

Stations One: Conversions and Word Problems

- 1) Convert 7 days into years

$$\frac{7 \text{ days}}{365 \text{ days}} \times \frac{1 \text{ year}}{1} = \frac{7}{365} = 0.019 \text{ years}$$

- 2) Convert 56.7 yards into inches

$$\frac{56.7 \text{ yards}}{1 \text{ yard}} \times \frac{3 \text{ feet}}{1 \text{ foot}} \times \frac{12 \text{ inches}}{1 \text{ inch}} = 2,041.2 \text{ inches}$$

- 3) How many cups are in 5.2 gallons

$$\frac{5.2 \text{ gallons}}{1 \text{ gallon}} \times \frac{4 \text{ quarts}}{1 \text{ quart}} \times \frac{2 \text{ pints}}{1 \text{ pint}} \times \frac{2 \text{ cups}}{1 \text{ cup}} = 83.2 \text{ cups}$$

- 4) Convert 12.6 ounces into pounds (1 lb = 16 oz)

$$\frac{12.6 \text{ ounces}}{16 \text{ ounces}} \times \frac{1 \text{ lb}}{1} = 0.7875 \text{ pounds}$$

- 5) How many cm are in 23 meters?

$$23 \text{ m} \times 10 \times 10 = 2,300 \text{ cm}$$

- 6) Convert .552 grams into milligrams

$$.552 \text{ g} \times 10 \times 10 \times 10 = 552 \text{ mg}$$

- 7) Convert 15.5 feet into meters (use 1 inch = 2.54 centimeters)

$$\frac{15.5 \text{ feet}}{1 \text{ foot}} \times \frac{12 \text{ inches}}{1 \text{ in}} \times \frac{2.54 \text{ cm}}{1 \text{ cm}} \times \frac{1 \text{ m}}{100 \text{ cm}} = \frac{472.44}{100} \text{ m} = 4.72 \text{ m}$$

- 8) Convert 55 kilograms into pounds (use 1 ounce = 28.35 g)

$$\frac{55 \text{ kg}}{1 \text{ kg}} \times \frac{1000 \text{ g}}{1 \text{ g}} \times \frac{1 \text{ ounce}}{28.35 \text{ g}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = \frac{55,000}{453.6} = 121.25 \text{ pounds}$$

- 9) Tom can drive 310 miles on 10.5 gallons of gas. How many kilometers can he drive on 15 Liters? (1 mile = 1.61 km and 1 quart = .946 L)

$$\frac{310 \text{ miles}}{10.5 \text{ gallons}} \times \frac{1 \text{ gallon}}{4 \text{ qt}} \times \frac{1 \text{ qt}}{.946 \text{ L}} \times \frac{1.61 \text{ km}}{1 \text{ mile}} = \frac{499.1 \text{ km}}{39.732 \text{ L}} = 12.56 \text{ km/L}$$

FROM PROBLEM #4

$$15 \text{ liters} \times 12.56 \text{ km/L} = 188.4 \text{ km}$$

- 10) Becca is 175 miles from Atlanta. If she is driving at 50 mph, how many hours will it take her to reach her destination?

$$\frac{175 \text{ miles}}{50 \text{ miles}} \times \frac{\text{hour}}{1} = 3.5 \text{ HOURS}$$

- 11) Henry's fitness club charges a one time registration fee and then charges by the month. The amount he pays for service can be model by the equation $10m + 25$. What does 10 represent? What does 25 represent?

10 IS THE MONTHLY FEE

25 IS THE REGISTRATION FEE

Station Two: Radicals

1) $\sqrt{360x^3y^2}$
 $\begin{array}{r} \uparrow \\ 36 \mid 10 \end{array}$

$6xy\sqrt{10x}$

2) $4xy\sqrt{900x^4y^6}$
 $\begin{array}{r} \uparrow \\ 9 \mid 100 \end{array}$

$120x^3y^4$

3) $\sqrt{63x^2y} \cdot \sqrt{14y^3} = \sqrt{882x^2y^4}$

$21xy^2\sqrt{2}$

$\begin{array}{r} \uparrow \\ 7 \mid 126 \end{array}$

$\begin{array}{r} \uparrow \\ 7 \mid 18 \\ \uparrow \\ 9 \mid 2 \end{array}$

4) $3x\sqrt{15x} \cdot 2\sqrt{10x^2}$

$6x\sqrt{150x^3}$
 $\begin{array}{r} \uparrow \\ 15 \mid 10 \\ \uparrow \\ 3 \mid 5 \mid 2 \end{array}$

$30x^2\sqrt{6x}$

5) $\sqrt{10x^2} \cdot -3x\sqrt{20x^2} = -3x\sqrt{200x^4}$

$-30x^3\sqrt{2}$

$\begin{array}{r} \uparrow \\ 2 \mid 100 \end{array}$

6) $-4\sqrt{20x^2} \cdot 5x\sqrt{25x} = -20x\sqrt{500x^3}$

$-200x^2\sqrt{5x}$

$\begin{array}{r} \uparrow \\ 5 \mid 100 \end{array}$

7) $3\sqrt{6} - 2\sqrt{27} + 3\sqrt{54}$
 $\begin{array}{r} \uparrow \\ 9 \mid 3 \\ \uparrow \\ 9 \mid 6 \end{array}$

