

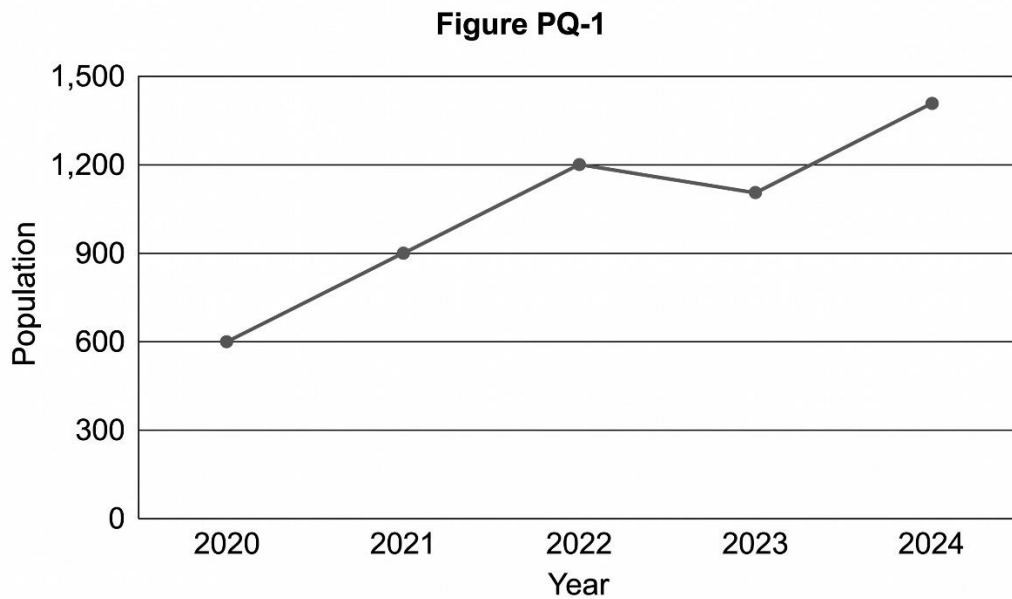
PRACTICE EXAM 14: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the value of the digit 4 in the number 6,374,289?
A) 40
B) 40,000
C) 4,000
D) 400
2. (Algebra) A pattern starts at 4 and follows the rule "multiply by 3 each time." What is the 4th term?
A) 36
B) 108
C) 81
D) 324
3. (Spatial Sense) What type of triangle has one angle measuring exactly 90° ?
A) Right
B) Equilateral
C) Acute
D) Obtuse
4. (Number Sense) Calculate: $84.6 - 27.85$
A) 57.25

- B) 56.25
- C) 57.75
- D) 56.75

5. (Data Literacy) The line graph shows the population of a small town over five years.



In which year was the population exactly 1,200?

- A) 2020
- B) 2021
- C) 2022
- D) 2023

6. (Number Sense) Which decimal is greater than 0.65?

- A) 0.7
- B) 0.605
- C) 0.6
- D) 0.5

7. (Financial Literacy) A scarf costs \$18. The store offers a 10% discount. What is the discount amount?

- A) \$0.18
- B) \$1.80
- C) \$16.20
- D) \$18.00

8. (Algebra) Solve for p: $p - 15 = 22$

- A) 7
- B) 22
- C) 15
- D) 37

9. (Spatial Sense) How many faces does a triangular prism have?

- A) 5
- B) 6
- C) 4
- D) 7

10. (Number Sense) Convert 2.5 hours to minutes.

- A) 125 min
- B) 175 min
- C) 150 min
- D) 250 min

11. (Algebra) Which expression represents "nine less than half of a number n"?

- A) $9 - n/2$
- B) $(n - 9)/2$
- C) $9n - 2$

D) $n/2 - 9$

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Calculate: 72×8

A) 566

B) 576

C) 586

D) 596

13. (Spatial Sense) A parallelogram has a base of 12 cm and a height of 7 cm. What is its area?

