CALCULATOR APPLICATIONS TIPS (DECEMBER 2023)

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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=_____hrs

$\frac{Both}{Aalone}+\frac{Both}{Balone}=1$; 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 12.5 J to simplify.

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

12.5(8) + 8J = 12.5J

100 = 12.5J - 8J

4.5J = 100 ; J = 100/4.**5** **= 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=_____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=_____

$$\text{Probability} = \frac{Favorable}{TotalOutcomes}$$

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

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

4=_____ 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)° and the second angle measures (8x + 22)°. Calculate the measure of the larger angle in degree.

5=_____°

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.

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