

Warm-up

GCF (what's leftover)

Factor the common factor out of each expression.

$$1) \frac{8}{2} + \frac{6x^4}{2}$$

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

$$2) 2n - 4$$

$$2(n - 2)$$

$$3) \frac{4n^9}{4n} + \frac{12n}{4n}$$

$$4n(n^8 + 3)$$

$$4) 3r + 9$$

$$3(r + 3)$$

$$\textcircled{3} \hat{1} \quad \textcircled{3} \hat{3}$$

$$5) \frac{-12a}{-3} - \frac{3}{-3} - 3(4a + 1)$$

$$6) 5r + 4r^4 \quad r(5 + 4r^3)$$

$$7) 12n^5 + 16n^3 \quad 4n^3(3n^2 + 4)$$

$$\cancel{2n^3(6n^2 + 8)}$$

$$8) -9x^3 - 12x \quad -3x(3x^2 + 4)$$

$$3 \hat{3} \quad \textcircled{3} \hat{4}$$
$$2 \hat{2}$$

$$9) \frac{5k^2}{5} - \frac{40k}{5} + \frac{10}{5} \quad 5(k^2 - 8k + 2)$$

$$10) 63m^6 - 49m^5 - 21m \quad 7m(9m^5 - 7m^4 - 3)$$

Geometry
Factoring Trinomials (a = 1)

F (1st, 1st)
O (outside, outside)
I (inside, inside)
L (last, last)

Name: _____
Date: _____

A **TRINOMIAL** is a polynomial with 3 terms. We will use "trial + error" to factor trinomials.

$$\begin{array}{r} _ \cdot _ = c \\ _ + _ = b \end{array}$$

$$ax^2 + bx + c$$

"trial + error" to guess + check

1. $x^2 + 8x + 12$

$$(x+2)(x+6)$$

$$x^2 + 6x + 2x + 12$$

$$x^2 + 8x + 12 \checkmark$$

$$\begin{array}{r} 12 \\ \wedge \\ \hline 2 \quad 6 \\ \hline 3 \quad 4 \end{array}$$

2. $x^2 - 5x + 6$

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

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

$$x^2 - 5x + 6 \checkmark$$

$$\begin{array}{r} 6 \\ \wedge \\ \hline 2 \quad 3 \end{array}$$

3. $x^2 - 2x - 8$

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

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

$$x^2 - 2x - 8 \checkmark$$

$$\begin{array}{r} 8 \\ \wedge \\ \hline 2 \quad 4 \end{array}$$

4. $x^2 + 3x - 18$

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

$$x^2 + 6x - 3x - 18$$

$$x^2 + 3x - 18$$

$$\begin{array}{r} 18 \\ \wedge \\ \hline 2 \quad 9 \\ \hline 3 \quad 6 \end{array}$$

5. $x^2 - x - 42$

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

$$x^2 - 7x + 6x - 42$$

$$x^2 - x - 42$$

$$\begin{array}{r} 42 \\ \wedge \\ \hline 2 \quad 21 \\ \hline 3 \quad 14 \\ \hline 6 \quad 7 \end{array}$$

6. $x^2 + x - 42$

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

$$x^2 + 7x - 6x - 42$$

$$x^2 + x - 42$$

Try these by yourself!

7. $x^2 + 8x + 15$

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

8. $x^2 + 6x + 5$

$$(x+1)(x+5)$$

9. $x^2 + 5x - 36$

$$(x-4)(x+9)$$

10. $x^2 - 9x + 8$

$$(x-8)(x-1)$$

11. $x^2 + 13x + 36$

$$(x+9)(x+4)$$

12. $x^2 - 23x + 60$

$$(x-3)(x-20)$$

13. $x^2 + 3x - 18$

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

14. $w^2 + 22w + 40$

$$(w+2)(w+20)$$

15. $y^2 - 2y - 80$

$$(y-10)(y+8)$$

16. $y^2 - 12y + 36$

$$(y-6)(y-6) \text{ or } (y-6)^2$$

A DRASTIC WAY TO DIET

AN EXTRÊME BUT EFFECTIVE WAY TO DIET IS HIDDEN IN THE LETTERS BELOW.
TO FIND IT:



Factor each trinomial below. Find the factored form in the set of answers under the exercise and cross out the letter above it. When you finish, the diet will remain. You might call it the "Algebra diet."