A) 19 cm^2

B) 38 cm^2

C) 84 cm^2

D) 42 cm^2

14. (Data Literacy) Seven students recorded their test scores: 78, 85, 92, 78, 88, 95, 82. What is the median?

A) 82

B) 85

C) 88

D) 78

15. (Number Sense) Calculate: $1,344 \div 6$

A) 214

B) 222

C) 234

D) 224

16. (Algebra) Evaluate the expression $6n + 5n - 4$ when $n = 3$.

- A) 25
- B) 29
- C) 31
- D) 33

17. (Financial Literacy) A meal costs \$32 and Mia leaves a 15% tip. How much is the tip?

- A) \$4.80
- B) \$5.20
- C) \$5.50
- D) \$4.50

18. (Number Sense) What is $\frac{7}{10}$ written as a percent?

- A) 7%
- B) 17%
- C) 70%
- D) 0.7%

19. (Spatial Sense) A regular pentagon has each side measuring 8 cm. What is its perimeter?

- A) 35 cm
- B) 30 cm
- C) 45 cm
- D) 40 cm

20. (Data Literacy) A bag contains 25 marbles: 8 red, 7 blue, 6 green, and 4 yellow. What is the probability of drawing a green marble?

- A) $\frac{6}{25}$
- B) $\frac{8}{25}$
- C) $\frac{7}{25}$

D) $\frac{4}{25}$

21. (Algebra) What is the next term in this sequence: 3, 6, 12, 24, 48, ___?

A) 72

B) 96

C) 84

D) 108

22. (Number Sense) Which fraction is equivalent to 0.4?

A) $\frac{4}{100}$

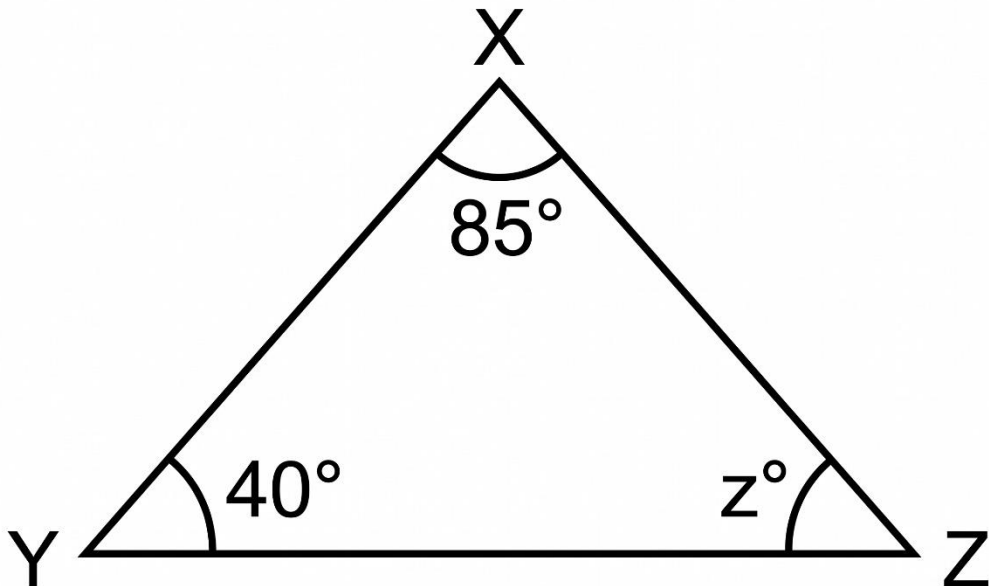
B) $\frac{4}{5}$

C) $\frac{1}{4}$

D) $\frac{2}{5}$

STAGE 3 (Questions 23-33) — 30 minutes

23. (Spatial Sense) The diagram shows triangle XYZ with two angles labeled.



What is the measure of angle z ?