$3\sqrt{6} - 6\sqrt{3} + 9\sqrt{6}$

$12\sqrt{6} - 6\sqrt{3}$

8) $3\sqrt{150} - \sqrt{150} - 4\sqrt{75}$

$\begin{array}{r} \uparrow \\ 15 \mid 10 \\ \uparrow \\ 3 \mid 5 \mid 5 \end{array}$

$\begin{array}{r} \uparrow \\ 25 \mid 3 \end{array}$

$15\sqrt{6} - 5\sqrt{6} - 20\sqrt{3}$

$10\sqrt{6} - 20\sqrt{3}$

9) $2\sqrt{6} - 3\sqrt{4} - 3\sqrt{24}$
 $\begin{array}{r} \uparrow \\ 4 \\ \uparrow \\ 6 \end{array}$
 $2\sqrt{6} - 6 - 6\sqrt{6}$

$-4\sqrt{6} - 6$

10) $-5\sqrt{27} + 2\sqrt{12} + \sqrt{8}$
 $\begin{array}{r} \uparrow \\ 9 \mid 3 \\ \uparrow \\ 4 \mid 3 \end{array}$

$-15\sqrt{3} + 4\sqrt{3} + 2\sqrt{2}$

$-11\sqrt{3} + 2\sqrt{2}$

11) Give one example of rational number. Explain why it is rational

4 it is a whole number

12) Give one example of an irrational number. Explain why it is irrational

π it repeats forever and does not stop

Stations 3: Polynomials

- 1) Write the following in standard form, state the leading coefficient, the degree (and name by degree), and name by number of terms $5x^2 - 10 + x - 3x^3$

$$-3x^3 + 5x^2 + x - 10$$

$$L.C = -3$$

$$DEGREE = 3 \quad \text{CUBIC}$$

TRINOMIAL

- 2) Write the following in standard form, state the leading coefficient, the degree (and name by degree), and name by number of terms $4 + 6x^2 - 12x$

$$6x^2 - 12x + 4$$

$$L.C = 6$$

$$DEGREE = 2$$

QUADRATIC

TRINOMIAL

3) $(x^2 + 3x) + (x^2 - 4x + 9)$

$$2x^2 - x + 9$$

4) $(4x^2 - 11x + 10) + (5x - 31)$

$$4x^2 - 6x - 21$$

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

$$-7x + 7$$

6) $(7x^3 - 1) - (15x^3 + 4x^2 - x + 3)$

$$-8x^3 - 4x^2 + x - 4$$

7) $-4x(x^2 + 6x - 7)$

$$-4x^3 - 24x^2 + 28x$$

8) $(3x - 4)(2x - 7)$

$$6x^2 - 21x - 8x + 28$$

$$6x^2 - 29x + 28$$

9) $(x + 6)(x - 6)$

$$x^2 - 6x + 6x - 36$$

$$x^2 - 36$$

10) $5x^3(4x^5 - 2x + 1)$

$$20x^8 - 10x^4 + 5x^3$$

11) $(8x - 1)^2$

$$(8x - 1)(8x - 1)$$

$$64x^2 - 8x - 8x + 1$$

$$64x^2 - 16x + 1$$

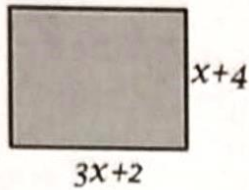
12) $(7x - 5)(3x + 10)$

$$21x^2 + 70x - 15x - 50$$

$$21x^2 + 55x - 50$$

Station 4: Perimeter, Area, and Volume

- 1) Find the perimeter and the area of the rectangle below



$$P = 3x+2 + 3x+2 + x+4 + x+4$$

$$P = 8x + 12$$

$$A = (3x+2)(x+4)$$

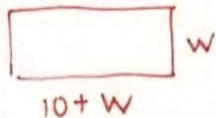
$$3x^2 + 12x + 2x + 8$$

$$A = 3x^2 + 14x + 8$$

- 2) What is the volume of a box of tissues with dimensions 12 inches by 4 inches by 5 inches?

$$12 \times 4 \times 5 = 240 \text{ in}^3$$

- 3) A pool is designed to be 10 feet longer than its width. Draw a diagram that would represent this.



- 4) What would be the perimeter of the pool?

$$(10+w) + (w) + (10+w) + (w) = 4w + 20 \text{ ft}$$

- 5) What would be the area of the pool?

$$w(10+w) = w^2 + 10w \text{ ft}^2$$

- 6) If $x = 12$ feet what is total square area of the pool?

$$(12)^2 + 10(12) = 264 \text{ ft}^2$$

- 7) If the pool is going to be 6 feet deep what is the volume of the pool?

$$264 \times 6 = 1584 \text{ ft}^3$$

- 8) How many gallons will it take to fill the pool? ($1 \text{ ft}^3 = 7.48$ gallons)

$$1584 \times 7.48 = 11,848.32 \text{ gallons}$$

- 9) You are going to fill the pool with your hose which flows at a rate of 90 kg/min. How many gallons is that per minute? ($1 \text{ kg} = .264$ gallons)

$$\frac{90 \text{ kg}}{\text{min}} \times \frac{.264 \text{ gallons}}{1 \text{ kg}} = 23.76 \text{ gallons/min}$$

- 10) How many minutes will it take to fill up the pool? (bonus- what is that in hours?)

$$\frac{11,848.32 \text{ gallons}}{23.76 \text{ gallons/min}} = 498.67 \text{ min}$$

$$\frac{498.67 \text{ min}}{60} = 8.3 \text{ hours}$$