

Name _____

Date _____

Problem Solving When the Percent Changes

Terrence and Lee were selling magazines for a charity. In the first week, Terrance sold 30% more than Lee. In the second week, Terrance sold 8 magazines, but Lee did not sell any. If Terrance sold 50% more than Lee by the end of the second week, how many magazines did Lee sell?

Choose any model to solve the problem. Show your work to justify your answer.

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.
 - a. 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.

Terrence and Lee were selling magazines for a charity. In the first week, Terrence sold 30% more than Lee. In the second week, Terrence sold 8 magazines, but Lee did not sell any. If Terrence sold 50% more than Lee by the end of the second week, how many magazines did Lee sell?

Choose any model to solve the problem. Show your work to justify your answer.

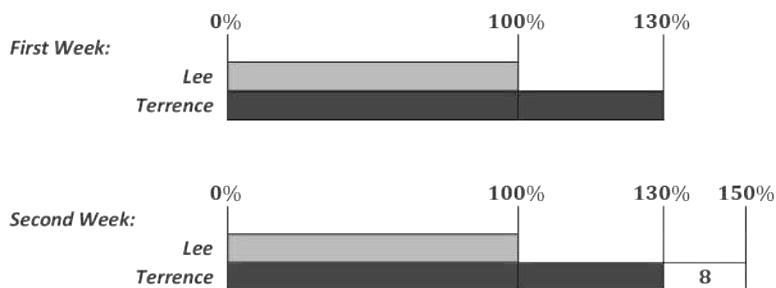
Answers may vary.

Equation Model:

Let m be the number of magazines Lee sold.

$150\% - 130\% = 20\%$, so $0.2m = 8$ and $m = 40$

Visual Model:



By subtracting 150% and 130%, I determined that 8 magazines represents 20% of the magazines Lee sold in the first week. Then, I multiplied both the percent and the number of magazines by 5 to find that 40 magazines represents 100% of the magazines Lee sold.

1. Solve each problem using an equation.

a. What is 150% of 625?

$$n = 1.5(625)$$

$$n = 937.5$$

b. 90 is 40% of what number?

$$90 = 0.4(n)$$

$$n = 225$$

c. What percent of 520 is 40? Round to the nearest hundredth of a percent.

$$40 = p(520)$$

$$p \approx 0.0769 = 7.69\%$$

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.

a. Find the absolute error.

$$|12.2 - 12.25| = 0.05 \text{ cm}$$

b. Find the percent error.

$$\frac{0.05}{|12.25|} \times 100\% = 0.4082$$

percent error $\approx 0.41\%$

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?

40 of the new members are women.

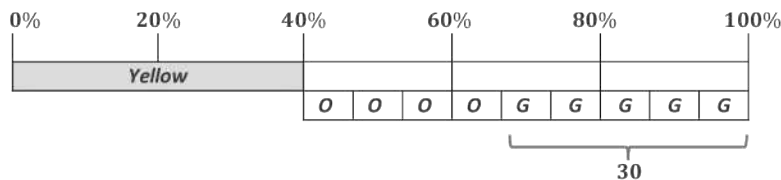
4. 40% of the marbles in a bag are yellow. The rest are orange and green. The ratio of the number of orange to the number of green is 4:5. If there are 30 green marbles, how many yellow marbles are there? Use a visual model to show your answer.

5 units = 30 marbles

1 unit = $30 \div 5$ marbles = 6 marbles 4 units = 4×6 marbles = 24 marbles

$30 + 24 = 54$ marbles represents 60% of the total. If I divide both 54 and 60% by 3, I can determine that 20% would be 18 marbles. Then, I can double both of these to find that 36 marbles make up 40% of the total.

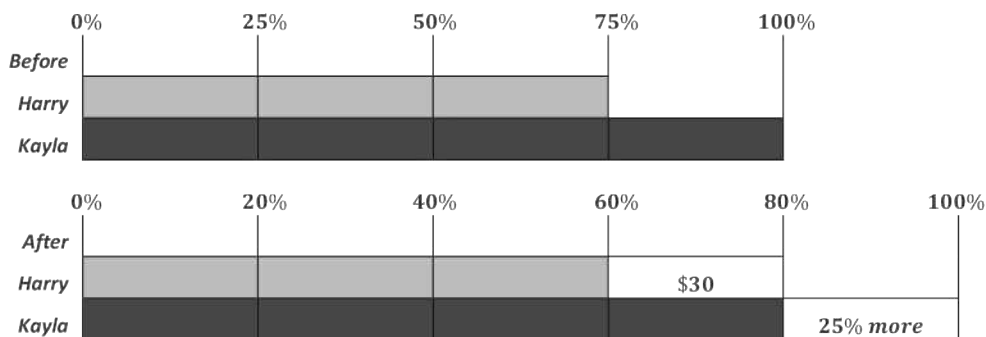
There are 36 yellow marbles because 40% of the marbles are yellow.



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.

Susan has 25% more.

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.



Each bar is \$30. Harry started with \$90, and Kayla started with \$120.