

## Chapter Two Word Problems

1. Each day a company has 60kg of wood and 100kg of metal available. A chair uses 2kg of wood, 4kg of metal and yields a profit of \$14. A table uses 3kg of wood, 4kg of metal and yields a profit of \$20. How many chairs and tables maximize the daily profit?
2. Astronauts have two foods: A and B. Food A has 40g of protein, 12g of fat, 50g of carbs per serving and has a mass of 0.4kg per serving. Food B has 10g of protein, 15g of fat, 20g of carbs per serving and has a mass of 0.3kg per serving. Astronauts require 120g of protein, 60g of fat and 200g of carbs per day. How many servings of A and B will minimize the total food mass per day?
3. A farmer can plant corn or soybeans and must plant at least five acres of each. Each acre of corn requires \$1 of capital and \$1 of labour and generates \$5 of revenue. Each acre of soybeans requires \$2 of capital and \$3 of labour and generates \$9 of revenue. The farmer has \$60 for capital and \$75 for labour. How many acres of each commodity should be planted to maximize revenue?
4. Joe has \$18,000 in total to invest in low-, medium- and high-risk assets. The amount in low-risk assets is at most \$2,000 more than the amount in medium-risk assets. The amount in low- and medium-risk assets total at least \$10,000. The amount in medium- and high-risk assets total at most \$14,000. Annual rates of return are 3%, 6% and 9% for the three asset classes. How much should be invested in each asset class to maximize Joe's annual return?