

## Math 107 Quiz #1 Answer

1. Here are two ways to calculate this. Pick your favorite.

- Percentage of the pop. under 65 =  $\frac{\text{Number of people under 65}}{\text{Total Population}} = \frac{310 \text{ million} - 39.5 \text{ million}}{310 \text{ million}} \approx \boxed{87\%}$

- Percentage of population 65 or older =  $\frac{\text{Number of people 65 or over}}{\text{Total Population}} = \frac{39.5 \text{ million}}{310 \text{ million}} \approx 13\%$

So, the percentage of the population under 65 is approximately  $100\% - 13\% = \boxed{87\%}$ .

2. Here are two ways to calculate the amount after the decrease:

- $20\%$  of  $\$50,000 = 0.2(50,000) = \$10,000$

So, after the decrease, your salary was  $\$50,000 - \$10,000 = \$40,000$ .

- Since your salary is decreased by  $20\%$ , you will be getting  $80\%$  of your original salary, which is  $80\%$  of  $\$50,000 = 0.8(50,000) = \$40,000$ .

Now, here are two ways to calculate the amount after the increase:

- $20\%$  of  $\$40,000 = 0.2(40,000) = \$8,000$

So, after the increase, your salary was  $\$40,000 + \$8,000 = \boxed{\$48,000}$ .

- Since your salary is increased by  $20\%$ , you will be getting  $120\%$  of your original salary, which is  $120\%$  of  $\$40,000 = 1.2(40,000) = \boxed{\$48,000}$ .

3. (a) Absolute change =  $613.95 - 590.30 = \boxed{\$23.65}$

(b) Relative change =  $\frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} = \frac{613.95 - 590.30}{590.30} \approx \boxed{0.0401 \text{ or } 4.01\%}$

(c) Google stock prices have risen by  $4.01\%$  as given by part (b) over the last month.

4. (a) i.  $(2005 \text{ Value}) = (1985 \text{ Value})(\text{Index for 2005}) \Rightarrow (2005 \text{ Value}) = 25(1.296) \approx \boxed{\$32.38}$

ii.  $(1965 \text{ Value}) = (1985 \text{ Value})(\text{Index for 1965}) \Rightarrow (1965 \text{ Value}) = 25(0.261) \approx \boxed{\$6.53}$

(b) Here are two ways to calculate this. Again, pick your favorite:

- The index number between 1965 and 2005 is given by  $\frac{\text{Index Value}_{2005}}{\text{Index Value}_{1965}} = \frac{129.6}{26.1} \approx 4.9655 \approx 497\%$

So, the inflation rate (rate of increase) is approximately  $497\% - 100\% = \boxed{397\%}$ .

- Relative Change between index values =  $\frac{\text{Index Value}_{2005} - \text{Index Value}_{1965}}{\text{Index Value}_{1965}} = \frac{129.6 - 26.1}{26.1} \approx 3.9655 \approx \boxed{397\%}$