Name _____

Linear Equation Word Problems

1. Emily and James are training for a marathon. Emily can run at a pace of 8 minutes per mile, while James can run at a pace of 6 minutes per mile. If they start at the same time on a circular track, how many minutes will it take for them to meet again if they run in opposite directions?

2. A company produces two types of smartphones: basic and premium. The basic model sells for $200 each, and the premium model sells for $400 each. Last month, they sold a total of 150 phones, making $45,000 in revenue. How many of each type did they sell?

3. Sarah invested a total of $10,000 in two accounts, one offering 4% annual interest and the other offering 6% annual interest. If she earned a total of $520 in interest after one year, how much did she invest in each account?

4. A toy factory produces two types of dolls: Barbie dolls and action figures. Barbie dolls require 2 hours of labor and 1 hour of painting, while action figures require 3 hours of labor and 2 hours of painting. If the factory has 100 hours of labor and 60 hours of painting available, how many of each should they produce to maximize profit?

5. A train travels from Town A to Town B at an average speed of 50 mph and returns at an average speed of 60 mph. If the total travel time for the round trip is 5 hours, what is the distance between the two towns?

6. A furniture store sells chairs and tables. Chairs cost $50 each, and tables cost $100 each. Last month, they sold a total of 30 items, making $2000 in revenue. How many of each did they sell?

7. A delivery service charges a base fee of $10 plus $2 for each mile traveled. If a customer's bill is $46, how many miles did the delivery cover?

8. A chemistry lab has two acid solutions: Solution A with 20% concentration and Solution B with 40% concentration. How many liters of each solution should be mixed to obtain 10 liters of a solution with a concentration of 30%?

9. Laura and John are sharing a box of chocolates. If Laura eats 4 chocolates per day and John eats 3 chocolates per day, the box will be empty in 8 days. How many chocolates were originally in the box?

10. A car rental agency offers two rental plans: Plan A charges $30 per day plus $0.20 per mile, while Plan B charges $50 per day with unlimited mileage. For what mileage will the total cost of both plans be the same for a three-day rental?