



Worksheet 4: Absolute and relative changes answers

- 1 The price of a bicycle changes from \$120 to \$160. The price of a laptop changes from \$1200 to \$1400.

| | Bicycle | Laptop |
|---|--|---|
| Absolute change: | +\$40 | +\$200 |
| Relative change: | $\frac{(\$160 - \$120)}{\$120} \times 100 = +33\%$ | $\frac{(\$1400 - \$1200)}{\$1200} \times 100 = +17\%$ |
| Proportion of income taken by the price change: | $\frac{\$40}{\$10000} \times 100 = +0.4\%$ | $\frac{\$200}{\$10000} \times 100 = +2\%$ |

Which product experiences a larger relative increase in price? *The bicycle*

Effect on income: *Although the laptop's price changes by a smaller percentage, the change takes a larger proportion of the individual's income.*

- 2 The price of a book changes from \$18 to \$23. The price of a can of a fizzy drink costing \$3 doubles.

| | Book | Fizzy drink |
|---|---|---|
| Absolute change: | +\$5 | +\$3 |
| Relative change: | $\frac{(\$23 - \$18)}{\$18} \times 100 = +27.8\%$ | $\frac{(\$6 - \$3)}{\$3} \times 100 = +100\%$ |
| Proportion of income taken by the price change: | $\frac{\$5}{\$10000} \times 100 = +0.05\%$ | $\frac{\$3}{\$10000} \times 100 = +0.03\%$ |

Which product experiences a larger relative increase in price? *The fizzy drink*

Effect on income: *The fizzy drink price changes by a larger percent, but the change takes a smaller proportion of the individual's income.*



- 3 The price of an airplane ticket changes from \$200 to \$230. The price of a bus ticket changes from \$30 to \$38.

| | Airplane ticket | Bus ticket |
|---|--|---|
| Absolute change: | +\$30 | +\$8 |
| Relative change: | $\frac{(\$230 - \$200)}{\$200} \times 100 = +15\%$ | $\frac{(\$38 - \$30)}{\$30} \times 100 = +26.7\%$ |
| Proportion of income taken by the price change: | $\frac{\$30}{\$10000} \times 100 = +0.3\%$ | $\frac{\$8}{\$10000} \times 100 = +0.08\%$ |

Which product experiences a larger relative increase in price? *The bus ticket*

Effect on income: *The bus ticket price changes by a larger percent, but the change takes a smaller proportion of the individual's income.*

- 4 The price of a TV changes from \$1530 to \$1950. The price of a smartphone changes from \$800 to \$1120.

| | TV | Smartphone |
|---|--|---|
| Absolute change: | +\$420 | +\$320 |
| Relative change: | $\frac{(\$1950 - \$1530)}{\$1530} \times 100 = +27.45\%$ | $\frac{(\$1120 - \$800)}{\$800} \times 100 = +40\%$ |
| Proportion of income taken by the price change: | $\frac{\$420}{\$10000} \times 100 = +4.2\%$ | $\frac{\$320}{\$10000} \times 100 = +3.2\%$ |

Which product experiences a larger relative increase in price? *The smartphone*

Effect on income: *The smartphone price changes by a larger percent, but the change takes a smaller proportion of the individual's income.*

- 5 The price of a cinema ticket changes from \$28 to \$38. The price of a gym membership card changes from \$80 to \$135.

| | Cinema ticket | Gym membership card |
|---|---|---|
| Absolute change: | +\$10 | +\$55 |
| Relative change: | $\frac{(\$38 - \$28)}{\$28} \times 100 = +35.7\%$ | $\frac{(\$135 - \$80)}{\$80} \times 100 = +68.75\%$ |
| Proportion of income taken by the price change: | $\frac{\$10}{\$10000} \times 100 = +0.1\%$ | $\frac{\$55}{\$10000} \times 100 = +0.55\%$ |

Which product experiences a larger relative increase in price? *The gym membership card*

Effect on income: *The gym membership card price changes by a larger percent and the change also takes a larger proportion of the individual's income.*



- 6 The price of a back pack changes from from \$350 to \$420. The price of a tent changes from \$550 to \$780.

| | Back pack | Tent |
|---|--|---|
| Absolute change: | +\$70 | +\$230 |
| Relative change: | $\frac{(\$420-\$350)}{\$350} \times 100 = +20\%$ | $\frac{(\$780-\$550)}{\$550} \times 100 = +41.81\%$ |
| Proportion of income taken by the price change: | $\frac{\$70}{\$10000} \times 100 = +0.7\%$ | $\frac{\$230}{\$10000} \times 100 = +2.3\%$ |

Which product experiences a larger relative increase in price? *The tent*

Effect on income: *The tent price changes by a larger percent and the change takes a larger proportion of the individual's income.*