Find the Percent of Increase

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3.6 Find the Percent of Increase

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[Figure 1]

Last month, LaShaunda spent $35 on the movies. This month she spent $56 on the movies. What is the percent of increase for LaShaunda's movie expenses?

In this concept, you will learn to find the percent of increase.

Percent of Increase

Many times in the real world, things change—prices go up and down, your savings balance goes up and down, your weight goes up and down, businesses get more or less business etc. Interpreting the amount of change as a percent is often useful to understand a situation and compare it to others. In some cases like these, you may want to look at percent of increase. The **percent of increase** is the percent that something has increased.

Let's look at a problem where you could use percent of increase.

Two years ago, Jack was 116 cm tall. He is now 132 cm tall. His height increased by 16 cm in two years. Two years ago, his little brother Thomas was only 80 cm tall. He has grown to 95 cm. He grew 15 cm. Calculate the percent of increase for both boys to determine who had a faster growth rate. Who grew more?

First, let's start to work on this problem. In the beginning, it might seem obvious that Jack grew more because he grew 16 cm and Thomas only grew 15 cm. But if you consider the

percent of increase, you might have a different argument. To find the percent increase, use the formula:

$$\text{percent of increase} = \frac{\text{amount of increase}}{\text{original amount}} \times 100$$

Next, calculate the percent of increase for Jack's height. Jack increased in height by 16 cm. His original height was 116 cm.

$$\frac{16}{116} \times 100 = 13.79\%$$

Then, calculate Thomas's percent of increase. Thomas grew 15 cm. His original height was 80 cm.

$$\frac{15}{80} \times 100 = 18.75$$

So you might argue that Thomas grew more than Jack because his percent of increase was greater.

In the last 3 years, the price of gas has risen from an average of $1.89 per gallon to an average of $2.95 per gallon. This is an increase of $1.06 per gallon. What is the percent of increase?

To solve for this percent of increase, you divide the amount of the increase by the original amount and multiply by 100.

$$\frac{1.06}{1.89} \times 100 = 56.08\%$$

The answer is 56.08%.

Therefore, gasoline has increased in price by 56.08% or 56.1%.

Examples

Example 1

Earlier, you were given a problem about LaShaunda and all her movies.

LaShaunda spent $35 last month and $56 this month. You want to find her percent of increase of her movie expenses.

First, find the amount of increase from 35 to 56.

$$\begin{aligned} \text{Amount of increase} &= 56 - 35 \\ \text{Amount of increase} &= 21 \end{aligned}$$

Next, use the formula to find the percent of increase.

$$\begin{aligned} \text{percent of increase} &= \frac{\text{amount of increase}}{\text{original amount}} \times 100 \\ \text{percent of increase} &= \frac{21}{35} \times 100 \\ \text{percent of increase} &= 60\% \end{aligned}$$

The answer is 60%.

Therefore, LaShaunda had a percent of increase of her movie expenses by 60%.

Example 2

A tree grew 2 inches every year. When Mary first planted the tree, it was 6 inches tall. After 10 years, it was 26 inches tall. What was the percent of increase from year 10 to when Mary first planted the tree?

First, find the amount of increase from 6 to 26.

$$\begin{aligned} \text{Amount of increase} &= 26 - 6 \\ \text{Amount of increase} &= 20 \end{aligned}$$

 Next, use the formula to find the percent of increase.

$$\begin{aligned} \text{percent of increase} &= \frac{\text{amount of increase}}{\text{original amount}} \times 100 \\ \text{percent of increase} &= \frac{20}{6} \times 100 \\ \text{percent of increase} &= 333\% \end{aligned}$$

The answer is 333%.

Therefore, in ten years the tree had grown 333%.

Example 3

What is the percent of increase from 10 to 45?

First, find the amount of increase from 10 to 45.

$$\begin{aligned} \text{Amount of increase} &= 45 - 10 \\ \text{Amount of increase} &= 35 \end{aligned}$$

Next, use the formula to find the percent of increase.

$$\begin{aligned} \text{percent of increase} &= \frac{\text{amount of increase}}{\text{original amount}} \times 100 \\ \text{percent of increase} &= \frac{35}{10} \times 100 \\ \text{percent of increase} &= 350\% \end{aligned}$$

The answer is 350%.

Example 4

What is the percent of increase from 15 to 20?

First, find the amount of increase from 15 to 20.

$$\begin{aligned} \text{Amount of increase} &= 20 - 15 \\ \text{Amount of increase} &= 5 \end{aligned}$$

Next, use the formula to find the percent of increase.

$$\begin{aligned} \text{percent of increase} &= \frac{\text{amount of increase}}{\text{original amount}} \times 100 \\ \text{percent of increase} &= \frac{5}{15} \times 100 \\ \text{percent of increase} &= 33.3\% \end{aligned}$$

The answer is 33.3%.

Example 5

What is the percent of increase from 80 to 120?

First, find the amount of increase from 80 to 120.

$$\begin{aligned} \text{Amount of increase} &= 120 - 80 \\ \text{Amount of increase} &= 40 \end{aligned}$$

Next, use the formula to find the percent of increase.

$$\begin{aligned} \text{percent of increase} &= \frac{\text{amount of increase}}{\text{original amount}} \times 100 \\ \text{percent of increase} &= \frac{40}{80} \times 100 \\ \text{percent of increase} &= 50\% \end{aligned}$$
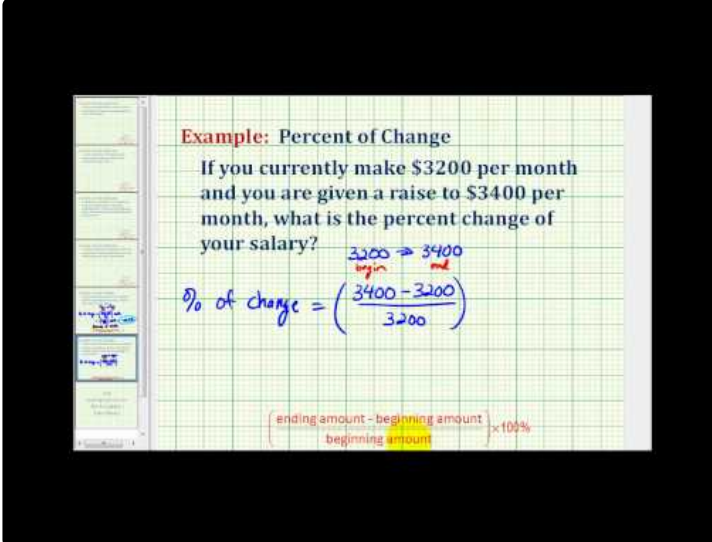
The answer is 50%.

Review

Calculate the percent of increase. You may round to the nearest whole percent.

1. From 7 to 12, an increase of 5

2. From 31 to 50, an increase of 19

3. From 7805 to 10510, an increase of 2705

4. From 16 to 30, an increase of 14

5. From 200 to 230, an increase of 30

6. From 180 to 200

7. From 330 to 400

8. From 695 to 1000

9. From 1200 to 1500

10. From 190 to 320

11. From 90 to 120

12. From 110 to 120

13. From 340 to 350

14. From 670 to 1000

15. From 879 to 900

Review (Answers)

To see the review answers, return to the Table of Contents and select 'Other Versions' or 'Resources'.

Resources

https://flexbooks.ck12.org/flx/render/embeddedobject/167989

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