

Name:

Date:

Goal: Factoring using the Diamond Method for Everything!

Class/Period:

Questions/Main Ideas:

Notes:

Tips for Factoring:

- Check to see if there is a GCF first.

- Check to see if the leading coefficient is negative 1

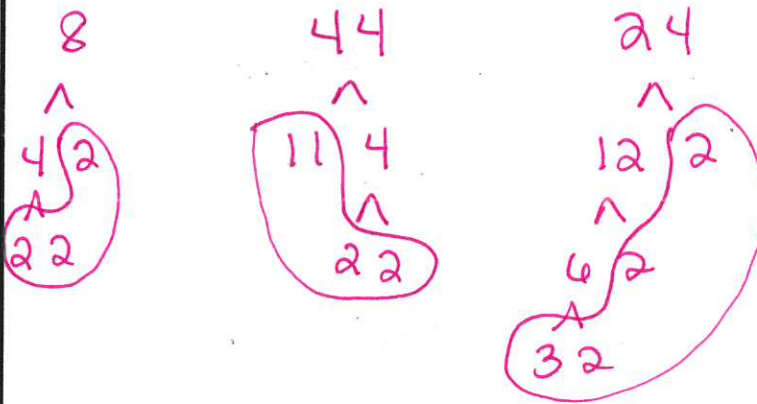
$-5x^2 + 53x - 72$

- Write out all the factors of $a \cdot c$

- Make sure all numbers are reduced.

Example : $-8x^2 + 44x + 24$

$-(8x^2 - 44x - 24)$

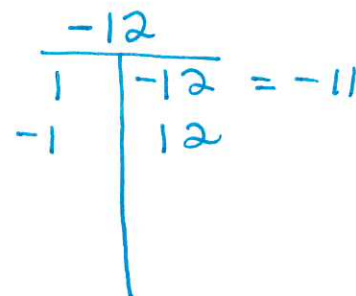
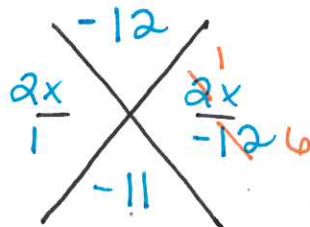


$8x^2 = 2 \cdot 2 \cdot 2 \cdot x \cdot x$

$-44x = 2 \cdot 2 \cdot 11 \cdot x \cdot -1 \rightarrow 4$

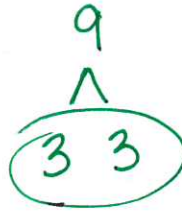
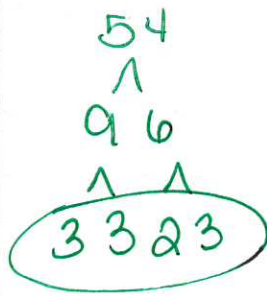
$-24 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot -1$

$-4(2x^2 - 11x - 6)$



$-4(2x+1)(x-6)$

Factor: $54x^4 - 9x^3 - 45x^2$

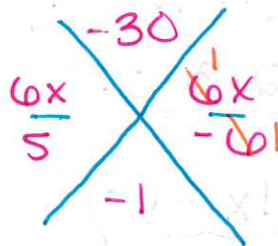


$$54x^4 = (3 \cdot 3 \cdot 3 \cdot 2 \cdot x \cdot x) \cdot x \cdot x$$

$$-9x^3 = (3 \cdot 3 \cdot -1 \cdot x \cdot x) \cdot x \quad \sim 9x^2$$

$$-45x^2 = (3 \cdot 3 \cdot 5 \cdot -1 \cdot x \cdot x)$$

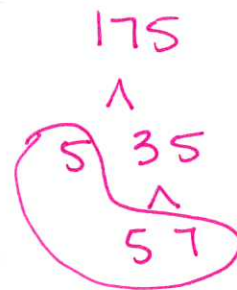
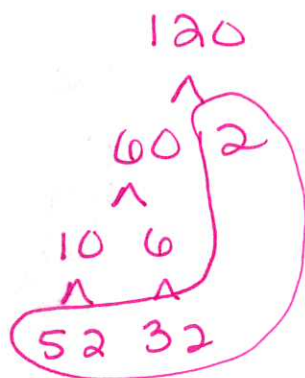
$$9x^2(6x^2 - x - 5)$$



	-30	
1	-30	
-1	30	
2	-15	
-2	15	
3	-10	
-3	10	
5	-6 = -1	
-5	6	

$$9x^2(6x+5)(x-1)$$

Factor: $20x^2 - 120x + 175$



$$20x^2 = 2 \cdot 2 \cdot 5 \cdot x \cdot x$$

$$-120x = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 \cdot -1 \cdot x \rightarrow 5$$

$$175 = 5 \cdot 5 \cdot 7$$

$$5(4x^2 - 24x + 35)$$

A diagram showing the AC method for factoring $4x^2 - 24x + 35$. It shows two columns: the first column has $2 \cdot 4x$ and -105 ; the second column has $2 \cdot 4x$ and -147 . A horizontal line is drawn above the terms, and a vertical line is drawn between the columns. The number 140 is written above the horizontal line. The entire diagram is crossed out with a large 'X'.

140	
10	14
-10	-14 = -24

$$5(2x-5)(2x-7)$$

Factor: $-36x^3 + 18x^2 - 54x$

$$-(36x^3 - 18x^2 + 54x)$$

$$\begin{array}{cc} 36 & \\ \wedge & \\ 6 & 6 \\ \wedge & \wedge \\ \hline 32 & 32 \end{array}$$

$$\begin{array}{cc} 18 & \\ \wedge & \\ 2 & 9 \\ & \wedge \\ & 33 \end{array}$$

$$\begin{array}{cc} 54 & \\ \wedge & \\ 9 & 6 \\ \wedge & \wedge \\ \hline 33 & 32 \end{array}$$

$$36x^3 = 3 \cdot 3 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x$$

$$-18x^2 = 3 \cdot 3 \cdot 2 \cdot -1 \cdot x \cdot x \rightarrow 18x$$

$$54x = 3 \cdot 3 \cdot 3 \cdot 2 \cdot x$$

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

$$\begin{array}{cc} 2x & 4 \\ & \times \\ & 2x \\ & -1 \end{array}$$

$$\begin{array}{r|l} 6 & \\ 1 & 4 \\ -1 & -6 \\ 2 & 3 \\ -2 & -3 \end{array}$$

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