

We are going to keep practicing solving by factoring. Be sure to look for a GCF first in case something has to be taken out.

Factor. Look for a GCF 1st.

Warmup

<p>1) $\frac{10x^2}{2x} + \frac{8x}{2x}$ $2x(5x + 4)$</p>	<p>2) $\frac{14x^3}{14x^2} - \frac{28x^2}{14x^2}$ $14x^2(x - 2)$</p>	<p>3) $4x^2 - 36$ $2x^2 - 9 - 9$ $(2x + 9)(2x - 9)$</p>												
<p>4) $\frac{2x^2}{2} - \frac{22x}{2} + \frac{36}{2}$ $2(x^2 - 11x + 18)$ <table border="1" style="display: inline-table; margin-left: 20px;"> <tr><td>x</td><td>-2</td></tr> <tr><td>x²</td><td>-2x</td></tr> <tr><td>-9</td><td>18</td></tr> </table> $2(x - 2)(x - 9)$</p>	x	-2	x ²	-2x	-9	18	<p>5) $\frac{2x^4}{2x^2} + \frac{22x^3}{2x^2} + \frac{56x^2}{2x^2}$ $2x^2(x^2 + 11x + 28)$ $2x^2(x + 7)(x + 4)$</p>	<p>6) $\frac{2x^2}{2} - \frac{2x}{2} - \frac{4}{2}$ $2(x^2 - x - 2)$ <table border="1" style="display: inline-table; margin-left: 20px;"> <tr><td>x</td><td>-2</td></tr> <tr><td>x²</td><td>-2x</td></tr> <tr><td>1</td><td>-2</td></tr> </table> $2(x - 2)(x + 1)$ <i>Signs and GCF</i></p>	x	-2	x ²	-2x	1	-2
x	-2													
x ²	-2x													
-9	18													
x	-2													
x ²	-2x													
1	-2													

- What is the main difference between FACTORING and SOLVING?
 leave in () () → set = 0 and solve

Solve by factoring. Be sure you watch your signs.

<p>7) $3x^3 - 3x = 0$ $3x(x^2 - 1) = 0$ $3x(x - 1)(x + 1) = 0$ $x - 1 = 0$ → $x = 1$ $x + 1 = 0$ → $x = -1$ $\frac{3x}{3} = \frac{0}{3}$ → $x = 0$</p>	<p>8) $3x^2 - 48 = 0$ $3(x^2 - 16) = 0$ $3(x - 4)(x + 4) = 0$ $x - 4 = 0$ → $x = 4$ $x + 4 = 0$ → $x = -4$</p>	<p>9) $12x^2 + 63x - 54 = 0$ $\frac{12x^2}{3} + \frac{63x}{3} - \frac{54}{3} = 0$ $3(4x^2 + 21x - 18) = 0$ <table border="1" style="display: inline-table; margin-left: 20px;"> <tr><td>x</td><td>6</td></tr> <tr><td>4x²</td><td>24x</td></tr> <tr><td>-3</td><td>-18</td></tr> </table> $(4x - 3)(x + 6) = 0$ $4x - 3 = 0$ → $x = \frac{3}{4}$ $x + 6 = 0$ → $x = -6$</p>	x	6	4x ²	24x	-3	-18
x	6							
4x ²	24x							
-3	-18							

10) $\frac{5b^2 + 45b}{5b \ 5b} = 0$

$(5b)(b+9) = 0$

$\frac{5b}{5} = 0 \quad \frac{b+9}{-9 \ -9} = 0$

$b=0 \quad b=-9$

11) $3x^2 - 10 = 27x$

~~$-27x \ -27x$~~

$3x^2 - 27x - 10 = 0$

Cannot Factor

12) $\frac{200x^2 - 162}{2 \ 2} = 0$

$2(100x^2 - 81) = 0$

$10x \ 10x \ 9 \ -9$

~~$(10x+9)(10x-9) = 0$~~

$10x+9=0 \quad 10x-9=0$

$X = -\frac{9}{10} \quad X = \frac{9}{10}$

When we solve for x, what do we call them?

