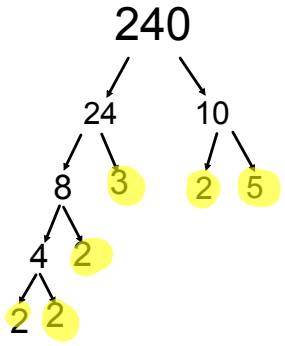
A Prime Number can be divided evenly **only** by 1 & itself.
And it must be a whole number greater than 1.

The first few prime numbers are 2, 3, 5, 7, 11, 13, 17 etc.....

Determining the Prime Factors of a Whole Number

Write the prime factorization of 240

Draw a Factor Tree !!



The Prime Factorization of 240 is:

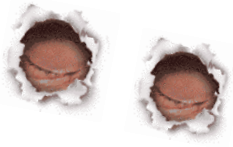
2 x 2 x 2 x 3 x 5 x 2 or **2^4 x 3 x 5**

The Prime Factors of 240 are:

2, 3, & 5

240

Warm Up

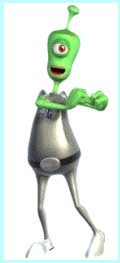


What is the greatest common factor of 144 and 216 ?

What is the least common multiple of 45 and 30 ?

3.7 Multiplying Polynomials

Expand & Simplify



$$4x(2x+1) - 2x(3x-3)$$

$8x^2 + 4x - 6x^2 + 6x$

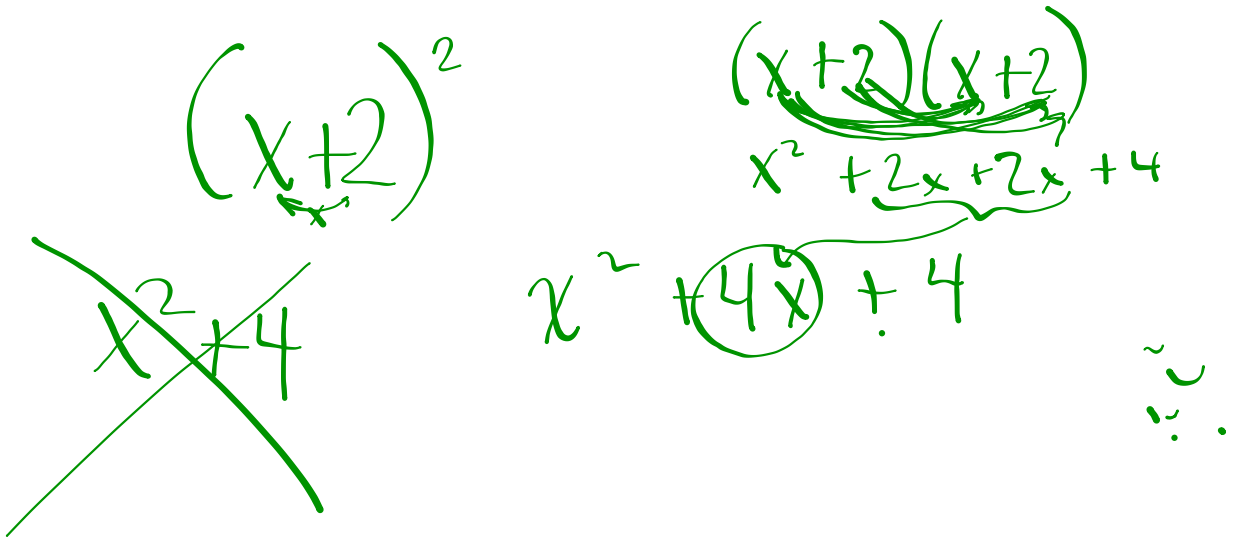
$2x^2 + 10x$

$$(x+4)(x-3)$$

	x	$+4$
x	x^2	$+4x$
-3	$-3x$	-12

$x^2 + 4x - 3x - 12$

$x^2 + x - 12$



Expand and collect like terms.

