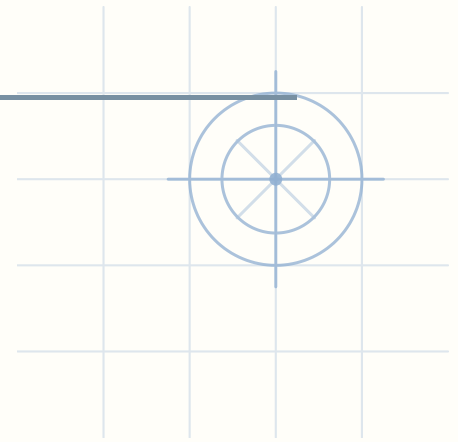


Taking out a common factor — Two terms

Name: _____

Date: _____

(Take out the greatest common factor. Fill in every number.



1 $19x + 228$

GCF = 19
 $19(x + 12)$

2 $24x + 2$

3 $36x + 162$

4 $48x + 6$

5 $40x + 32$

6 $84x + 49$

7 $156x + 13$

8 $42x + 66$

9 $66x + 154$

10 $264x + 144$

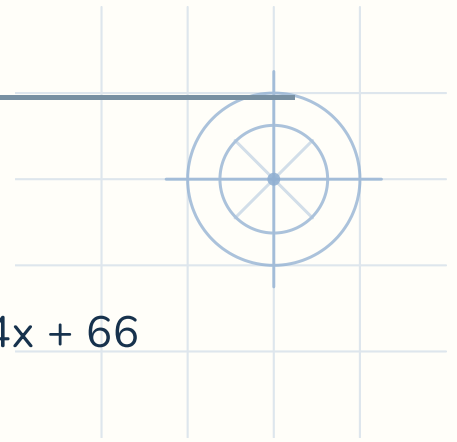


Taking out a common factor — Three terms

Name: _____

Date: _____

Take out the greatest common factor. Fill in every number.



1 $8x^2 + 32x + 24$

GCF = 8

$8(x^2 + 4x + 3)$

2 $22x^2 + 44x + 66$

3 $24x^2 + 32x + 64$

4 $80x^2 + 140x + 120$

5 $99x^2 + 132x + 22$

6 $33x^2 + 3x + 21$

7 $72x^2 + 42x + 54$

8 $70x^2 + 70x + 14$

9 $46x^2 + 276x + 69$

10 $126x^2 + 252x + 147$

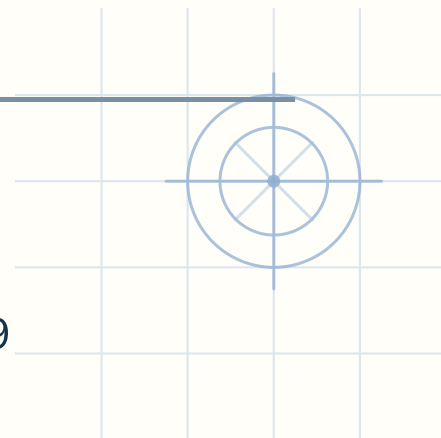


Difference of two squares — X^2 minus a square

Name: _____

Date: _____

Each one is a difference of two squares. Factor it.



1 $x^2 - 1225$

$$x^2 = (x)^2, 1225 = 35^2$$

$$(x + 35)(x - 35)$$

2 $x^2 - 1089$

3 $x^2 - 289$

4 $x^2 - 256$

5 $x^2 - 36$

6 $x^2 - 16$

7 $x^2 - 25$

8 $x^2 - 49$

9 $x^2 - 196$

10 $x^2 - 4$



Factoring quadratics — Both numbers positive

Name: _____

Date: _____

Factor each one.