S ① $m^2 + 8m + 7$ $\frac{7 \times 1}{1+1} = 8$
 $(m+7)(m+1)$

T ② $m^2 + 5m + 6$ $\frac{2 \times 3}{2+3} = 5$
 $(m+2)(m+3)$

E ③ $m^2 + 10m + 9$ $\frac{9 \times 1}{9+1} = 10$
 $(m+9)(m+1)$

G ④ $m^2 - 6m + 8$ $\frac{4 \times 2}{4+2} = 6$
 $(m-4)(m-2)$

A ⑤ $m^2 - 8m + 12$ $\frac{6 \times 2}{6+2} = 8$
 $(m-6)(m-2)$

O ⑥ $m^2 + 11m + 24$ $\frac{3 \times 8}{3+8} = 11$
 $(m+3)(m+8)$

L ⑦ $d^2 - 8d + 15$ $\frac{-5 \times -3}{-5 + -3} = -8$
 $(d-5)(d-3)$

E ⑧ $d^2 - 12d + 20$ $\frac{-10 \times -2}{-10 + -2} = -12$
 $(d-10)(d-2)$

F ⑨ $d^2 + 14d + 13$ $\frac{13 \times 1}{13+1} = 14$
 $(d+13)(d+1)$

A ⑩ $d^2 - 13d + 36$ $\frac{-9 \times -4}{-9 + -4} = -13$
 $(d-9)(d-4)$

U ⑪ $d^2 + 17d + 30$ $\frac{15 \times 2}{15+2} = 17$
 $(d+15)(d+2)$

T ⑫ $d^2 + 9d + 18$ $\frac{6 \times 3}{6+3} = 9$
 $(d+6)(d+3)$

G ⑬ $x^2 + 5xy + 4y^2$ $\frac{4 \times 1}{4+1} = 5$
 $(x+4y)(x+y)$

O ⑭ $x^2 - 18xy + 32y^2$ $\frac{-16 \times -2}{-16 + -2} = -18$
 $(x-16y)(x-2y)$

N ⑮ $x^2 - 13xy + 40y^2$ $\frac{-8 \times -5}{-8 + -5} = -13$
 $(x-8y)(x-5y)$

I ⑯ $x^2 + 7xy + 12y^2$ $\frac{3 \times 4}{3+4} = 7$
 $(x+3y)(x+4y)$

T ⑰ $x^2 - 27xy + 26y^2$ $\frac{-26 \times 1}{-26 + 1} = -26$
 $(x-26y)(x-y)$

R ⑱ $x^2 + 19xy + 60y^2$ $\frac{15 \times 4}{15+4} = 19$
 $(x+4y)(x+15y)$

G	E	B	A	S	U	T	O	Y	F	N	J	L	E	O	M	A	T	O	R	E	G	I	A	N	L	T
(m-2)(m-4)	(m+9)(m+1)	(m+8)(m+1)	(m-2)(m-6)	(m+7)(m+1)	(m+3)(m+4)	(m+2)(m+3)	(m+8)(m+3)	(m-2)(m-8)	(d+1)(d+13)	(d+2)(d+9)	(d+2)(d+15)	(d-5)(d-3)	(d-10)(d-2)	(d-2)(d-18)	(d-5)(d-4)	(d-4)(d-9)	(d+6)(d+3)	(x-16y)(x-2y)	(x+4y)(x+15y)	(x+2y)(x+4y)	(x+y)(x+4y)	(x+4y)(x+3y)	(x+20y)(x+3y)	(x-5y)(x-8y)	(x-2y)(x-13y)	(x-26y)(x-y)

BUY

NOM

EAL

* BUY NO MEAL

sounds like BINOMIAL

hahahah