$2x\,(5x+3) - 7x\,(6x-5)$

$$(x+4)(x-3)$$

	x	+4
x	x^2	+ 4X
-3	-3x	-12

5) $(10x^5 + 3)\ (-2x^2 - 11x + 2)$

$x^5 \cdot x^2 = x^7$

	$-2x^2$	-11x	+2
$10x^5$	$-20x^7$	$-110x^6$	$+20x^5$
+3	$-6x^2$	-33x	+6

Expand and simplify

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

Expand and simplify

$$(x-3)(x-1)(x-5)$$

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

$$x^2-3x-x+3$$

$$6\cdot(3)(2)$$

$$18\cdot 2=36$$

Factoring

Simple $1a^2 + a + cons$

hard. $4a^2 + a + \dots$

There are 5 different kinds of Factoring:

- Greatest common factor (GCF) any # of terms
- Simple Trinomials (Factor by Inspection) 3
- Hard Trinomials (Factor by Decompostion) 3
- Special Factors
  - Difference of Squares 2 a^2-4 $(a+2)(a-2)$
  - Perfect Square Trinomials 3 $4a^2 + 20a + 25$ $(2a+5)^2$

x^2+5x-6

$8x^2-26x-24$

Difference of Squares

- two terms that are perfect squares.
- must be a difference
- factor like this...

$$a^2 - b^2 = (a + b)(a - b)$$

EXAMPLES...

1) $4x^2 - 49$

2) $16x^2 - 9y^2$

3) $81z^4 - 625$

4) $49w^2 - 4s^2$

Perfect Square Trinomials

- three terms: the first and last are perfect squares.
- factors like this...

$$a^2 + 2ab + b^2 = (a + b)^2$$

OR

$$a^2 - 2ab + b^2 = (a - b)^2$$

- recognize them and you save yourself the decomposition steps!!!

EXAMPLES...

1) $25x^2 - 10x + 1$

2) $9x^2 + 24x + 16$

Math 10 Name_____

Factoring: Difference of Squares and Perfect Squares Date_____

Factor each completely.