1 $x^2 + 28x + 171$

multiply to 171 · add to 28
19 and 9
 $= (x + 19)(x + 9)$

2 $x^2 + 17x + 60$

3 $x^2 + 31x + 240$

4 $x^2 + 16x + 39$

5 $x^2 + 24x + 23$

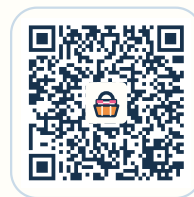
6 $x^2 + 45x + 506$

7 $x^2 + 18x + 81$

8 $x^2 + 25x + 136$

9 $x^2 + 30x + 189$

10 $x^2 + 6x + 9$



Factoring quadratics — Both numbers negative

Name: _____

Date: _____

Factor each one. Both numbers are negative.

1 $x^2 - 28x + 160$

multiply to 160 · add to -28

$160 > 0 \rightarrow$ same sign

$-28 < 0 \rightarrow$ both -

-8 and -20

$= (x - 8)(x - 20)$

2 $x^2 - 29x + 120$

3 $x^2 - 17x + 16$

4 $x^2 - 20x + 99$

5 $x^2 - 22x + 121$

6 $x^2 - 36x + 323$

7 $x^2 - 26x + 169$

8 $x^2 - 34x + 285$

9 $x^2 - 46x + 529$

10 $x^2 - 15x + 54$

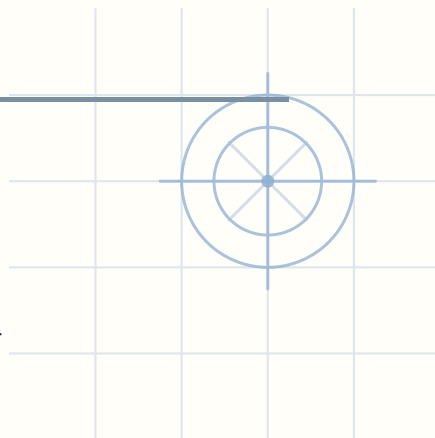


Factoring quadratics — One positive, one negative

Name: _____

Date: _____

Factor each one. The two numbers have opposite signs.



1 $x^2 + 8x - 308$

multiply to -308 · add to 8
 $-308 < 0 \rightarrow$ one +, one -
22 and -14
 $= (x + 22)(x - 14)$

2 $x^2 - 14x - 51$

3 $x^2 - 15x - 100$

4 $x^2 + 3x - 504$

5 $x^2 - 10x - 56$

6 $x^2 - 10x - 75$

7 $x^2 + 4x - 77$

8 $x^2 + 11x - 242$

9 $x^2 + 17x - 110$

10 $x^2 - 16x - 57$



Power Pack · Factoring — Answer key

Common factor: two terms

1. $19x + 228 = 19(x + 12)$
($19 \div 19 = 1$, $228 \div 19 = 12$)

2. $24x + 2 = 2(12x + 1)$ (24
 $\div 2 = 12$, $2 \div 2 = 1$)

3. $36x + 162 = 18(2x + 9)$
($36 \div 18 = 2$, $162 \div 18 = 9$)

4. $48x + 6 = 6(8x + 1)$ ($48 \div$
 $6 = 8$, $6 \div 6 = 1$)

5. $40x + 32 = 8(5x + 4)$ (40
 $\div 8 = 5$, $32 \div 8 = 4$)

6. $84x + 49 = 7(12x + 7)$ (84
 $\div 7 = 12$, $49 \div 7 = 7$)

7. $156x + 13 = 13(12x + 1)$
($156 \div 13 = 12$, $13 \div 13 = 1$)

8. $42x + 66 = 6(7x + 11)$ (42
 $\div 6 = 7$, $66 \div 6 = 11$)

9. $66x + 154 = 22(3x + 7)$
($66 \div 22 = 3$, $154 \div 22 = 7$)

10. $264x + 144 = 24(11x +$
 $6)$ ($264 \div 24 = 11$, $144 \div 24$
 $= 6$)

Common factor: three terms

1. $8x^2 + 32x + 24 = 8(x^2 +$
 $4x + 3)$ ($8 \div 8 = 1$, $32 \div 8 =$
 4 , $24 \div 8 = 3$)

