

**Algebra 2CP**  
**Chapter 11 Word Problems**

**11.1 Arithmetic Sequences**

1. Trevor Koba has opened an English Language School in Isehara, Japan. He began with 26 students. If he enrolls 3 new students each week, in how many weeks will he have 101 students?
2. Yolanda interviewed for a job that promised her a starting salary of \$32,000 with a \$1250 raise at the end of each year. What will her salary be during her sixth year if she accepts the job?
3. Mark has saved \$370 for a scooter and continues to save his weekly allowance of \$10. Find the amount Mark will have saved after 7 weeks.

**11.2 Arithmetic Series**

1. A health club rolls its towels and stacks them in layers on a shelf. Each layer of towels has one less towel than the layer below it. If there are 20 towels on the bottom layer and one towel on the top layer, how many towels are stacked on the shelf?
2. A merchant places \$1 in a jackpot on August 1, then draws the name of a regular customer. If the customer is present, he or she wins the \$1 in the jackpot. If the customer is not present, the merchant adds \$2 to the jackpot on August 2 and draws another name. Each day the merchant adds an amount equal to the day of the month. If the first person to win the jackpot wins \$496, on what day of the month was her or his name drawn?
3. Matthew is training to run a marathon. He runs 20 miles his first week of training. Each week, he increases the number of miles he runs by 4 miles. How many total miles did he run in 8 weeks of training?

**11.3 Geometric Sequences**

1. Raul invests \$1000 in a savings account that earns 5% interest compounded annually. How much money will he have in the account at the end of 5 years?
2. A vacuum pump removes 20% of the air from a container with each stroke of its piston. What percent of the original air remains after five strokes?

**11.4 Geometric Series**

1. A pile driver drives a post 27 inches into the ground on its first hit. Each additional hit drives the post  $\frac{2}{3}$  the distance of the prior hit. Find the total distance the post has been driven after 5 hits.
2. Hugh Moore e-mails a joke to 5 friends on Sunday morning. Each of these friends e-mails the joke to 5 of her or his friends on Monday morning, and so on. Assuming no duplication, how many people will have heard the joke by the end of Saturday, not including Hugh?
3. Arnold lifts weights. He does three bench press workouts each week. For each workout, he lifts a weight 12 times. The first week he starts with 50 pounds. Each week he increases the amount that he lifts by 10%. After 10 weeks, what is the total amount of weight that Arnold has lifted during his bench press workouts? Round your answer to the nearest pound.

**11.5 Infinite Geometric Series**

1. On its first swing, a pendulum travels 8 feet. On each successive swing, the pendulum travels  $\frac{4}{5}$  the distance of its previous swing. What is the total distance traveled by the pendulum when it stops swinging?
2. A wooden pole swings back and forth over the cup on a miniature golf hole. One player pulls the pole to the side and lets it go. Then it follows a swing pattern of 25 centimeters, 20 centimeters, 16 centimeters, and so on until it comes to rest. What is the total distance the pole swings before coming to rest?