Quantitative Tools - level I
Fall 2015
Introduction, Changes and Percentages - RESULTS

Exercise 1 - Variables (*)

1.
- quantitative, continuous
- qualitative, nominal
- quantitative, discrete
- qualitative, ordinal
- qualitative, nominal
- qualitative, ordinal
- quantitative, discrete
- quantitative, discrete
- qualitative, nominal
- quantitative, discrete

Exercise 2 - Relative change and percentages (*)

1. The absolute change of Alice income is $5,000. The relative change is $\frac{100}{7} \approx 14.3\%$

2. Alice's bonus is $3,500$

3. The annual automatic pay was last year $1,500$, being 4.3% of Alice's income. The annual automatic pay is in percentages the same each year. So, Alice's income is now $40,000 * 1.043 = \$41,714$

4. Alice's income is now $41,714 * 0.85 = \$35,457$

5. Alice should ask an increase by $\frac{\$41,714 - \$35,457}{\$35,457} = 17.6\%$

Exercise 3 - Relative change and percentages (**)

1. The first pair of jeans costs $42, the second $45. The first one is cheaper.

2. The final price of the pair of jeans is $150 * 0.8 * 0.9 = \$108$. Bob unfortunately cannot afford this pair of jeans.

3. The initial price was $\frac{80}{1-0.3} = 114.30$

4. The initial price of the t-shirt was $\frac{20}{0.8} = 25\$$. Bob saved $14.30 + \$5 = \$19.30$

Exercise 4 - Average growth rate (***)

1. cf. Table

Days	Abs. change	Rel. change in %
Tuesday	1	+20%
Wednesday	-2	-33.3%
Thursday	3	+75%
Friday	2	28.6%
Saturday	-1	-11.1%

Table 1: Absolute change and relative change of Santiago and Manolin's catch

2. The aggregate change (in percentages) for the whole week is

$$\left(\frac{6}{5} * \frac{2}{3} * \frac{7}{4} * \frac{9}{7} * \frac{8}{9} - 1 \right) * 100 = 60\%$$

3.

$$\left(\sqrt{\left(1.75 * \frac{9}{7} \right)} - 1 \right) * 100 = 50\%$$

4. The average growth rate for the whole week is (we use the result of question 2.) :

$$\left(1.6^{\frac{1}{5}} - 1 \right) * 100 = 9.86\%$$