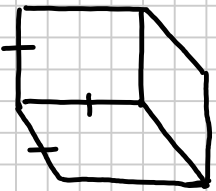


Chapter 3 Review

Example #1) Determine the side length.



$$V = 1728 \text{ m}^3$$

Factor 1728

$$\sqrt{2 \times 864}$$

$$\sqrt{2 \times 432}$$

$$\sqrt{2 \times 216}$$

$$\sqrt{2 \times 108}$$

$$\sqrt{2 \times 54}$$

$$\sqrt{6 \times 9}$$

$$\sqrt{3 \times 2} \quad \sqrt{3 \times 3}$$

Prime Factors = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

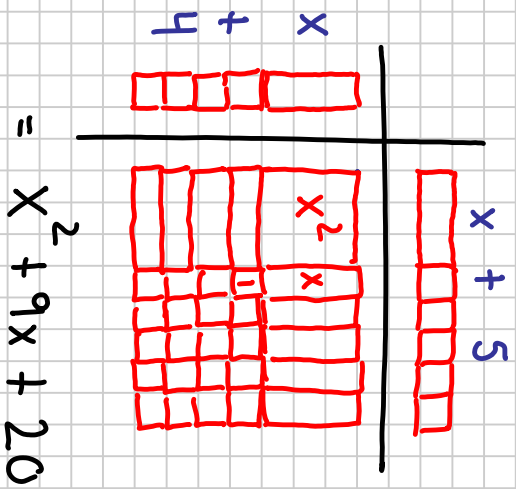
$$= (3 \times 2 \times 2) \times (3 \times 2 \times 2) \times (3 \times 2 \times 2)$$

$$= 12 \times 12 \times 12$$

$$\sqrt[3]{1728} = 12$$

Example #2) Expand and Simplify

Method #1 - Tiles



$$(x+5)(x+4)$$

Method #2 - FOIL

$$(x+5)(x+4)$$

A diagram illustrating the FOIL method for the product of two binomials. The expression $(x+5)(x+4)$ is written. Red arrows indicate the following steps: a top arrow from x to x , a top arrow from x to 4 , a bottom arrow from 5 to x , and a bottom arrow from 5 to 4 .

$$= x^2 + 4x + 5x + 20$$

✓

$$= x^2 + 9x + 20$$

Example #3) Expand and simplify

$$(4x - 2y)^2$$

rewrite as

$$(4x - 2y)(4x - 2y)$$

$$= 16x^2 - 8xy - 8xy + 2y^2$$

$$= 16x^2 - 16xy + 4y^2$$

Example #4) Factor - see summary notes on website

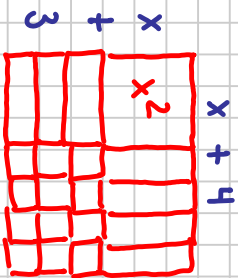
a) Method 1

$$x^2 + 7x + 12$$

↑ Add
↑ Mult.

$$(x + 4)(x + 3)$$

| Factors | Sum |
|---------|-----|
| 1x12 | 13 |
| 2x6 | 8 |
| 3x4 | 7 ✓ |



Method #2 - Tiles

b) Factor

$$9x^2 - 12x^3$$

$\frac{9x^2}{3x^2} \quad \frac{-12x^3}{3x^2}$

← GCF = $3x^2$ so divide that from

all the terms

$$= 3x^2 (3 - 4x)$$

← GCF goes at front of brackets.

c) Factor

$$4x^2 + 20x + 9$$

36

← No GCF

so Factor by decomposition

Common Factor = $4x^2 + 20x + 9$

$= 2x$

$$2x(2x+1) + 9(2x+1)$$

Common Factor → $(2x+1)(2x+9)$

$2x+1$

Write one

| Factors 36 | Sum |
|------------|------|
| 1 x 36 | 37 |
| 2 x 18 | 20 ✓ |
| 3 x 12 | 15 |
| 4 x 9 | 13 |
| 6 x 6 | 12 |

d) Factor

$$3x^2 - 13x - 10$$

$$= 3x^2 - 15x + 2x - 10$$

$$= 3x(x-5) + 2(x-5)$$

$$= (x-5)(3x+2)$$

| Factors -30 | Sum |
|-------------|-------|
| 1 x -30 | -29 |
| -1 x 30 | 29 |
| 2 x -15 | -13 ✓ |
| -2 x 15 | 13 |
| 3 x -10 | -7 |
| -3 x 10 | 7 |

e) Factor

$$x^2 - 49$$

↓

$$x^2 + 0x - 49$$

$$= (x + 7)(x - 7)$$

- No GCF

- No middle term

- Find $\sqrt{49}$

- only works when
subtracting terms

f) Factor

$$9x^2 - 16y^2$$

$$(3x + 4y)(3x - 4y)$$

$$\sqrt{9x^2} = 3x$$

$$\sqrt{16y^2} = 4y$$