- A) 45°
- B) 65°
- C) 55°
- D) 75°

24. (Number Sense) Calculate: $\frac{5}{6} - \frac{1}{3}$

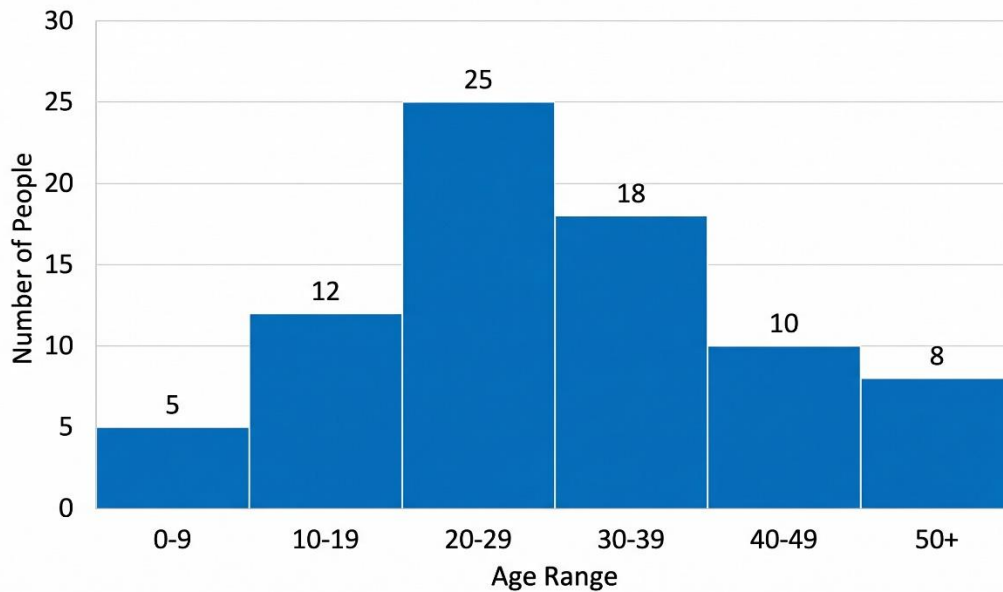
- A) $\frac{1}{2}$
- B) $\frac{4}{6}$
- C) $\frac{2}{3}$
- D) $\frac{4}{9}$

25. (Algebra) Solve for x : $9x + 4 = 67$

- A) 6
- B) 7
- C) 8
- D) 9

26. (Data Literacy) The histogram shows the ages of attendees at a community event.

Figure PQ-3



How many people are in the 20-29 age range?

- A) 18
- B) 12
- C) 25
- D) 10

27. (Number Sense) Evaluate: $4^2 \times 2 - 6 + 3$

- A) 35
- B) 22
- C) 19
- D) 29

28. (Financial Literacy) Sara wants to save \$720 for a tablet. If she saves \$45 each week, how many weeks will it take her?

- A) 16 weeks
- B) 14 weeks
- C) 18 weeks

D) 20 weeks

29. (Spatial Sense) What is the sum of the interior angles of a hexagon?

A) 540°

B) 900°

C) 720°

D) 1080°

30. (Algebra) A delivery service charges a \$6 base fee plus \$0.75 per kilometer. Which expression represents the cost for k kilometers?

A) $6.75k$

B) $6 + 0.75k$

C) $0.75 + 6k$

D) $6(0.75 + k)$

31. (Number Sense) Which integer is the smallest?

A) -3

B) -7

C) 2

D) -10

32. (Data Literacy) Six values were recorded: 14, 22, 18, 26, 20, 18. What is the mode?

A) 18

B) 20

C) 22

D) 14

33. (Spatial Sense) How many vertices does a hexagonal prism have?

A) 6

- B) 8
- C) 12
- D) 18

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) What is the prime factorization of 60?

- A) 2×30
- B) $2^2 \times 3 \times 5$
- C) 6×10
- D) 4×15

35. (Algebra) If $8y - 3 = 45$, what is the value of y ?

