Lesson 9: Problem Solving When the Percent Changes

Classwork

Example 1

The amount of money Tom has is 75% of Sally's amount of money. After Sally spent \$120 and Tom saved all his money, Tom's amount of money is 50% more than Sally's. How much money did each have at the beginning? Use a visual model and a percent line to solve the problem.

Example 2

Erin and Sasha went to a candy shop. Sasha bought 50% more candies than Erin. After Erin bought 8 more candies, Sasha had 20% more. How many candies did Erin and Sasha have at first?

a. Model the situation using a visual model.



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b. How many candies did Erin have at first? Explain.

Example 3

Kimberly and Mike have an equal amount of money. After Kimberly spent \$50 and Mike spent \$25, Mike's money is 50% more than Kimberly's. How much did Kimberly and Mike have at first?

a. Use an equation to solve the problem.

b. Use a visual model to solve the problem.

Which method do you prefer and why?



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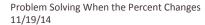


Exercise

Todd has 250% more video games than Jaylon. Todd has 56 video games in his collection. He gives Jaylon 8 of his games. How many video games did Todd and Jaylon have in the beginning? How many do they have now?







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Lesson Summary

• To solve a changing percent problem, identify the first whole and then the second whole. To relate the part, whole, and percent, use the formula

Quantity = Percent \times Whole.

Models, such as double number lines, can help visually show the change in quantities and percents.

Problem Set

- 1. Solve each problem using an equation.
 - a. What is 150% of 625?
 - b. 90 is 40% of what number?
 - c. What percent of 520 is 40? Round to the nearest hundredth of a percent.
- 2. The actual length of a machine is 12.25 cm. The measured length is 12.2 cm. Round the answer to part (b) to the nearest hundredth of a percent.
 - Find the absolute error.
 - b. Find the percent error.
- 3. A rowing club has 600 members. 60% of them are women. After 200 new members joined the club, the percentage of women was reduced to 50%. How many of the new members are women?
- 4. 40% of the marbles in a bag are yellow. The rest are orange and green. The ratio of the number of orange to the number of green is 4:5. If there are 30 green marbles, how many yellow marbles are there? Use a visual model to show your answer.
- 5. Susan has 50% more books than Michael. Michael has 40 books. If Michael buys 8 more books, will Susan have more or less books than Michael? What percent more or less will Susan's books be? Use any method to solve the problem.
- 6. Harry's amount of money is 75% of Kayla's amount of money. After Harry earned \$30 and Kayla earned 25% more of her money, Harry's amount of money is 80% of Kayla's money. How much money did each have at the beginning? Use a visual model to solve the problem.



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