

Inquiry Lab

Percent of Change



Content Standards
7.RP.3, 7.EE.3
Mathematical Practices
1, 3, 4

Inquiry

HOW can you use a percent model to model percent of change?

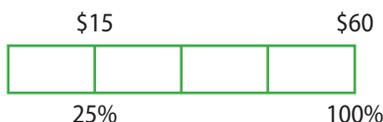
Investigation 1

Sales A sleeping bag sells for \$60 and then the price increases by 25%. What is the new price of the sleeping bag?

Step 1 Draw a bar diagram to represent 100% and the original price of \$60. Leave room on the right side to extend the bar.



Step 2 Divide the bar into four equal parts so that each part represents the percent of increase. Label the percent of increase on the bottom of the diagram. Label the corresponding dollar amount on the top.



Step 3 The price of the sleeping bag increases by 25%, so add another equal part to the bar to represent the increase. Label the top and bottom of the diagram.



The bar diagram shows that the price of the sleeping bag after a 25% increase is \$75.

You can use percents to describe a change when a number increases or decreases.

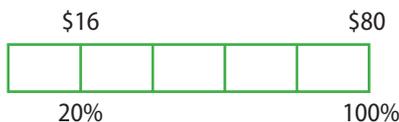
Investigation 2

Sales Suppose a tent sells for \$80 and the price increases to \$96. What percent does the amount of increase represent?

Step 1 Draw a bar diagram to represent the original price. Leave room on the right side to extend the bar. Label the bar to represent the current price of the tent.



Step 2 Divide the bar diagram into equal parts so that the amount of increase is represented by one or more of the parts.



Since $\$96 - \$80 = \$16$ and $\$80 \div \$16 = 5$, divide the bar into 5 equal parts, each of which represents \$16. Label the diagram.

Step 3 Since the price of the tent increases to \$96, add another equal part to the bar diagram and label it.

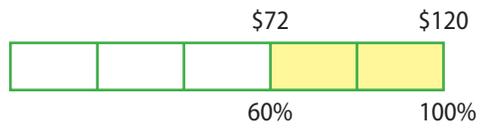


The bar diagram shows that the price of the tent increased by 20%.



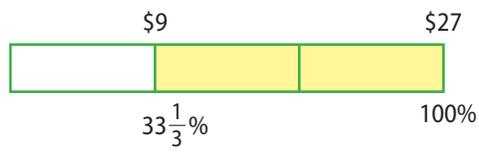
Collaborate

- The bar diagram represents the cost of a skateboard with an original price of \$120 and a discount of 40%.
 - What percent does each part of the bar diagram represent?
 - What dollar amount does each part of the bar diagram represent?
 - What is the discounted price of the skateboard?



- Genevieve has a coupon for 25% off at her family's favorite take-out restaurant. Use a bar diagram to represent the total cost of a \$60 meal.
 - Draw and shade a bar diagram to represent the situation.
 - What percent does each part of the bar diagram represent?
 - What dollar amount does each part of the bar diagram represent?
 - What is the total cost of the meal?

- CCSS Model with Mathematics** Give a real-world scenario that could be represented by this bar diagram.



Analyze

Draw a model to find the new price. If it is not possible to find an exact answer from the model, estimate.

- | | |
|-----------------------------|----------------------------|
| 4. \$80 increased by 40%. | 5. \$25 increased by 50%. |
| 6. \$30 increased by 33%. | 7. \$40 increased by 90%. |
| 8. \$15 decreased by 20%. | 9. \$150 decreased by 30%. |
| 10. \$600 decreased by 75%. | 11. \$20 decreased by 15%. |

Draw a model to find the percent of increase or decrease. If it is not possible to find an exact answer from the model, estimate.

- | | |
|---|--------------------------------------|
| 12. old price: \$25; new price: \$30 | 13. old price: \$50; new price: \$20 |
| 14. old price: \$750; new price: \$1000 | 15. old price: \$14; new price: \$12 |

- CCSS Reason Inductively** What would a percent model extended to more than twice its length mean with respect to percent of increase or decrease? Explain your reasoning.



Reflect

- Inquiry** HOW can you use a percent model to model percent of change?