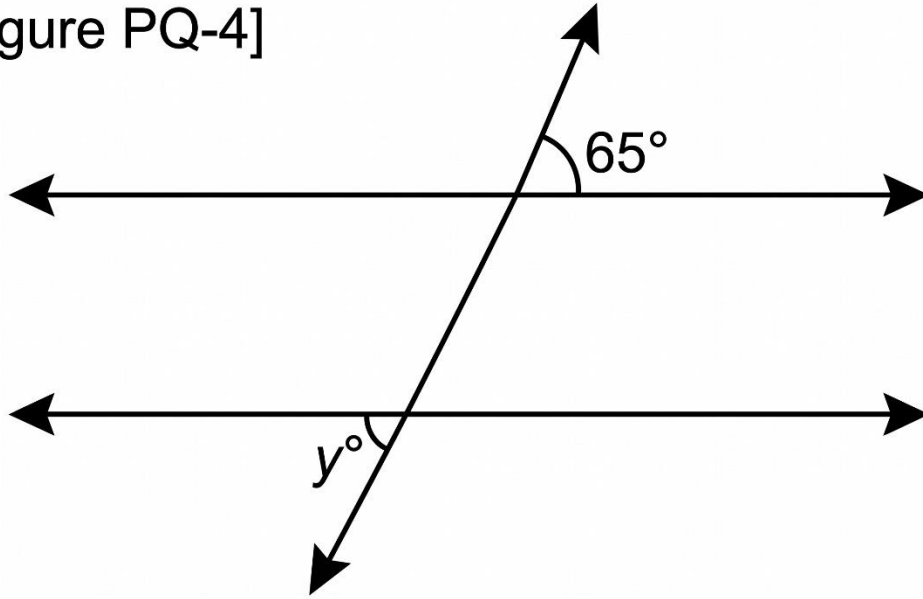
- A) 6
- B) 5
- C) 7
- D) 8

36. (Data Literacy) A spinner has 20 equal sections: 8 red, 6 blue, 4 green, and 2 yellow. What is the probability of spinning red or blue?

- A) $8/20$
- B) $6/20$
- C) $14/10$
- D) $7/10$

37. (Spatial Sense) The diagram shows two parallel lines cut by a transversal.

[Figure PQ-4]



What is the measure of angle y , the alternate interior angle?

- A) 115°
- B) 90°
- C) 65°
- D) 25°

38. (Number Sense) What is $\frac{3}{5}$ of 75?

- A) 25
- B) 45
- C) 50
- D) 60

39. (Financial Literacy) Alex deposits \$800 in a savings account at 5% simple interest per year. How much will be in the account after 2 years?

- A) \$880
- B) \$840
- C) \$920
- D) \$80

40. (Algebra) A taxi service charges a \$5 booking fee plus \$2.50 per kilometer. Which expression represents the total cost for k kilometers?

- A) $7.50k$
- B) $5k + 2.50$
- C) $2.50 + 5k$
- D) $5 + 2.50k$

41. (Data Literacy) Find the mean of this data set: 24, 32, 28, 36, 30.

- A) 28
- B) 32
- C) 30
- D) 36

42. (Data Literacy) A class has 30 students. Of those students, 18 take French and 12 take Spanish. What fraction of students take French, in simplest form?

- A) $\frac{3}{5}$
- B) $\frac{2}{5}$
- C) $\frac{1}{2}$
- D) $\frac{3}{4}$

43. (Spatial Sense) A cylinder has a radius of 4 cm. What is the diameter?

- A) 4 cm
- B) 8 cm
- C) 12 cm
- D) 16 cm

44. (Number Sense) A recipe needs $\frac{2}{3}$ cup of flour. How much flour is needed for 3 batches of the recipe?

