1. $2x^2 + 30x + 100$

Method 1
Foldable

Step 1: Standard Form

$2x^2 + 30x + 100$

Step 2: Factor Out GCF

$2(x^2 + 15x + 50)$

$a = 1$
$b = 15$
$c = 50$

Step 3: Multiply a·c

$1 \cdot 50 = 50$

Step 4: Find the factors

$1 \cdot 50$

$2 \cdot 25$

$5 \cdot 10$

Step 5: Find factor that add up to b.

$b = 15$

$1 + 50 = 51$

$2 + 25 = 27$

$5 + 10 = 15$

$f_1 = 5$

$f_2 = 10$

## Step 6: Simplified Fractions

$a = 1 \quad f_1 = 5 \quad f_2 = 10$

$$\frac{a}{f_1} = \frac{1}{5} \qquad \frac{a}{f_2} = \frac{1}{10}$$

## Step 7: write binomials

Add x to the numerator

$$\frac{1x}{5} \qquad \frac{1x}{10}$$

$$(x+5) \qquad (x+10)$$

Factored Form:

$$2(x+5)(x+10)$$

1. $2x^2 + 30x + 100$

Method 2

T-Chart

NoTE:

Only works when $a = 1$. afte we take out the gcf.

Step 1: Take out GCF

$2(x^2 + 15x + 50)$

Step 2: T-Chart

| 50 | | |
|---|---|---|
| 1 | 50 | = 51 |
| 2 | 25 | = 27 |
| 5 | 10 | = 15 |

Step 3: Write factored form

$2(x+5)(x+10)$

1. $2x^2 + 30x + 100$

Method 3

Step 1: Factor out GCF

$2(x^2 + 15x + 50)$

Step 2: Put in calculator $y =$

Step 3: Find the zeros

- Where the graph crosses x-axis

$x = -10$ $x = -5$

Step 4: Write Binomials

$x = -10$ $x = -5$

$+10 \quad +10$ $+5 \quad +5$

$x + 10 = 0$ $x + 5 = 0$

$2(x+10)(x+5)$

2. $6n^2 - 84n + 240$

Step 1 : SF

$6n^2 - 84n + 240$

Step 2: GCF

$6(n^2 - 14n + 40)$

$a = 1$
$b = -14$
$c = 40$

Step 3: $a \cdot c$

$1 \cdot 40 = 40$

Step 4: Find factors

$-1 \cdot -40$ $-5 \cdot -8$
$-2 \cdot -20$
$-4 \cdot -10$

Step 5: Find factor add up to b

$-1 + -40 = -41$ $-4 + -10 = -14$
$-2 + -20 = -22$ $-5 + -8 = -13$

$f_1 = -4$
$f_2 = -10$

Step 6: Simplified fraction

$a = 1$ $f_1 = -4$ $f_2 = -10$

$$\frac{a}{f_1} = \frac{1}{-4}$$

$$\frac{a}{f_2} = \frac{1}{-10}$$

Both simplified

Step 7: Write binomials

$1x$ | $1x$

$-4$ | $-10$

$(x-4)$ $(x-10)$

Factored Form: $6(x-4)(x-10)$

$6(x^2-10x-4x+40)$

$6(x^2-14x+40)$

$6x^2-84x+240$ ✓

3. $n^3 - 11n^2 + 28n$

Step 1: Take out GCF

$n(n^2 - 11n + 28)$ 2

Step 2: T-Chart

Both factors are

28

| | | |
|---|---|---|
| -1 | -28 | = -29 |
| -2 | -14 | = -16 |
| -4 | -7 | = -11 |
| - | | |

Step 3: Factored Form

$n(x-4)(x-7)$

6. $4p^2 - 1$ *Perfect Square Trinomial*

Step 1: SF

$4p^2 - 1$ $a = 4$ $b = 0$ $c = -1$

Step 2: GCF

$4p^2 - 1$ $a = 4$ $b = \emptyset$ $c = 1$

Step 3: $a \cdot c$

$4 \cdot 1 = 4$

Step 4: Find factors

$1 \cdot -4$ $-2 \cdot 2$

$-1 \cdot 4$

Step 5. Find factors to equal $b = 0$

$1 + -4 = -3$ $-2 + 2 = 0$ $f_1 = 2$

$-1 + 4 = 3$ $f_2 = 2$

Step 6: Simplified Fractions

$\frac{a}{f_1} = \frac{4}{2} = \frac{2}{1}$ $\frac{a}{f_2} = \frac{4}{-2} = \frac{2}{-1}$

Step 7: Factored form

$\frac{2x}{+1}$ $\frac{2x}{-1}$ Add

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

6. $4p^2 - 1$

Perfect Square Trinomial

a + c are perfect squares

Take square root of a + c

$\sqrt{4} = \pm 2x \quad \sqrt{1} = \pm 1$

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

9 - 12

set equal to zero, then factor, solve for the variable

(binomial)(binomial) $= 0$

binomial $= 0$ binomial $= 0$

$(2x+1) \quad (2x-1) = 0$

$2x+1 = 0$

$-1 \quad -1$

$\frac{2x}{2} = \frac{-1}{2}$

$x = -\frac{1}{2}$

$2x-1 = 0$

$+1 \quad +1$

$\frac{2x}{2} = \frac{1}{2}$

$x = \frac{1}{2}$