

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Unit 1 Review

Do the following one-step and multi-step unit conversions.

1. How many inches are there in 3.1 miles?

$$3.1 \text{ mi} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{12 \text{ in}}{1 \text{ ft}} = \boxed{196,416 \text{ in}}$$

- There are 5280 feet in one mile
- There are 0.034 ounces in one milliliter
- There are 0.454 kg in one pound
- There are 1.6 kilometers in one mile
- There are 1.05 quarts in one liter
- There are 4 quarts in one gallon

2. Fifty mph is how many feet per second?

$$\frac{50 \text{ mi}}{\text{hr}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec}} = \boxed{73.3 \text{ ft/sec}}$$

3. A bird chirps 10 times a minute. At this rate, about how many times would it chirp in a day?

$$\frac{10 \text{ chirps}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hr}}{1 \text{ day}} = \boxed{14,400 \text{ chirps/day}}$$

Equations: Solve for the given variable. Show all of your work.

4. Solve for x.  $2x + 5(x - 3) = x + 2$

$$\begin{aligned} 2x + 5x - 15 &= x + 2 \\ 7x - 15 &= x + 2 \end{aligned}$$

$$\begin{aligned} 7x - 15 &= x + 2 \\ -x & \quad -x \\ \hline 6x - 15 &= 2 \\ +15 & \quad +15 \\ \hline 6x &= 17 \\ \frac{6x}{6} &= \frac{17}{6} \\ x &= 2.83 \end{aligned}$$

5. Solve for y.  $3x - 6y = 12$

$$\begin{aligned} 3x - 6y &= 12 \\ -3x & \quad -3x \\ \hline -6y &= -3x + 12 \\ \frac{-6y}{-6} &= \frac{-3x + 12}{-6} \\ y &= \frac{1}{2}x - 2 \end{aligned}$$

6. Solve for m.  $\frac{4m + 8}{x} = n \cdot 6$

$$\begin{aligned} 4m + 8 &= 6n \\ 4m + 8 &= 6n \\ -8 & \quad -8 \\ \hline 4m &= 6n - 8 \\ \frac{4m}{4} &= \frac{6n - 8}{4} \\ m &= \frac{3}{2}n - 2 \end{aligned}$$

7. Solve for y.  $2(x - 10) = \frac{1}{2}(y - 8) \cdot 2$

$$\begin{aligned} 2(x - 10) &= y - 8 \\ 2x - 20 &= y - 8 \\ 2x - 20 &= y - 8 \\ +8 & \quad +8 \\ \hline 2x - 12 &= y \\ y &= 2x - 12 \end{aligned}$$

8. How many terms are in the expression
- $5x^2 - 5x + 6$
- ?

 $\boxed{3}$ 

9. What are the factors, coefficients, and constants in the expression
- $5xy^2 - 5x + 6$
- ?

coefficients: 5, -5  
constant: 6

Translate into an algebraic expression.

10. Eighteen decreased by a number.

$$18 - n$$

11. The cube of number increased by 12.

$$n^3 + 12$$

12. Sabrina wants to have an average of at least 90 on her quizzes. If she took three quizzes and earned a 95, 86 and 82, what is the lowest grade she has to earn on the fourth quiz?

$$\frac{95 + 86 + 82 + x}{4} = 90 \quad 263 + x = 360$$

$$x = 97$$

13. Sue agrees to buy a 4-month package deal of monthly gym passes, and in turn receives a 15% discount. Write an algebraic expression to represent the total cost of the monthly passes with the discount, if  $x$  represents the cost of each monthly pass.

$$4x - .15(4x)$$

$$4x - .6x$$

14. Destiny is trying to find the sum of 3 consecutive even integers. Their sum is 66. Find the 3 numbers.

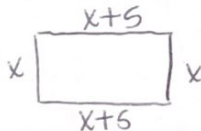
$$x + x + 2 + x + 4 = 66$$

$$3x + 6 = 66$$

$$3x = 60 \quad x = 20$$

$$20, 22, 24$$

15. The width of a rectangle is 5 inches more than the length. The perimeter is 126. Find the length and width of the rectangle.



$$4x + 10 = 126$$

$$4x = 116$$

$$x = 29$$

$$\begin{array}{l} L: 29 \text{ in} \\ W: 34 \text{ in} \end{array}$$

16. Find two consecutive integers such that the sum of the greatest integer and twice the lesser integer is 40.

$$G: x+1$$

$$L: x$$

~~cancel~~

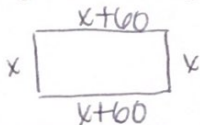
$$x+1 + 2x = 40$$

$$3x + 1 = 40$$

$$3x = 39$$

$$\begin{array}{l} x = 13 \\ x+1 = 14 \end{array}$$

17. A rectangular playground is 60 meters longer than it is wide. It can be enclosed by 920 meters of fencing. Find its length.



$$4x + 120 = 920$$

$$4x = 800$$

$$x = 200$$

$$\begin{array}{l} W: 200 \text{ m} \\ L: 260 \text{ m} \end{array}$$