- A) $\frac{4}{3}$ cups

- B) $1 \frac{1}{3}$ cups
- C) $1 \frac{2}{3}$ cups
- D) 2 cups

Practice Exam 14: Answer Key and Explanations

- 1. C** — The digit 4 occupies the thousands place in 6,374,289. Reading positions from right to left (ones, tens, hundreds, thousands), the digit 4 sits in the fourth position with a value of $4 \times 1,000 = 4,000$. Place value identification is fundamental for reading and comparing large numbers.
- 2. B** — Starting at 4 and multiplying by 3 each time: term 1 = 4, term 2 = 12, term 3 = 36, term 4 = 108. This geometric sequence has a common ratio of 3, where each term is three times the previous one. Recognizing multiplicative patterns distinguishes geometric sequences from arithmetic ones.
- 3. A** — A right triangle has exactly one 90° angle, identified by a small square symbol at the vertex. Equilateral triangles have three 60° angles, acute triangles have all angles less than 90° , and obtuse triangles contain one angle greater than 90° . The right angle defines this triangle type uniquely.
- 4. D** — Align decimal points and subtract: $84.60 - 27.85 = 56.75$. Writing 84.6 as 84.60 ensures matching decimal places before borrowing. Proper alignment of place values is essential for accurate decimal operations in measurement and financial contexts.
- 5. C** — Reading the line graph, the data point at 2022 falls exactly at 1,200 on the y-axis. Identifying specific values on line graphs requires matching x-axis labels to corresponding y-axis values at each plotted point. Line graphs effectively display changes over time.
- 6. A** — Compare decimals by examining place values from left to right: 0.65 has 6 tenths and 5 hundredths. The value 0.7 (or 0.70) has 7 tenths, exceeding 0.65's 6 tenths. The others (0.605, 0.6, 0.5) all have fewer than 6 tenths or equal tenths with smaller hundredths.
- 7. B** — Calculate 10% of \$18: $0.10 \times \$18 = \1.80 . Recognizing 10% as $\frac{1}{10}$ enables quick mental calculation by moving the decimal point one place to the left. The discount amount represents the price reduction, not the sale price itself.
- 8. D** — Solve by adding 15 to both sides: $p - 15 = 22 \rightarrow p = 22 + 15 = 37$. Addition is the inverse operation of subtraction, used to isolate the variable. Check: $37 - 15 = 22 \checkmark$. One-step equations build foundational algebraic skills.
- 9. A** — A triangular prism has 5 faces total: 2 triangular bases plus 3 rectangular faces connecting the bases. The formula for prism faces equals 2 (bases) + n (sides matching the base's sides). Understanding shape properties supports surface area calculations and net construction.

10. C — Convert hours to minutes by multiplying by 60 (since 1 hour = 60 minutes): $2.5 \times 60 = 150$ minutes. Breaking down: 2 hours = 120 min, plus 0.5 hour = 30 min, totaling 150 min. Time conversions support scheduling and elapsed-time calculations.

11. D — "Half of a number n " translates to $n/2$ (division first), and "nine less than" means subtract 9, producing $n/2 - 9$. The phrase "less than" reverses subtraction order: the value being subtracted comes from the second part of the description.

12. B — Multiply 72×8 : using the distributive property, $72 \times 8 = (70 + 2) \times 8 = 560 + 16 = 576$. Breaking large multiplications into manageable parts using place value reduces calculation errors. Verification: $576 \div 8 = 72 \checkmark$.

13. C — Area of a parallelogram = base \times height = $12 \times 7 = 84 \text{ cm}^2$. The height must be perpendicular to the base, not the slanted side. This formula matches that of a rectangle since a parallelogram can be transformed into a rectangle of equal area.

14. B — Order the values: 78, 78, 82, 85, 88, 92, 95. With 7 values (odd count), the median is the middle value at position 4, which is 85. Three values fall below and three above this middle point. Median represents the center of ordered data.

15. D — Divide 1,344 by 6: breaking this down, $1,200 \div 6 = 200$, plus $144 \div 6 = 24$, giving $200 + 24 = 224$. Verification: $6 \times 224 = 1,344 \checkmark$. Division efficiency improves with familiarity with multiplication facts and partial quotient strategies.

16. B — Substitute $n = 3$ into the expression: $6(3) + 5(3) - 4 = 18 + 15 - 4 = 33 - 4 = 29$. Order of operations requires multiplication before addition and subtraction per BEDMAS. Combining like terms first ($6n + 5n = 11n$, then $11(3) = 33$) gives the same result.

