



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	65% discount on a \$62 shirt	+ –
2	12.3% increase in price of \$1599 phone	+ –
3	35.82% decrease in test score of 98	+ –

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

1	\$43 discount on an \$84 dress	+ –
2	\$3.55 increase in price of \$12 burger meal	+ –
3	2.43° decrease in temperature from 26.82°	+ –



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

1	12.5% decrease in value of a \$8500 car	+
		–
2	70% increase in number of people from 890	+
		–
3	23.8% increase in savings from \$170	+
		–

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

1	\$80 pants after a 60% discount	+
		–
2	420 more sales after a 20% increase	+
		–
3	180 students after a 28% decrease	+
		–



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



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

1	35% discount on an \$490 couch	+
		–
2	62.5% increase in savings from \$526.80	+
		–
3	9.8% decrease in price of \$5 bread	+
		–

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

1	65 more sales from 164	+
		–
2	\$14.70 discount on a \$44.95 chair	+
		–
3	6.03kg lighter from 49.83kg	+
		–



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

1	11.8% increase in value of a \$120 poster	+
		–
2	60% decrease in sales from 720 per month	+
		–
3	48.5% decrease in weight from 85kg	+
		–

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

1	\$952 laptop after a 15% discount	+
		–
2	6641 points after a 45% improvement in game performance	+
		–
3	1850 animals after a 48% increase	+
		–