

Excellence

- 1.** A student says 41 heads in 80 tosses proves a coin is unfair. Are they correct? Explain.
- 2.** A spinner has four equal sectors, so the theoretical probability of red is $\frac{1}{4}$. In 12 spins red appears 6 times. Compare the experimental and theoretical probabilities.
- 3.** A bar chart shows bus arrivals over 50 days: early 8, on time 29, late 13. Estimate the probability that tomorrow's bus is late.
- 4.** A survey of 120 students shows 54 bring lunch, 42 buy lunch, and 24 go home. Estimate the probability a randomly chosen student buys lunch.
- 5.** A basketball player scores 63 shots from 90 attempts. Estimate the probability of scoring, as a fraction in simplest form and as a percentage.
- 6.** In a science test, 18 of 30 seedlings survive in one tray and 52 of 80 survive in another. Which tray has the higher survival probability?

- 7.** A machine makes faulty items with theoretical probability 0.08. In a sample of 150 items, 18 are faulty. Is the experimental probability above or below the theoretical probability?
- 8.** A coin is tossed 200 times and lands heads 94 times. Is this result closer to 0.45, 0.47, or 0.50? Explain.
- 9.** Which is greater: 17 wins from 40 games or 31 wins from 70 games? Show enough working to justify.
- 10.** A hospital record shows 126 of 300 patients waited under 15 minutes. Estimate the probability that the next patient waits under 15 minutes.