

## Applied Problems

- **Problem 1:** A submarine descends at a rate of 45 meters per minute. If it continues descending at this rate for 18 minutes, what is the final depth of the submarine relative to its starting position? If it then ascends at a rate of 30 meters per minute for 12 minutes, what will be its new position?
- **Problem 2:** A mountain climber is 1,200 meters above sea level. If she climbs up 150 meters each hour for 8 hours, then descends 90 meters per hour for 3 hours, what will be her final altitude?
- **Problem 3:** A factory produces 5,000 units of a product daily. If it operates for 25 days and then cuts production by 30% for the next 15 days, how many units will it have produced in total?
- **Problem 4:** A company incurs a loss of \$8 per unit of a defective product. If 1,500 units are defective, calculate the total loss. If the company then sells 4,000 units at a profit of \$12 per unit, what is the net profit or loss?
- **Problem 5:** A farmer plants crops on 120 acres of land. Each acre yields 85 bushels of wheat. If the market price drops by \$4 per bushel, how much less will the farmer earn if he sells all the wheat?
- **Problem 6:** A city's population decreases by 3% each year. If the current population is 500,000, what will the population be after 5 years? If the population then increases by 2% the following year, what will be the new population?
- **Problem 7:** A car's value decreases by \$1,500 each year. If its current value is \$18,000, what will be its value after 6 years? If the car is sold at a 10% discount from its value after 6 years, what will be the selling price?