

11-13-18

Aim: SWBAT factor a trinomial.

HW: Packet Page 38

Review Due Tomorrow

Test Thursday

Do Now: Packet Page 36

HW: Multiply the binomials in questions 1-11. Match that answer to the correct letter of the alphabet. Enter that letter of the alphabet on the blank corresponding to the problem number.

F I R S T O U T E R I N N E R L A S T
 3 5 9 2 7 11 6 7 8 9 5 10 10 8 9 1 4 2 7

A $3x^2 + 2x - 1$ **B** $x^2 + 3$ **C** $2x^2 - 12$ **D** $x^2 - 78$ **E** $x^2 + 9x - 36$ **F** $x^2 + 7x - 78$ **G** $3x^2 - 1$ **H** $x^2 - 36$

I $x^2 - 12x + 36$ **J** $x^2 + 36$ **K** $20x^2 - 36$ **L** $x^2 + 4x + 3$ **M** $x^2 + 36$ **N** $x^2 - 16$ **O** $x^2 + 10x + 25$ **P** $2x^2 - 25$

Q $2x^2 + 25$ **R** $2x^2 - 5x - 25$ **S** $2x^2 + 5x - 12$ **T** $20x^2 - 63x + 36$ **U** $x^2 - 9x - 36$ **V** $x^2 + 25$

W $x^2 + 16$ **X** $2x^2 - 5x + 12$ **Y** $3x^2 + 1$ **Z** 0

- 1) $(x + 3)(x + 1)$ $x^2 + 4x + 3$ **L** 7) $(4x - 3)(5x - 12)$ $20x^2 - 63x + 36$ **T**
- 2) $(2x - 3)(x + 4)$ $2x^2 + 5x - 12$ **S** 8) $(x - 3)(x + 12)$ $x^2 + 9x - 36$ **E**
- 3) $(x + 13)(x - 6)$ $x^2 + 7x - 78$ **F** 9) $(2x + 5)(x - 5)$ $2x^2 - 5x - 25$ **R**
- 4) $(3x - 1)(x + 1)$ $3x^2 + 2x - 1$ **A** 10) $(x - 4)(x + 4)$ $x^2 - 16$ **N**
- 5) $(x - 6)^2$ $x^2 - 12x + 36$ **I** 11) $(x + 5)^2$ $x^2 + 10x + 25$ **O**
 $(x - 6)(x - 6)$ $(x + 5)(x + 5)$
- 6) $(x - 12)(x + 3)$ $x^2 - 9x - 36$ **U**

Divide:

12) $\frac{16b^8c^5}{4b^8c^2}$

$4b^0c^3$

$4c^3$

13) $\frac{20n^5m^9}{20nm^7}$

n^4m^2

14) $\frac{15r^5 + 10r^8 - 5r^2}{5r}$

$3r^4 + 2r^7 - r$

$2r^7 + 3r^4 - r$

15) $\frac{27x^5 + 21x^4 - 9x}{3x}$

$9x^4 + 7x^3 - 3$

Factor each expression below.

1) $x^2 + 6x + 5$

Same Signs -- both positive

Factors of 5	Sum
1 and 5	6

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

3) $x^2 - 7x - 8$

Different Signs -- Bigger Negative

Factors of 8	Sum
1 and -8	-7
2 and -4	-2

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

5) $x^2 - 7x + 18$

Same Signs -- both negative

Factors of 18	Sum
-1 and -18	-19
-2 and -9	-11
-3 and -6	-9

Cannot be Factored

2) $x^2 - 15x + 56$

Same Signs
both negative

$(x - 7)(x - 8)$

Factors of 56	Sum
-1 and -56	-57
-2 and -28	-30
-3 and -18	-21
-4 and -14	-18
-7 and -8	-15

4) $x^2 + 5x - 36$

Different Signs
Bigger Positive

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

Factors of 36	Sum
-1 and 36	35
-2 and 18	16
-3 and 12	9
-4 and 9	5
-6 and 6	0

6) $x^2 - 7x - 18$

Different Signs
Bigger Negative

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

Factors of 18	Sum
1 and -18	-17
2 and -9	-7
3 and -6	-3

both positive
signs are the same

$$ax^2 + bx + c$$

both negative
signs are the same

$$ax^2 - bx + c$$

greater #
is positive
signs are different

$$ax^2 + bx - c$$

greater #
is negative
signs are different

$$ax^2 - bx - c$$

HOMEWORK - FACTORING TRINOMIALS

Factor each expression, then check your answer.