1) $n^2 - 9$

2) $25a^2 - 9$

3) $k^2 - 4$

4) $16x^2 - 9$

5) $x^2 - 25$

6) $25x^2 - 16y^2$

7) $u^2 - 16v^2$

8) $u^2 - 9v^2$

9) $4x^2 - y^2$

10) $a^2 - 25b^2$

11) $9m^2 + 12m + 4$

12) $16r^2 + 8r + 1$

13) $25x^2 - 20x + 4$

14) $16n^2 + 40n + 25$

15) $9b^2 - 24b + 16$

16) $16m^2 - 24mn + 9n^2$

17) $9x^2 - 6xy + y^2$

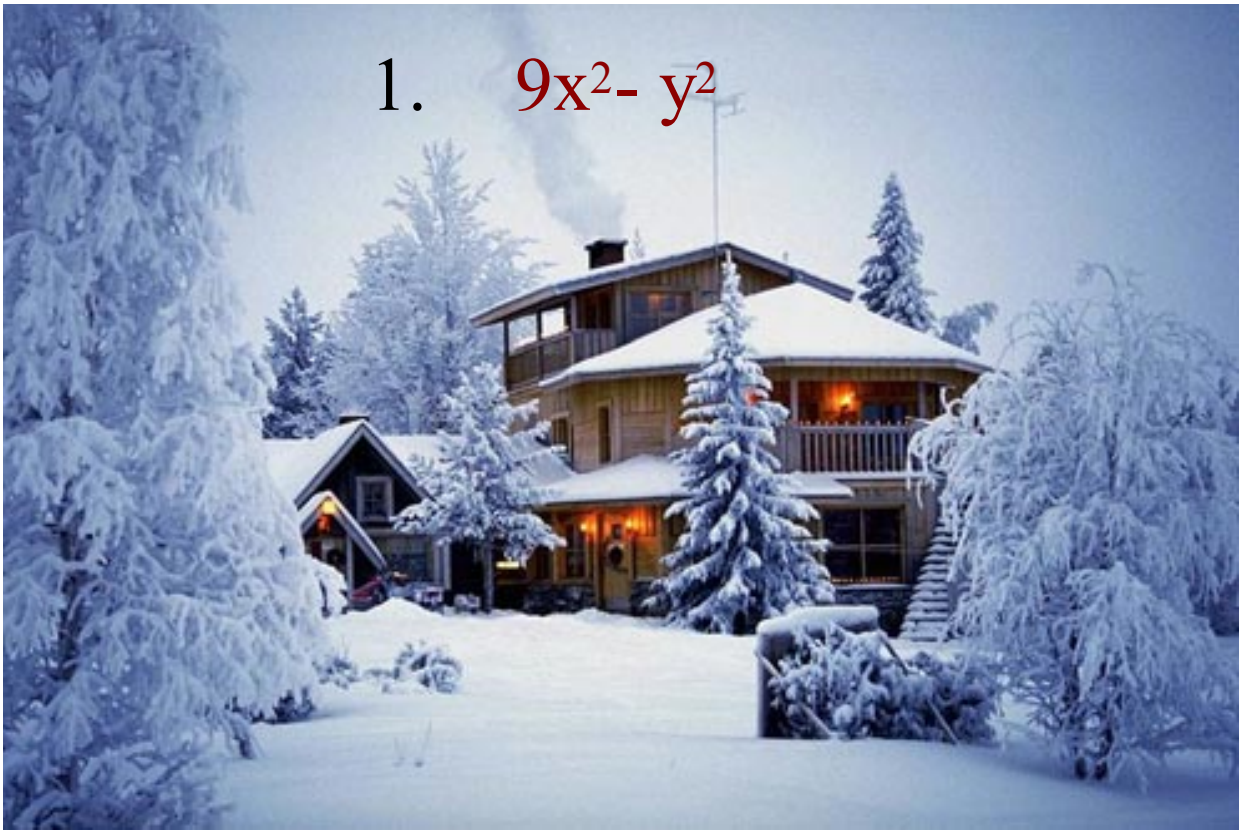
18) $25x^2 + 10xy + y^2$

19) $x^2 - 8xy + 16y^2$

20) $9x^2 + 24xy + 16y^2$

Review Questions

1. $9x^2 - y^2$
2. $2x^2 - x - 15$
3. $3a^2b^2 + 27a^4b^7 - 12a^6b^5$
4. $3x^2 - 27x + 42$
5. $24x^4 + 10x^2 + 4$
6. Tricky $(x+1)^2 - (x+5)^2$


1. $9x^2 - y^2$


2. $2x^2 - x - 15$

3. $3a^2b^2+27a^4b^7-12a^6b^5$

4. $3x^2-27x+42$

6. $(x+1)^2 - (x+5)^2$

7. $(x-2)^2 - 9(x+1)^2$

Factoring Review
Math 10B

Factor each completely:

1) $6b^2a^2 - 24b^2$

2) $3x^2 + x - 10$

3) $x^2 - 4y^2$

4) $m^2 - 10m - 11$

5) $25x^2 - 30x + 9$

6) $2n^2 - 9n + 9$

7) $15x^{11} - 12y^2$

8) $2a^2 - 7a^2 - 20a + 70$

9) $4x^2 + 100xy + 625y^2$

10) $36n^2 - 32$

11) $a^2 - 9a - 36$

12) $6v^3 - 48v - 2v^2 + 16$

13) $-56x^3 + 80$

14) $9m^4 + 30m^2n^2 + 25n^4$

15) $5v^2 - 26v - 63$

16) $64x^2 - 36y^2$

17) $2x^2 - 2x - 40$

18) $4x^2 - 25$

19) $3x^2 - 17xy + 10y^2$

20) $40x^3 - 5x^2 - 32x + 4$

21) $25r^2 - 49$

22) $p^2 - 5p - 84$