



# Warm Up

Factor each of the following:

1)  $3x^4 - 15x^2 + 24x$

$$3x(x^3 - 5x + 8)$$

2)  $18a^3b^6 + 27ab^2 - 36ab$

$$9ab(2a^2b^5 + 3b - 4)$$

3)  $-21rt - 49r^4 - 35r^3t$

$$-7r(3t + 7r^3 + 5r^2t)$$

or  
 $7r(-3t - 7r^3 - 5r^2t)$

4)  $6xy^2 + 7x^2y + 2y$

$$y(6xy + 7x^2 + 2)$$

Simplify then Factor:

$$\begin{aligned} 1) & \underline{2x^3} - \underline{5x} + \underline{7} + \underline{6x^3} + \underline{x} + \underline{1} \\ & = 2x^3 + 6x^3 - 5x + x + 7 + 1 \\ & = 8x^3 - 4x + 8 \end{aligned}$$

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

2)  $\underline{-7n^3y} - \underline{5n^2y^3} + \underline{2ny^2} - \underline{n^2y^3} - \underline{n^3y} - 12ny$

$$-8n^3y - 6n^2y^3 + 2ny^2 - 12ny$$

$$2ny(-4n^2 - 3ny^2 + y - 6)$$

## Prime factorization of 120

Hint: Product of primes

# Polynomials





Monomial

1 term



Binomial

2 terms



Trinomial

3 terms

*How are terms separated?????*

$+, -$



**Terms are separated by “+” and “-“ signs.**





How many terms?

$$4x - 5y + q$$

3

$$5(x - 3y)$$

2

$$\frac{3x - 4}{5}$$

2

Bonus:

How many terms?

Collect like terms

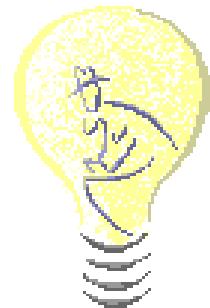
$$\underline{3x} + \underline{4y} - \underline{5x} - \underline{2y} + \underline{x}$$

$$3x - 5x + x + 4y - 2y \\ -1x + 2y$$



Simplify:

$$\begin{aligned} & \cancel{2x} - \cancel{7} + \underline{3x^2} - \cancel{5x} - \cancel{2} - \underline{2x^2} \\ = & \quad 3x^2 - 2x^2 + 2x - 5x - 7 - 2 \\ = & \quad x^2 - 3x - 9 \end{aligned}$$



Distributing Factors

### 3.7 Multiplying Polynomials

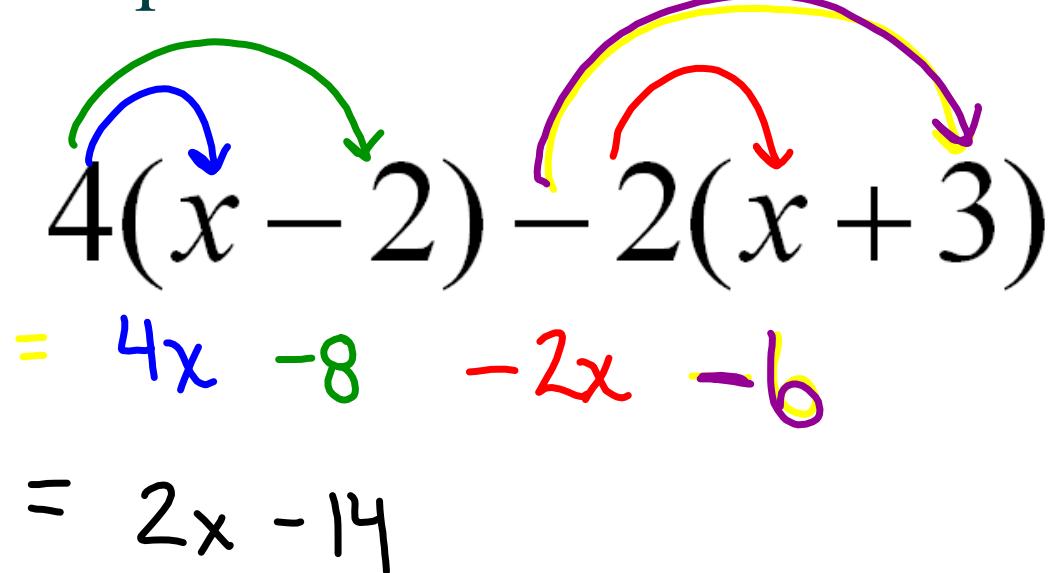
# Expand & Simplify

Rainbow



Skittles  
TASTE THE RAINBOW

Expand and collect like terms.

$$\begin{aligned} & 4(x - 2) - 2(x + 3) \\ &= 4x - 8 - 2x - 6 \\ &= 2x - 14 \end{aligned}$$


The diagram illustrates the distribution of constants into parentheses. A green curved arrow points from the 4 in  $4(x - 2)$  to both the  $x$  and the  $-2$ . A blue curved arrow points from the  $-2$  in  $-2(x + 3)$  to both the  $x$  and the  $+3$ . A red curved arrow points from the  $-8$  in  $4x - 8$  to the  $-2x$ . A yellow curved arrow points from the  $-6$  in  $-2x - 6$  to the  $-14$ .

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

$$2x^4 - 10x^3 - 2x^2 - 10x$$

$$4(3xy + 7x - 5) - 3(2x + 5xy - 1)$$

12xy + 28x - 20    -6x    -15xy    +3

- 3xy + 22x - 11



Numbers, Relations &amp; Functions 10

Name \_\_\_\_\_

Multiplying Polynomials

Date \_\_\_\_\_

**Find each product.**

1)  $5(6b + 3)$



2)  $8(6r + 3)$



3)  $2(8x + y)$



4)  $5mn(3m + 2n)$



5)  $7(x - 7y)$



6)  $2mn(8m - 2n)$

7)  $(4x - 2y)(6x + 6y)$

8)  $(6x + 3y)(4x - 7y)$

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

10)  $(3x + 6y)(5x - 8y)$

11)  $(5x - 4y)(5x^2 - 4xy + 6y^2)$

12)  $(8x - 7y)(6x^2 + 8xy + 3y^2)$

13)  $(6a^2 - 2a - 3)(8a + 2)$

14)  $(2k^2 + 8k - 2)(7k + 4)$

15)  $(7a^2 - 2ab + 2b^2)(a^2 - 2ab - 8b^2)$

16)  $(x^2 - 4xy + 2y^2)(x^2 - 2xy - 7y^2)$