

## Answer Key

### Worksheet 4: Percent Decreases

When we decrease a number by a percent, we are starting with 100%.

*Example 1: Decreasing a quantity by 5% is the same as taking  $100\% - 5\% = 95\%$  of the quantity*

*Example 2: Decreasing a quantity by 35% is the same as taking  $100\% - 35\% = 65\%$  of the quantity*

Decreasing a quantity by  $N\%$  is the same as taking  $(100 - N)\%$  of the quantity

**Directions:** Answer each of the following questions. Show all work for full credit.

1. If an investment is worth 73% of what it was worth a year ago, by what percent did the investment decrease?

$$100 - 73 = 27$$

2. Nora finds an investment opportunity boasting that if you invest with them for one year, you will increase your money by 30%. She invested \$4,500. Unfortunately, it wasn't true and after investing, Nora *lost* 30% of her money.

- a. What is 30% of \$4,500?

$$4500 \times 0.3 = 1350$$

- b. How much money would Nora have if the investment had increased by 30%?

$$4500 + 1350 = 5850 \text{ or } 4500 \times 1.3 = 5850$$

- c. How much money will Nora have left after *losing* 30% of her principal?

*Another way of saying this: What is \$4500 decreased by 30%?*

$$4500 - 1350 = 3150 \text{ or } 4500 \times 0.7 = 3150$$

3. a. What is 100% decreased by 12%?  
 $100 - 12 = 88$
- b. What is 50 decreased by 12%?  
 $50 \times 0.88 = 44$
- c. What is 88% of 50?  
 $50 \times 0.88 = 44$
4. a. What is 100% decreased by 74%?  
 $100 - 74 = 26$
- b. What is 50 decreased by 74%?  
 $50 \times 0.26 = 13$
- c. What is 26% of 50?  
 $50 \times 0.26 = 13$
5. Juan invests \$2,333. Unfortunately, his investment decreases by 15%.
- a. How much money did Juan lose?  
 $2333 \times 0.15 = 349.95$
- b. What percent of his principal does he still have after losing 15%?  
 $85\%$
6. Chantel had \$20,000 in 2017 and at the start of 2018 she only had \$17,400. By what percent did her money decrease?  
 $17400/20000 = 0.87 \rightarrow 100 - 87 = 13$
7. Jack and Jill went shopping together. They both LOVED the same “Personal Finance is Fun!” t-shirt. The shirt costs \$20. Fortunately, there was a sale that day and the salesperson was able to give Jill 15% off the price of the t-shirt (he decreased the price of her shirt by 15%). A week later Jack went back to buy the same shirt for himself, not only was the shirt no longer on sale, but the original price had been increased by 15%.
- a. How much did Jill pay for her shirt?  
 $20 \times 0.85 = 17$  or  $20 \times 0.15 = 3 \rightarrow 20 - 3 = 17$
- b. How much did Jack pay for his shirt?  
 $20 \times 1.15 = 23$  or  $20 \times 0.15 = 3 \rightarrow 20 + 3 = 23$
- c. How are the two above questions related? Write a note explaining your thinking to Jack, who can answer part A but cannot answer part B. Jack thinks these two problems are entirely different problems. In your note explain how the two problems are very similar.
- Both of these problems involve a 15% change in the original price. A involves a 15% increase and B involves a 15% decrease in the original amount of the price.**