1) $x^2 + 9x + 18$

Same Signs
both positive

Factors of 18	Sum
1 and 18	19
2 and 9	11
3 and 6	9

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

2) $x^2 - 12x + 35$

Same Signs
both negative

Factors of 35	Sum
-1 and -35	-36
-5 and -7	-12

$(x - 5)(x - 7)$

3) $y^2 - 13y + 12$

Same Signs
both negative

Factors of 12	Sum
-1 and -12	-13
-2 and -6	-8
-3 and -4	-7

$(y - 1)(y - 12)$

4) $x^2 - 11x + 24$

Same Signs
both negative

Factors of 24	Sum
-1 and -24	-25
-2 and -12	-14
-3 and -8	-11
-4 and -6	-10

$(x - 3)(x - 8)$

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

Different Signs
Bigger Positive

Factors of 10	Sum
-1 and 10	9
-2 and 5	3

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

6) $y^2 + 3y - 40$

Different Signs
Bigger Positive

Factors of 40	Sum
-1 and 40	39
-2 and 20	18
-4 and 10	6
-5 and 8	3

$(y - 5)(y + 8)$

7) $m^2 - 7m - 8$

Different Signs
Bigger Negative

Factors of 8	Sum
1 and -8	-7
2 and -4	-2

$(m - 8)(m + 1)$

8) $x^2 + 5x - 6$

Different Signs
Bigger Positive

Factors of 6	Sum
-1 and 6	5
-2 and 3	1

$(x - 1)(x + 6)$

9) $n^2 + 2n - 63$

Different Signs
Bigger Positive

Factors of 63	Sum
-1 and 63	62
-3 and 21	18
-7 and 9	2

$(n - 7)(n + 9)$

10) $a^2 - 7a - 18$

Different Signs
Bigger Negative

Factors of 18	Sum
1 and -18	-17
2 and -9	-7
3 and -6	-3

$(a - 9)(a + 2)$

AIM: SWBAT factor a trinomial.

DO NOW: Match the polynomial to the correct product.

- | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|
| 1) $(x + 2)(x + 6)$ C | 2) $(x - 3)(x - 4)$ A | 3) $(x + 3)(x - 4)$ D | 4) $(x + 2)(x - 6)$ B |
| $x^2 + 6x + 12$ | $x^2 - 4x - 12$ | $x^2 - 4x + 3x - 12$ | $x^2 - 6x + 2x - 12$ |
| $x^2 + 8x + 12$ | $x^2 - 7x + 12$ | $x^2 - x - 12$ | $x^2 - 4x - 12$ |
| A) $x^2 - 7x + 12$ | B) $x^2 - 4x - 12$ | C) $x^2 + 8x + 12$ | D) $x^2 - x - 12$ |

Factoring a trinomial. That's SUM PRODUCT!

- 1) $x^2 \oplus 8x \oplus 15$ You need 2 factors of **+15** whose sum is **+8**. 1, 15
3, 5
same signs
 $(x + 3)(x + 5)$
- 2) $x^2 \ominus 8x \oplus 12$ You need 2 factors of **+12** whose sum is **-8**. 1, 12
2, 6
3, 4
same signs
 $(x - 2)(x - 6)$
- 3) $x^2 \ominus 12x \ominus 28$ You need 2 factors of **-28** whose sum is **-12**. 1, 28
2, 14
4, 7
Different signs more negatives
 $(x + 2)(x - 14)$
- 4) $x^2 \oplus 3x \ominus 40$ You need 2 factors of **-40** whose sum is **+3**. 1, 40
2, 20
4, 10
5, 8
Different signs more positives
 $(x + 8)(x - 5)$

Factor each trinomial.

- | | | |
|--------------------|--------------------|-------------------|
| 1) $y^2 + 9y + 14$ | 2) $x^2 - 8x + 15$ | 3) $w^2 + 5w - 6$ |
|--------------------|--------------------|-------------------|

4) $x^2 + 2x - 35$

Different Signs
bigger positive

mult. to -35, add to 2

-1, 35

★ -5, 7

$(x - 5)(x + 7)$

7) $x^2 - 8x - 9$

Different Signs
bigger negative

mult. to -9, add to -8

★ 1, -9

3, -3

$(x - 9)(x + 1)$

10) $x^2 + 2x - 15$

Different Signs
bigger positive

mult. to -15, add to 2

-1, 15

★ -3, 5

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

13) $x^2 - 4x - 12$

Different Signs
bigger negative

mult. to -12, add to -4

1, -12

★ 2, -6

3, -4

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

5) $x^2 - 11x + 30$

Same Signs
both negative

mult. to 30, add to -11

-1, -30

-2, -15

-3, -10 $(x - 5)(x - 6)$

★ -5, -6

8) $x^2 + 8x + 12$

Same Signs
both positive

mult. to 12, add to 8

1, 12

★ 2, 6

3, 4

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

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

Same Signs -- both positive
mult. to 36, add to 13

1, 36

2, 18

3, 12

★ 4, 9

6, 6

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

14) $x^2 - 15x + 56$

Same Signs -- both negative
mult. to 56, add to -15

-1, -56

-2, -28

-3, -18

-4, -14

★ -7, -8

$(x - 7)(x - 8)$

6) $x^2 + 12x + 36$

Same Signs 1, 36
both positive 2, 18

mult. to 36, add to 12 3, 12

4, 9

★ 6, 6

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

9) $x^2 - 9x + 14$

Same Signs
both negative

mult. to 14, add to -9

-1, -14

★ -2, -7

$(x - 2)(x - 7)$

12) $x^2 - 6x - 7$

Different Signs
bigger negative

mult. to -7, add to -6

★ 1, -7

$(x - 7)(x + 1)$

15) $x^2 - 18x + 72$

Same Signs -- both negative
mult. to 72, add to -18

-1, -72

-2, -36

-3, -24

-4, -18

★ -6, -12

-8, -9

$(x - 6)(x - 12)$

HOMEWORK - FACTORING TRINOMIALS

Factor each of the following trinomials.

1) $x^2 + 12x + 32$

2) $x^2 - 7x - 30$

3) $x^2 + 8x - 9$

4) $x^2 + 14x + 40$

5) $x^2 + 5x - 24$

6) $x^2 - 9x + 20$

7) $x^2 + 16x + 15$

8) $x^2 - 9x + 14$

9) $x^2 - 11x + 24$

10) $x^2 + 7x + 12$

11) $x^2 + 5x - 14$

12) $x^2 - 10x + 21$