2. $22x^2 + 44x + 66 = 22(x^2 +$
 $2x + 3)$ ($22 \div 22 = 1$, $44 \div$
 $22 = 2$, $66 \div 22 = 3$)

3. $24x^2 + 32x + 64 = 8(3x^2 +$
 $4x + 8)$ ($24 \div 8 = 3$, $32 \div 8 =$
 4 , $64 \div 8 = 8$)

4. $80x^2 + 140x + 120 =$
 $20(4x^2 + 7x + 6)$ ($80 \div 20 =$
 4 , $140 \div 20 = 7$, $120 \div 20 =$
 6)

5. $99x^2 + 132x + 22 =$
 $11(9x^2 + 12x + 2)$ ($99 \div 11$
 $= 9$, $132 \div 11 = 12$, $22 \div 11$
 $= 2$)

6. $33x^2 + 3x + 21 = 3(11x^2 +$
 $x + 7)$ ($33 \div 3 = 11$, $3 \div 3 =$
 1 , $21 \div 3 = 7$)

7. $72x^2 + 42x + 54 = 6(12x^2$
 $+ 7x + 9)$ ($72 \div 6 = 12$, $42 \div$
 $6 = 7$, $54 \div 6 = 9$)

8. $70x^2 + 70x + 14 = 14(5x^2$
 $+ 5x + 1)$ ($70 \div 14 = 5$, $70 \div$
 $14 = 5$, $14 \div 14 = 1$)

9. $46x^2 + 276x + 69 =$
 $23(2x^2 + 12x + 3)$ ($46 \div 23$
 $= 2$, $276 \div 23 = 12$, $69 \div 23$
 $= 3$)

10. $126x^2 + 252x + 147 =$
 $21(6x^2 + 12x + 7)$ ($126 \div 21$
 $= 6$, $252 \div 21 = 12$, $147 \div 21$
 $= 7$)

Difference of squares

1. $x^2 - 1225 = (x + 35)(x -$
 $35)$ (1225 is 35 squared, so
the two brackets are $(x +$
 $35)$ and $(x - 35)$)

2. $x^2 - 1089 = (x + 33)(x -$
 $33)$ (1089 is 33 squared, so
the two brackets are $(x +$
 $33)$ and $(x - 33)$)

3. $x^2 - 289 = (x + 17)(x -$
 $17)$ (289 is 17 squared, so
the two brackets are $(x +$
 $17)$ and $(x - 17)$)

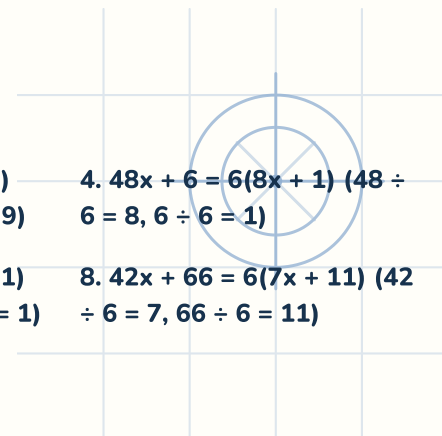
4. $x^2 - 256 = (x + 16)(x -$
 $16)$ (256 is 16 squared, so
the two brackets are $(x +$
 $16)$ and $(x - 16)$)

5. $x^2 - 36 = (x + 6)(x - 6)$
(36 is 6 squared, so the two
brackets are $(x + 6)$ and $(x$
 $- 6)$)

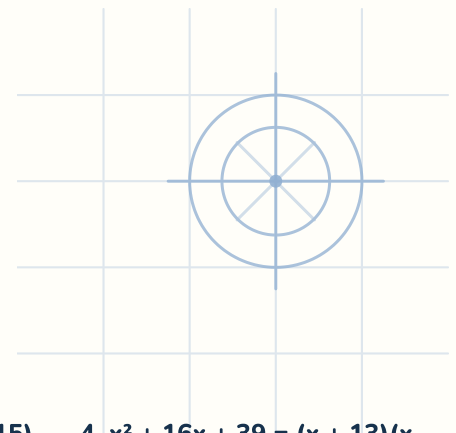
6. $x^2 - 16 = (x + 4)(x - 4)$
(16 is 4 squared, so the two
brackets are $(x + 4)$ and $(x$
 $- 4)$)