17. A — Calculate 15% of \$32: $0.15 \times \$32 = \4.80 . Alternatively, find 10% (\$3.20) plus 5% (\$1.60), totaling \$4.80. Tip calculations are common consumer skills, with standard tips typically ranging from 15-20% in many contexts.

18. C — Convert $7/10$ to a percent: $7/10 = 70/100 = 70\%$. Multiplying both numerator and denominator by 10 produces an equivalent fraction with denominator 100, which equals the percent value. Percent means "per hundred," making this conversion straightforward.

19. D — A regular pentagon has 5 equal sides. Perimeter equals the sum of all sides: $5 \times 8 = 40 \text{ cm}$. Regular polygons (all sides and angles equal) have perimeters calculated by multiplying side length by the number of sides. This shortcut applies to any regular polygon.

20. A — Probability equals favorable outcomes divided by total outcomes: $P(\text{green}) = 6 \text{ green} / 25 \text{ total} = 6/25$. The fraction expresses the likelihood of drawing a green marble on a single random selection. Probability values range from 0 (impossible) to 1 (certain).

- 21. B** — The pattern multiplies by 2 each time: $3 \times 2 = 6$, $6 \times 2 = 12$, $12 \times 2 = 24$, $24 \times 2 = 48$, $48 \times 2 = 96$. This geometric sequence has a common ratio of 2 between consecutive terms. Identifying the multiplicative relationship distinguishes geometric patterns from arithmetic ones.
- 22. D** — Convert 0.4 to a fraction: $0.4 = 4/10$. Simplify by dividing both numerator and denominator by their greatest common factor (2): $4/10 = 2/5$. Decimal-to-fraction conversion requires placing the decimal over the appropriate power of 10, then reducing to simplest form.
- 23. C** — The interior angles of any triangle sum to 180° . The third angle equals $180^\circ - 85^\circ - 40^\circ = 55^\circ$. This angle sum property holds for all triangles regardless of type, making it a powerful tool for finding missing angles in geometric problems.
- 24. A** — Find common denominator (6): $5/6 - 1/3 = 5/6 - 2/6 = 3/6 = 1/2$ in simplest form. Converting $1/3$ to sixths by multiplying numerator and denominator by 2. Like denominators are required for subtracting fractions so numerators represent parts of the same-sized whole.
- 25. B** — Solve the two-step equation: $9x + 4 = 67 \rightarrow$ subtract 4 from both sides: $9x = 63 \rightarrow$ divide both sides by 9: $x = 7$. Check: $9(7) + 4 = 63 + 4 = 67 \checkmark$. Two-step equations require systematic application of inverse operations.
- 26. C** — Reading the histogram, the bar for the 20-29 age range reaches a height of 25 people. Histograms display frequency distributions for grouped data, with bar height representing the count within each interval. The tallest bar identifies the most common range.
- 27. D** — Follow order of operations: exponent first: $4^2 = 16$; then multiplication: $16 \times 2 = 32$; finally add and subtract left to right: $32 - 6 + 3 = 26 + 3 = 29$. BEDMAS dictates this sequence: exponents before multiplication before addition/subtraction.
- 28. A** — Divide the savings goal by the weekly amount: $\$720 \div \$45 = 16$ weeks. This calculation determines how long regular savings will take to reach a target. Breaking large savings goals into manageable weekly amounts supports financial planning.
- 29. C** — The interior angle sum of a polygon equals $(n - 2) \times 180^\circ$, where n is the number of sides. For a hexagon ($n = 6$): $(6 - 2) \times 180^\circ = 4 \times 180^\circ = 720^\circ$. This formula derives from dividing any polygon into $(n - 2)$ triangles, each contributing 180° .
- 30. B** — The fixed base fee is \$6, and the variable cost is \$0.75 per kilometer. For k kilometers, the variable cost is $0.75k$. Total cost: $6 + 0.75k$. The constant term represents fixed costs while the coefficient times variable represents usage-based costs.
- 31. D** — On a number line, integers decrease as they move left from zero. Comparing -3, -7, 2, -10: -10 has the largest absolute value among negatives, placing it farthest left, making it the smallest. With negative numbers, the larger the absolute value, the smaller the number.

