

Chapter 25

PERCENT RATE OF CHANGE

Sometimes, it is difficult to tell whether a change in the amount of something is a big deal or not. We use **PERCENT RATE OF CHANGE** to show how much an amount has changed in relation to the original amount. Another way to think about it is simply as the rate of change expressed as a percent.

When the original amount goes **UP**, we calculate percent **INCREASE**.

When the original amount goes **DOWN**, we calculate percent **DECREASE**.

To calculate the percent rate of change:

First, set up this ratio: $\frac{\text{CHANGE IN QUANTITY}}{\text{ORIGINAL QUANTITY}}$

(The "change in quantity" is the difference between the original and new quantity.)

Second, divide.

Last, move the decimal two spaces to the right and add your % symbol.

EXAMPLE: A store purchases T-shirts from a factory for \$20 each and sells them to customers for \$23. What is the percent increase in price?

$$\frac{23 - 20}{20} = \frac{3}{20} = 0.15 = 15\% \text{ increase}$$

EXAMPLE: On your first history test, you get 14 questions correct. On your second test, you don't study as much, so you get only 10 questions correct. What is the percent decrease from your first to your second test?

$$\frac{14 - 10}{14} = \frac{4}{14} = \frac{2}{7} = 0.29 = 29\% \text{ decrease}$$

Remember to reduce fractions whenever possible to make your calculations easier.

FOR PERCENTAGES, ROUND TO THE NEAREST HUNDREDTH PLACE.



CHECK YOUR KNOWLEDGE

For 1 through 5: Are the following rates of change percent increases or decreases?

1. 7% to 17%

3. 5.0025% to 5.0021%

2. 87.5% to 36.2%

4. $92\frac{1}{2}\%$ to $92\frac{1}{5}\%$

5. 31.5% to 75%

6. Find the percent increase or decrease from 8 to 18.

7. Find the percent increase or decrease from 0.05 to 0.03.

8. Find the percent increase or decrease from 2 to 2,222.

9. A bike store purchases mountain bikes from the manufacturer for \$250 each. They then sell the bikes to their customers for \$625. What percent of change is this?

10. While working at the taco shop, Gerard noticed that on Sunday they sold 135 tacos. However, the next day, they sold only 108. What percent of change happened from Sunday to Monday?

ANSWERS

157

CHECK YOUR ANSWERS



1. Increase
2. Decrease
3. Decrease
4. Decrease
5. Increase
6. 125% increase
7. 40% decrease
8. 111,000% increase
9. 150% increase
10. 20% decrease