

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	52% increase in people from 175	+
		–
2	42% decrease in price of \$9.50 tub of ice-cream	+
		–
3	Sandra pays 15.5% more than Caleb who pays \$45.81	+
		–

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

1	\$12 discount off a \$96 jacket	+
		–
2	Berta was 8 seconds faster than Jon who finished the race after 85 seconds	+
		–
3	In one month, Jeremy's test scores improved by 25 from a score of 48.	+
		–



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

1	17.5% increase in price of a \$124 concert ticket	+
		–
2	28% decrease in movie ratings from a score of 96	+
		–
3	45% discount off a \$6,499 TV	+
		–

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

1	A shirt costs \$350 after a 32% discount	+
		–
2	Tom scores 25% higher than his previous game score of 495 points	+
		–
3	Luke's rent is now \$378 per week after a 12.5% increase	+
		–