

Percentage Changes

Calculating Percentage Changes

A percentage change compares old values to new values. These values could be prices, population numbers or it could represent a certain number of objects. Percentage changes can either be positive (percentage increase) or negative (percentage decrease).

You will often be asked these questions below.

Find the Change

You want to find how much the original value has changed by as a number.

EXAMPLE: 50% off \$12 shoes

- (1) Convert percentage to decimal
- (2) Multiply decimal with original value

$$0.50 \times \$12 = \$6$$

The price has decreased by \$6

Find the Percentage Change

You want to find how much the original value has changed by as a percentage.

EXAMPLE: \$3 off \$12 shoes

- (1) Write the change as a fraction:

$$\frac{\text{Change}}{\text{Original value}} = \frac{\$3}{\$12} = \frac{1}{4} \text{ or } 0.25$$

- (2) Convert to percentage
0.25 = 25% decrease in price

Find the New Value

You want to find the new value after a change has happened.

SEE EXAMPLE ABOVE

After you **Find the Change**:

- (1) If positive change, add it to the original value. If negative, subtract it from the original.

$$\$12 \text{ shoes} - \$6 \text{ discount} = \$6$$

The shoes now cost \$6.

Find the Original Value

You want to find the original value after a change has happened.

EXAMPLE: \$9 shoes after 25% off

- (1) Convert percentage to decimal

- (2) If positive change, add decimal to 1. If negative, subtract from 1.

- (3) Divide new value by decimal

$$\frac{\$9}{1-0.25} = \frac{9}{0.75} = \$12 \text{ shoes originally}$$



Instructions: Find the changes below and circle either (+/−) to show a positive or negative change. Round to the nearest two decimals.

1	25% discount off a \$18 calculator	<input type="radio"/> + <input type="radio"/> −
2	Mandy's height grew by 5% from 145cm	<input type="radio"/> + <input type="radio"/> −
3	Andrew lost 18.2% of his 95kg weight	<input type="radio"/> + <input type="radio"/> −

Instructions: Find the percentage changes below and circle either (+/−) to show a positive or negative change. Round to the nearest two decimals.

1	\$6 increase on a \$12 movie ticket	<input type="radio"/> + <input type="radio"/> −
2	A plant grew by 15cm from a height of 130cm	<input type="radio"/> + <input type="radio"/> −
3	\$22 discount off a \$75 pair of shoes	<input type="radio"/> + <input type="radio"/> −



Instructions: Find the new values below and circle either (+/–) to show a positive or negative change. Round to the nearest two decimals.

1	20% discount on a \$55 dress	+
		–
2	40% increase in Max's card collection from 205 cards	+
		–
3	18% decrease in car value from \$23,000	+
		–

Instructions: Find the original values below and circle either (+/–) to show a positive or negative change. Round to the nearest two decimals.

1	\$16 shirt after a 75% discount	+
		–
2	815 views on a video after 25% increase	+
		–
3	726 tickets sold after 50% increase	+
		–