7. $x^2 - 25 = (x + 5)(x - 5)$
(25 is 5 squared, so the two
brackets are $(x + 5)$ and $(x$
 $- 5)$)

8. $x^2 - 49 = (x + 7)(x - 7)$
(49 is 7 squared, so the two
brackets are $(x + 7)$ and $(x$
 $- 7)$)



Power Pack · Factoring — Answer key



Difference of squares

9. $x^2 - 196 = (x + 14)(x - 14)$ (196 is 14 squared, so the two brackets are $(x + 14)$ and $(x - 14)$)

10. $x^2 - 4 = (x + 2)(x - 2)$ (4 is 2 squared, so the two brackets are $(x + 2)$ and $(x - 2)$)

Quadratics: both positive

1. $x^2 + 28x + 171 = (x + 19)(x + 9)$ (19 and 9)

2. $x^2 + 17x + 60 = (x + 5)(x + 12)$ (5 and 12)

3. $x^2 + 31x + 240 = (x + 15)(x + 16)$ (15 and 16)

4. $x^2 + 16x + 39 = (x + 13)(x + 3)$ (13 and 3)

5. $x^2 + 24x + 23 = (x + 1)(x + 23)$ (1 and 23)

6. $x^2 + 45x + 506 = (x + 23)(x + 22)$ (23 and 22)

7. $x^2 + 18x + 81 = (x + 9)(x + 9)$ (9 and 9)

8. $x^2 + 25x + 136 = (x + 17)(x + 8)$ (17 and 8)

9. $x^2 + 30x + 189 = (x + 21)(x + 9)$ (21 and 9)

10. $x^2 + 6x + 9 = (x + 3)(x + 3)$ (3 and 3)

Quadratics: both negative

1. $x^2 - 28x + 160 = (x - 8)(x - 20)$ (-8 and -20)

2. $x^2 - 29x + 120 = (x - 24)(x - 5)$ (-24 and -5)

3. $x^2 - 17x + 16 = (x - 16)(x - 1)$ (-16 and -1)

4. $x^2 - 20x + 99 = (x - 9)(x - 11)$ (-9 and -11)

5. $x^2 - 22x + 121 = (x - 11)(x - 11)$ (-11 and -11)

6. $x^2 - 36x + 323 = (x - 17)(x - 19)$ (-17 and -19)

7. $x^2 - 26x + 169 = (x - 13)(x - 13)$ (-13 and -13)

8. $x^2 - 34x + 285 = (x - 15)(x - 19)$ (-15 and -19)

9. $x^2 - 46x + 529 = (x - 23)(x - 23)$ (-23 and -23)

10. $x^2 - 15x + 54 = (x - 6)(x - 9)$ (-6 and -9)

Quadratics: opposite signs

1. $x^2 + 8x - 308 = (x + 22)(x - 14)$ (22 and -14)

2. $x^2 - 14x - 51 = (x + 3)(x - 17)$ (3 and -17)

3. $x^2 - 15x - 100 = (x - 20)(x + 5)$ (-20 and 5)

4. $x^2 + 3x - 504 = (x + 24)(x - 21)$ (24 and -21)

5. $x^2 - 10x - 56 = (x - 14)(x + 4)$ (-14 and 4)

6. $x^2 - 10x - 75 = (x - 15)(x + 5)$ (-15 and 5)

7. $x^2 + 4x - 77 = (x - 7)(x + 11)$ (-7 and 11)

8. $x^2 + 11x - 242 = (x + 22)(x - 11)$ (22 and -11)

Power Pack · Factoring — Answer key

Quadratics: opposite signs

9. $x^2 + 17x - 110 = (x + 22)(x - 5)$ (22 and -5) 10. $x^2 - 16x - 57 = (x - 19)(x + 3)$ (-19 and 3)