- 32. A** — The mode is the value occurring most frequently in a dataset. In {14, 22, 18, 26, 20, 18}, the value 18 appears twice while all others appear only once. Mode identifies the most common occurrence, useful for analyzing repeated measurements.
- 33. C** — A hexagonal prism has 12 vertices: 6 vertices on the top hexagonal face plus 6 vertices on the bottom hexagonal face. Each vertex marks a corner where edges meet. Understanding vertex counts supports surface area calculations and spatial reasoning.
- 34. B** — Prime factorization expresses a number as a product of prime numbers. For 60: $60 = 2 \times 30 = 2 \times 2 \times 15 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3 \times 5$. The other options contain composite numbers (30, 6, 10, 4, 15), not prime factors. Verification: $2^2 \times 3 \times 5 = 4 \times 3 \times 5 = 60 \checkmark$.
- 35. A** — Solve: $8y - 3 = 45 \rightarrow$ add 3 to both sides: $8y = 48 \rightarrow$ divide both sides by 8: $y = 6$. Check: $8(6) - 3 = 48 - 3 = 45 \checkmark$. Two-step equation solving applies inverse operations systematically to isolate the variable.
- 36. D** — Probability of red or blue equals their combined sections divided by total: $(8 + 6)/20 = 14/20 = 7/10$ simplified. When events are mutually exclusive (cannot occur simultaneously), their probabilities are added together. Simplifying gives the probability in lowest terms.
- 37. C** — When parallel lines are cut by a transversal, alternate interior angles are equal. The angle of 65° and angle y occupy alternate positions on opposite sides of the transversal, between the parallel lines, making $y = 65^\circ$. This property enables calculation of unknown angles in parallel line configurations.
- 38. B** — Calculate $3/5$ of 75: multiply the fraction by the whole number: $(3/5) \times 75 = (3 \times 75)/5 = 225/5 = 45$. Alternatively, find $1/5$ of 75 (which is 15), then multiply by 3: $15 \times 3 = 45$. Finding fractional parts connects fractions to division and multiplication.
- 39. A** — Calculate interest first: $I = P \times r \times t = \$800 \times 0.05 \times 2 = \80 . Then add to original deposit: $\$800 + \$80 = \$880$. The total account balance equals principal plus interest earned. Simple interest grows savings predictably over time.
- 40. D** — The fixed booking fee is \$5, and the variable cost is \$2.50 per kilometer. For k kilometers, the variable cost is $2.50k$. Total cost: $5 + 2.50k$. The constant term represents fixed costs while the coefficient times variable represents usage-based costs.
- 41. C** — Calculate mean by summing values and dividing by count: $(24 + 32 + 28 + 36 + 30) \div 5 = 150 \div 5 = 30$. The mean represents the central balancing point of the dataset where all values contribute equally. Mean is the most commonly used measure of central tendency.
- 42. A** — The fraction of students taking French equals French students divided by total students: $18/30$. Simplify by dividing both numerator and denominator by their greatest common factor (6): $18/30 = 3/5$ in simplest form. Reducing fractions to lowest terms supports clearer comparison.

43. B — The diameter of a circle equals twice the radius: $d = 2r = 2 \times 4 = 8$ cm. The radius extends from center to edge, while the diameter extends from edge to edge through the center. Understanding this relationship supports circle measurement calculations.

44. D — Calculate flour needed for 3 batches by multiplying: $(2/3) \times 3 = 6/3 = 2$ cups. Multiplying a fraction by a whole number means adding it to itself that many times: $2/3 + 2/3 + 2/3 = 6/3 = 2$. Scaling recipes requires proportional adjustment of all ingredients.