



## Worksheet 5: Percentage changes

Economists are usually interested in relative rather than absolute changes.

If the price of 1 kilogram of apples increases from \$4 to \$6, this is a \$2 increase in price, which is not very informative.

The price of 1 kilogram of dragon fruit may have increased from \$20 to \$25 at the same time, so you might think the \$5 increase in price affects you more than the \$2 increase in price of apples, other things being equal.

Using the formula for percentage changes below, you can prove if this is really the case.

$$\% \text{ change} = \frac{(\text{New value} - \text{Original value})}{\text{Original value}} \times 100$$

$$\text{Thus, the percentage change in the price of apples would be: } \frac{\$6 - \$4}{\$4} \times 100 = +50\%$$

$$\text{And for dragon fruit the percentage change would be: } \frac{\$25 - \$20}{\$20} \times 100 = +25\%$$

The increase in the price of apples is greater in percentage terms, although they remain cheaper than dragon fruits (\$6 vs. \$25).

Now apply the formula for percentage changes to the examples below and state which product experiences a greater percentage change in price. Mind the direction of the change! Some of the prices below decrease!

### Example 1:

The price of an airplane ticket increased from \$75 to \$100.

Calculation:

$$\frac{(\boxed{\phantom{00}} - \boxed{\phantom{00}})}{\boxed{\phantom{00}}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

The price of a bus ticket increased from \$3 to \$6.

Calculation:

$$\frac{(\boxed{\phantom{00}} - \boxed{\phantom{00}})}{\boxed{\phantom{00}}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

Which product experiences a greater percentage change in price? \_\_\_\_\_



### Example 2:

The tuition fee for a university course increased from \$10 000 to \$12 000.

Calculation:

$$\frac{(\boxed{\phantom{000}} - \boxed{\phantom{000}})}{\boxed{\phantom{000}}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

The rent for an apartment increased from \$400 to \$500.

Calculation:

$$\frac{(\boxed{\phantom{000}} - \boxed{\phantom{000}})}{\boxed{\phantom{000}}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

Which product experiences a greater percentage change in price? \_\_\_\_\_

### Example 3:

The price of an exotic holiday decreased from \$750 to \$500.

Calculation:

$$\frac{(\boxed{\phantom{000}} - \boxed{\phantom{000}})}{\boxed{\phantom{000}}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

The price of a car decreased from \$4000 to \$3500.

Calculation:

$$\frac{(\boxed{\phantom{000}} - \boxed{\phantom{000}})}{\boxed{\phantom{000}}} \times \boxed{\phantom{000}} = \boxed{\phantom{000}}$$

Which product experiences a greater percentage change in price? \_\_\_\_\_



### Example 4:

The price of petrol increased from \$1.50 to \$1.75 per litre.

Calculation:

$$\frac{(\boxed{\phantom{00}} - \boxed{\phantom{00}})}{\boxed{\phantom{00}}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

The price of a taxi service increased from \$2.50 to \$2.75 per kilometre.

Calculation:

$$\frac{(\boxed{\phantom{00}} - \boxed{\phantom{00}})}{\boxed{\phantom{00}}} \times \boxed{\phantom{00}} = \boxed{\phantom{00}}$$

Which product experiences a greater percentage change in price? \_\_\_\_\_