

Lesson 3.2

Using Percents to describe change.

1. How do you use percents to describe change?

Divide the _____ of _____ by the _____ amount. These results in a percent _____ or _____.

2. How do you find the amount of change?
the _____ value from the _____ value.

3. If you are not told if the situation is a percent increase, how could you recognize this?
The _____ (second) amount will be _____ than the original amount.

4. How would you explain percent increase/decrease?
Percent increase/decrease is a _____ of the _____ of increase/decrease to the _____ amount expressed as a percent.

The grizzly bear population in Yellowstone National Park in 1970 was about 270. Over the next 35 years, it increased by about 115%. What was the population in 2005?

STEP 1 Find the amount of change.

$$1.15 \times 270 = 310.5 \quad \text{Find 115\% of 270. Write 115\% as a decimal.}$$
$$\approx 311 \quad \text{Round to the nearest whole number.}$$

STEP 2 Find the new amount.

$$\begin{aligned} \text{New Amount} &= \text{Original Amount} + \text{Amount of Change} \\ &= 270 + 311 \quad \text{Substitute values.} \\ &= 581 \quad \text{Add.} \end{aligned}$$

The population in 2005 was about 581 grizzly bears.

Add the amount of change because the population increased.

Lesson 3.2 Percent Increase and Decrease

Day 1

Teach objective

Assignment - Guided practice and Independent practice completed as a class

Day 2

Review

Cooperative (elbow buddy) assignment 3-2 practice and problem solving: D

3-2 Practice and problem solving: A/B

Login to Go Math

Go to the Resources Tab

Click on the Student Online Edition (yellow open book)

This will take you to another window to an interactive student edition textbook.

Go to page 91

Answers to “reflect”, Explore activity” and “your turn” questions

EA.

1. The amount of change is equal to the original amount; the value doubles.
2. 23%
3. No; the least distance David could live from his workplace is 0 miles, which corresponds to a 100% decrease. A decrease greater than this is impossible.
4. 33%
5. 37.5%
6. Example: The amount of change is equal to the greater value minus the lesser value, which is always positive.
7. No, An increase of 10% gives a balance of \$110. Another 10% increase would give a balance of \$121. One increase of 20% would give a balance of \$120.
8. \$548.90
9. \$349.30

For answers to the guided practice and independent practice, see Coach Gammon.

Additional web sites

http://www.virtualnerd.com/tutorials/?id=Alg1_4_17

<https://www.youtube.com/watch?v=TpZXX-GsmB0>

Remember, on the online edition, you can click on the “math on the spot” for a little extra teaching from Prof Burger. If you only have your book, use a QR scanner on the “math on the spot”

Lesson 3.2

Using Percents to describe change.

1. How do you use percents to describe change?

Divide the amount of change by the original amount. This results in a percent increase or decrease.

2. How do you find the amount of change?

subtract the lesser value from the greater value.

3. If you are not told if the situation is a percent increase, how could you recognize this?

The new (second) amount will be greater than the original amount.

4. How would you explain percent increase/decrease?

Percent increase/decrease is a ratio of the amount of increase/decrease to the original amount expressed as a percent.

The grizzly bear population in Yellowstone National Park in 1970 was about 270. Over the next 35 years, it increased by about 115%. What was the population in 2005?

STEP 1 Find the amount of change.

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The population in 2005 was about 581 grizzly bears.

LESSON
3-2**Percent Increase and Decrease****Practice and Problem Solving: D**

Jessica had 80 songs on her iPod. She downloaded 10 more songs.
What was the percent of increase of songs on her iPod?

Step 1 Find the amount of change.

Subtract the lesser value from the greater value.

$$\text{Amount of change} = 90 - 80 = 10$$

Step 2 Find the percent of change.

$$\begin{aligned} \text{Percent of Change} &= \frac{\text{Amount of Change}}{\text{Original Amount}} \\ &= \frac{10}{80} \times 100 = 12.5\% \end{aligned}$$

Find each percent increase. Round to the nearest percent. The first one is done for you.

- From \$15 to \$21 40%
- From 12 teachers to 48 teachers _____
- From 80 pencils to 152 pencils _____
- From 40 cans to 70 cans _____

Find each percent decrease. Round to the nearest percent. The first one is done for you.

- From 80 miles to 15 miles 81%
- From 100 ounces to 25 ounces _____
- From \$60 to \$40 _____
- From 39 seconds to 13 seconds _____

Find the new amount given the original amount and the percent of change. The first one is done for you.

- \$25; 10% increase \$27.50
- 160 bananas; 20% decrease _____
- 200 books; 75% decrease _____
- 52 companies; 25% increase _____

Solve.

- Last year, there were 400 students at Woodland Middle School. This year, the student population will increase by 5%. What will be the school's student population this year?

- A backpack that normally sells for \$39 is on sale for 30% off. Find the amount of the sale price.

LESSON
3-2

Percent Increase and Decrease

Practice and Problem Solving: A/B

Find each percent increase. Round to the nearest percent.

- | | |
|--|-------------------------------------|
| 1. From 24 teachers to 30 teachers _____ | 2. From \$18 to \$45 _____ |
| 3. From 75 pencils to 225 pencils _____ | 4. From \$65 to \$144 _____ |
| 5. From 42 acres to 72 acres _____ | 6. From 95 trees to 145 trees _____ |

Find each percent decrease. Round to the nearest percent.

- | | |
|---------------------------------------|---|
| 7. From 20 miles to 11 miles _____ | 8. From \$16 to \$4 _____ |
| 9. From 126 ounces to 48 ounces _____ | 10. From 84 seconds to 8 seconds _____ |
| 11. From 90 apples to 75 apples _____ | 12. From 248 workers to 200 workers _____ |

Given the original amount and the percent of change, find the new amount.

- | | |
|-------------------------------------|--------------------------------------|
| 13. \$25; 300% increase _____ | 14. 160 bananas; 20% decrease _____ |
| 15. 56 books; 75% decrease _____ | 16. 52 companies; 25% increase _____ |
| 17. 12,000 miles; 5% increase _____ | 18. 710 points; 10% decrease _____ |

Solve.

19. Last year, there were 380 students at Woodland Middle School. This year, the student population will increase by 5%. What will be the school's increased student population?
- _____

20. A backpack that normally sells for \$39 is on sale for 33% off. Find the amount of the discount and the sale price.
- _____

21. In August, the Simons' water bill was \$48. In September, it was 15% lower. What was the Simons' water bill in September?
- _____

22. A gallery owner purchased a very old painting for \$3,000. The painting sells at a 325% increase in price. What is the retail price of the painting?
- _____