

MATH 1030-004, Quiz 3 Solution

Spring 2011

1. Express the following numbers in three forms: as a reduced fraction, as a decimal, and as a percentage. **(2 pts)**

(a) $0.85 = 85\% = 85/100 = 17/20$.

(b) $4/3 = 1.33 = 133\%$.

2. The number 70,000,000 is the same as

[a.] 7×10^7 .

b. 7×10^8 .

c. 7×10^9 . **(2 pts)**

$70,000,000 = 7 \times 10^7$.

3. Find the absolute change and the percentage change if the number of daily newspapers in the United States was 2,226 in 1900 and 1,420 in 2010. **(2 pts)**

$$\text{absolute change} = 1,420 - 2,226 = -806.$$

$$\text{relative change} = \frac{-806}{2226} = -0.362 = -36.2\%.$$

4. You purchase a bicycle with a retail (pre-tax) price of \$760. The local sales tax rate is 7.6%. What is the final cost? **(2 pts)**

$$\text{final cost} = (100 + 7.6)\% \times \$760 = 107.6\% \times \$760 = 1.076 \times \$760 = \$817.76.$$

5. Simon's monthly take-home pay (after taxes) is \$2,200. If he pays 21% of his gross pay (before taxes) in tax, what is his gross pay? **(2 pts)**

$$\$2,200 = (100 - 21)\% \times \text{gross}$$

$$\$2,200 = 79\% \times \text{gross}$$

$$\$2,200 = 0.79 \times \text{gross}$$

$$\text{gross} = \frac{\$2,200}{0.79} = \$2,784.81.$$

6. Find the scale ratio for the map where 1 inch on the map represents 10 miles. **(2 pts)**

$$10 \text{ mi} \times \frac{5,280 \text{ ft}}{1 \text{ mi}} \times \frac{12 \text{ in.}}{1 \text{ ft}} = 633,600 \text{ in.}$$

So the ratio is 1 : 633,600.

7. You are multiplying 1,277 times 14,385. You expect the answer to be a number between 1 and 10 times

a. 10^3 .

b. 10^5 .

[c.] 10^7 . **(2 pts)**

$$1,277 \times 14,385 > 1,000 \times 10,000 = 10^3 \times 10^4 = 10^7 > 10^6 = 10 \times 10^5.$$

So the answer has to be c.