

Topic 1 - Unit Conversions

* kHIDbdcM

5280 feet = 1 mile
 0.034 ounces = 1 milliliter
 0.454 kg = 1 pound
 1.6 kilometers = 1 mile
 73 gallons = 2 barrels
 1.05 quarts = 1 liter
 4 quarts = 1 gallon
 16 ounces = 1 pound
 2.2 pound = 1 kg

1) A big bowl of Mac and Cheese weighs 80 grams.
 How heavy is it in kg?

$$\frac{80g}{1000} = 0.08kg$$

2) A tire is rotating at 120 revolutions per minute.
 Convert this to revolutions per hour.

$$\frac{120 \text{ rev}}{1 \text{ minute}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = 7,200 \text{ rev/hr}$$

3) A car is traveling 102.667 feet per second, how fast is that in miles per hour?

$$\frac{102.667 \text{ ft}}{1 \text{ second}} \cdot \frac{1 \text{ mile}}{5280 \text{ ft}} \cdot \frac{60 \text{ sec}}{1 \text{ minute}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} = \frac{36901.2}{5280} = 70 \frac{\text{miles}}{\text{hr.}}$$

4) Sabrina wants to have a pizza party and invite 30 of her closest friends.
 She called Papa Johns and found that a large pizza cost \$9.50 and is cut
 into 8 slices. If she wants each guest to get 2 pieces each, how much is
 she going to have to spend on pizza? Show all unit conversion work to
 get full credit.

$$\frac{30 \text{ people}}{1} \cdot \frac{2 \text{ slices}}{1 \text{ person}} \cdot \frac{1 \text{ pizza}}{8 \text{ sl}} = 7.5 \text{ pizzas}$$

order 8
 $8 \times \$9.50 = \76

Topic 2 - Identifying Parts of an Expression

1) How many terms are in the expression $x^3 - 18x^2 + 8x - 9$?

4

2) Identify and label each of the following for the above expressions

Name By Degree	Name by # of Terms	List the Coefficients	List the Constants
Cubic	polynomial	1, -18, 8	-9

3) Simplify these polynomials and arrange in standard form, then name by
 degree and number of terms, and state the Leading Coefficient.

$$(3x^3 - 5x^2 + x - 4) + (-4x^3 + 2x - 8)$$

$$-x^3 + 5x^2 + 3x - 12$$

Name by Degree: Cubic
 Name by Number of Terms: polynomial
 Leading Coefficient: -1
 Standard Form: $-x^3 + 5x^2 + 3x - 12$

Topic 3: Operations with Polynomials

Simplify the following polynomials. Write your answer in standard form, and put a box around your final answer.

1. $(3x^3 - 5x^2 - x + 1) - (-2x^3 - x^2 + 3x - 5)$

← Distribute the negative

$$3x^3 - 5x^2 - x + 1 + 2x^3 + x^2 - 3x - 5$$

$$\boxed{5x^3 - 4x^2 - 4x + 6}$$

5.

2. $(4x + 5)^2$

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

$$\boxed{16x^2 + 40x + 25}$$

3. $(4x - 3)(5x + 9)$

$$20x^2 + 36x - 15x - 27$$

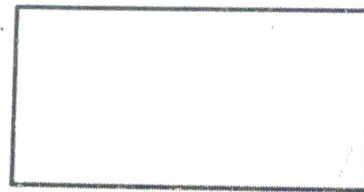
$$\boxed{2x^2 + 21x - 27}$$

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

$$12x^3 - 27x^2 + 6x - 8x^2 + 18x - 4$$

$$\boxed{12x^3 - 35x^2 + 24x - 4}$$

Find perimeter and area of the rectangle. Simplify completely.



$x + 5$

$2x + 1$

$$P = 2(2x + 1) + 2(x + 5)$$

$$P = 4x + 2 + 2x + 10$$

$$\boxed{P = 6x + 12}$$

$$A = l \cdot w$$

$$A = (x + 5)(2x + 1)$$

$$= 2x^2 + x + 10x + 5$$

$$\boxed{A = 2x^2 + 11x + 5}$$

Topic 4: Radicals

1. $\sqrt{18x^2}$

$$\boxed{3x\sqrt{2}}$$

2. $\sqrt{196x^7y^2}$

$$\boxed{14x^3y\sqrt{x}}$$

3) $\sqrt{24} + 3\sqrt{54}$

$$2\sqrt{6} + 9\sqrt{6}$$

$$\boxed{11\sqrt{6}}$$

4. $-2\sqrt{5x^4} - x^2\sqrt{5}$

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

$$\boxed{-3x^2\sqrt{5}}$$

5. $-2\sqrt{5} \cdot \sqrt{12}$

$$-2\sqrt{60}$$

$$-2\sqrt{4} \cdot \sqrt{15}$$

$$\boxed{-4\sqrt{15}}$$

6. $\sqrt{48y^3}$

$$\sqrt{16} \sqrt{3} \sqrt{y^2} \sqrt{y}$$

$$4y\sqrt{3y}$$

7. $\sqrt{2}(3\sqrt{2} - 6)$

$$3\sqrt{4} - 6\sqrt{2}$$

$$\boxed{6 - 6\sqrt{2}}$$

8. $2\sqrt{63x^5y^8}$

$$2\sqrt{9} \cdot \sqrt{7} \sqrt{x^4} \sqrt{x} \sqrt{y^8}$$

$$2 \cdot 3 \cdot x^2 \cdot y^4 \sqrt{7x}$$

$$6x^2y^4\sqrt{7x}$$

Station 5: Irrational vs. Rational

1. Which of the following is true?

- A. A rational number plus a rational number equals a rational number
- B. An irrational number plus an irrational number equals a rational number **no**
- C. An irrational number plus a rational number equals a rational number **no**
- D. A rational number plus a rational number always equals an integer. **no**

2. Simplify the following expressions, if possible. Then, identify the solution as rational or irrational, and state why this is the case.

a) $3\sqrt{36} - \sqrt{25}$

$$3 \cdot 6 - 5$$

$$18 - 5$$

R

c) $4 + \pi$

IRR

b) $\sqrt{8} * \sqrt{2} + \sqrt{7}$

$$\sqrt{16} + \sqrt{7}$$

$$4 + \sqrt{7}$$

irr

d) $\sqrt{7} * \sqrt{7}$

$$\sqrt{49}$$

(7) R