

# CALCULATOR APPLICATIONS TIPS (JANUARY 2021)

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1. Jim and Lane work together to complete a task in 8 hours. If Jim is gone, it takes Lane 12.5 hours to complete the task. Calculate how long it would take Jim to do the task if Lane was gone.

$$1 = \underline{\hspace{2cm}} \text{ hrs}$$

$\frac{\text{Both}}{\text{Aalone}} + \frac{\text{Both}}{\text{Balone}} = 1$ ; Let  $J$  = time it takes Jim to complete the task alone.

$\frac{8}{J} + \frac{8}{12.5} = 1$ ; Multiply both sides of the equation by  $12.5J$  to simplify.

$$12.5J\left(\frac{8}{J} + \frac{8}{12.5}\right) = 1(12.5J)$$

$$12.5(8) + 8J = 12.5J$$

$$100 = 12.5J - 8J$$

$$4.5J = 100 ; J = 100/4.5 = \mathbf{22.2}$$

**Answer : 22.2 hours**

2. The speed a car can achieve in 10 seconds is inversely proportional to its weight. After 10 seconds, a car that weighs 2400 pounds can achieve a speed of 44 miles per hour. Calculate the speed of a 1600 pound car after 10 seconds.

$$2 = \underline{\hspace{4cm}} \text{ mph}$$

$$S = \frac{m}{W} ; 44 = \frac{m}{2400} ; m = 44(2400)$$

$$S = \frac{44(2400)}{1600} = 66.0 ; \text{ Answer : } 66.0 \text{ mph}$$

3. There are 73 marbles in a jar, all of the same size. There are 13 red, 31 white and 29 blue. Matt wants 2 blue marbles. Calculate the probability of drawing out 2 blue marbles. The first blue marble, when drawn, is not replaced.

$$3 = \underline{\hspace{4cm}}$$

$$\text{Probability} = \frac{\text{Favorable}}{\text{Total Outcomes}}$$

$$\left(\frac{29}{73}\right)\left(\frac{28}{72}\right) = .154$$

4. A collection of 115 nickels and half-dollars is worth \$15.65. Calculate the number of nickels.

$$4 = \underline{\hspace{2cm}} \text{ INT}$$

Let  $N$  = number of nickels ;  $115 - N$  = number of half-dollars.

$$5N + 50(115 - N) = 1565$$

$$5N + 50(115) - 50N = 1565$$

$$-45N = 1565 - 50(115)$$

$$N = \frac{1565 - 50(115)}{-45} = 93 ; \text{ Answer : } 93 \text{ (Integer)}$$

5. Two angles form a linear pair. The first angle measures  $(22x - 8)^\circ$  and the second angle measures  $(8x + 22)^\circ$ . Calculate the measure of the larger angle in degree.

$$5 = \underline{\hspace{2cm}}^\circ$$

A linear pair are two angles that are supplementary.

$$(22x - 8) + (8x + 22) = 180$$

$$30x + 14 = 180$$

$$30x = 180 - 14 ; x = \frac{180 - 14}{30}$$

Substitute for  $x$  in one of the equations. If the result is greater than 90 it is the answer. If not its answer is its supplement.

$$22\left(\frac{180 - 14}{30}\right) - 8 = 114 ; \text{ Answer : } 114$$