- 1) X-intercepts 2) zero 3) Roots 4) solutions

All 4 words mean the same thing!

ROOTS

Factor and solve the following. Then sketch a graph.

13) $x^2 - 4x - 12 = 0$

$-12 \wedge -6 \ 2$

$(x-6)(x+2) = 0$

X	-6
X ²	-6x
2x	-12

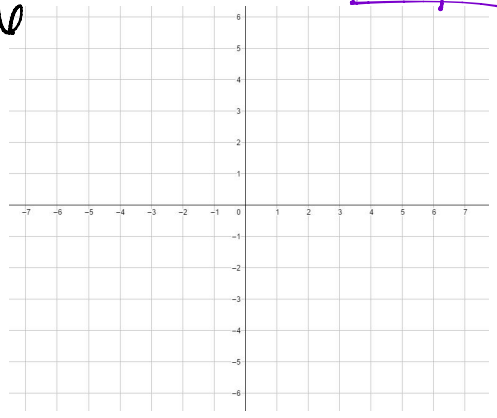
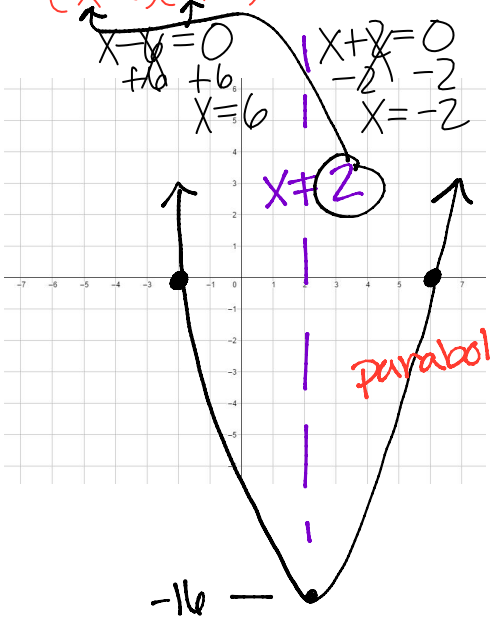
14) $2x^2 + 7x - 4 = 0$

$-8 \ 1$

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

x	4
2x	8x
-1	-4

$(2-6)(2+2) = -16$



Factor but find a GCF 1st.

$\frac{12x^2y^2 + 32xy^3}{4xy^2} \frac{32xy^3}{4xy^2}$ $4xy^2(3x + 8y)$	$\frac{18x^6 + 12x^3}{6x^3} \frac{12x^3}{6x^3}$ $6x^3(3x^3 + 2)$	$\frac{-x^2 + 5x - 6}{-1} \frac{5x - 6}{-1} \frac{-6}{-1}$ $-1(x^2 - 5x + 6)$ $-1(x-2)(x-3)$
$\frac{20y^4 - 15y^3 + 30y^2}{5y^2} \frac{30y^2}{5y^2} \frac{30y^2}{5y^2}$ $5y^2(4y^2 - 3y + 6)$ $\frac{24}{\lambda}$	$\frac{17x^2 + 51x}{17x} \frac{51x}{17x}$ $17x(x + 3)$	$\frac{36x^3 + 63x^2 - 27x}{9x} \frac{63x^2}{9x} \frac{-27x}{9x}$ $9x(4x^2 + 7x - 3)$ -12 $9x(4x^2 + 7x - 3)$

Factor the following all the way. Then solve it.

$$\frac{4x^2 + 4x - 48}{4} = 0$$

$$4(x^2 + x - 12) = 0$$

$$\begin{array}{cc} & x & -3 \\ x & \begin{array}{|c|c|} \hline x^2 & -3x \\ \hline \end{array} \\ 4 & \begin{array}{|c|c|} \hline 4x & -12 \\ \hline \end{array} \end{array}$$

$$4(x-3)(x+4) = 0$$

$$x = 3$$

$$x = -4$$

$$x - 3 = 0 \quad x + 4 = 0$$

$$+3 + 3 \quad -4 - 4$$