Myopenmath Questions and Solutions

1) What number is 125% of 70?

Ans: 125% of 70 = $\frac{125}{100} \times 70 = 87.5$

2) 95% of what number is 57?

Ans: Let the required number be x.

$\therefore 95\% \ of \ x = 57 \Rightarrow$

$\frac{95}{100} \times x = 57$

$\Rightarrow x = 57 \times \frac{100}{95} = 60$

Hence, the require number is 60.

3) What percent of 90 is 54?

Ans: Let x% of 90 is 54

$\therefore \frac{x}{100} \times 90 = 54$

$\Rightarrow x = \frac{54 \times 100}{90} = 60$

Hence the required percent is 60.

4) Employees in 2012 paid 4.2% of their gross wages towards social security (FICA tax), while employers paid another 6.2%. How much will someone earning $33,000 a year pay towards social security out of their gross wages?

Ans: Payments towards social security = 4.2% of $33,000 = $\frac{4.2}{100} \times 33000 = \$1,386$

5) A store has clearance items that have been marked down by 55%. They are having a sale, advertising an additional 40% off clearance items. What percent of the original price do you end up paying?

Ans : A 55% reduction of the marked down price yields 45% of the original price.
Clearance items are further reduced 40%, so that the clearance items are 40% of 45% or an additional 18% of the original price.

So, 45% minus 18% leaves 27% of the original price.

6) Joyce paid $49.50 for an item at the store that was 55 percent off the original price. What was the original price?

Ans: Let the original price be $x

Discount = $\frac{55}{100} \times x = \$\frac{11x}{20}$

Hence the reduced price = $x - \frac{11x}{20} = \$\frac{9x}{20}$

$\frac{9x}{20} = 49.50$

$\Rightarrow x = \frac{49.50 \times 20}{9} = 110$

Hence the original price was $110

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7) The population of a town increased from 3900 in 2005 to 5600 in 2009. Find the absolute and relative (percent) increase.

Ans: Absolute increase = 5600 – 3900 = 1700

Relative increase = $\frac{5600-3900}{3900} \times 100\% = 43.589744\%$

8) The distance between two towns is 530 miles. On a map, this is represented by a length of 5 inches. On the same map, how may inches would there be between two cities that are 1590 miles apart.

a) Record the proportion below in which you will use to solve the problem. Be sure to use x as the unknown quantity.

b) Solve your proportion in part a) and record your result below.

Ans:

a) $\frac{530}{5} = \frac{1590}{x}$

b) By cross multiplication we get

$530x = 1590 \times 5$

$\Rightarrow x = \frac{1590 \times 5}{530} = 15$ inches.

9) A certain city covers an area of 74.7 mi². How many square kilometers is this? Use the conversion factor 1 mile = 1.61 km. Round to one decimal place.

Ans: Area of the city = 74.7 mi^2 = (74.7 x 1.61 x 1.61) = 193.6 Km^2

10) A basement for a 22 ft by 40 ft house is to be dug at a depth of 9 feet.

How many cubic yards of earth need to be hauled away? Assume the surface of the ground is level.

Ans: Volume of the yards = 22 x 40 x 9 = 7920 cubic feet

= 7920 ÷ 27 = 293.33 cubic yards.

11) If a rectangular garden is 45 ft. by 30 ft., how many feet of fence are needed to enclose it?

Ans: Length of the garden = 45 ft

Width of the garden = 30 ft

Perimeter of the garden = 2 (L + B) = 2(45 + 30) = 2 * 75 = 150 feet

Hence, 150 feet of fence are needed to enclose the ground.

12) As of 2020, the US minimum wage is $7.25 per hour. If a large corporation paid each of their 1.7 million employees that rate for 35 hours per week, 48 weeks per year, how much would each worker earn, and what would the total income be?

Ans: First, we need determine each worker's salary and express that annual salary in scientific notation.

Each workers Salary = $ (7.25 x 35 x 48) = $ 12180 = $ 1.218 x 10^4

No. of workers = 1.7 million = 1700000 = 1.7 x 10^6

To determine the total income, multiply each worker's salary by the total number of employees.

Hence, Total income = $(1.218 x 10^4 x 1.7 x 10^6) = $ 2.0706 x 10^{10}