

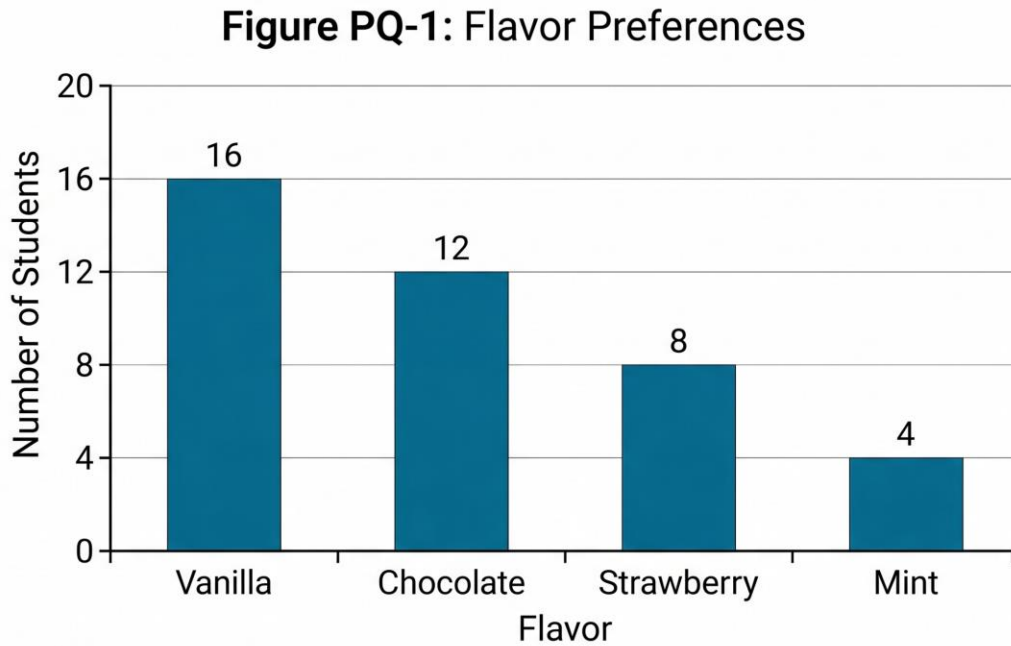
PRACTICE EXAM 13: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the place value of the digit 5 in the number 2,548,917?
A) 500,000
B) 5,000,000
C) 50,000
D) 5,000
2. (Algebra) A pattern follows the rule "subtract 6 each time." If the first term is 80, what is the 6th term?
A) 56
B) 44
C) 62
D) 50
3. (Spatial Sense) Which 3D figure has 5 faces, 8 edges, and 5 vertices?
A) Cube
B) Triangular prism
C) Square pyramid
D) Rectangular prism
4. (Number Sense) Calculate: $47.6 + 13.85$
A) 60.45

- B) 61.45
- C) 60.95
- D) 61.95

5. (Data Literacy) The bar graph shows the favorite ice cream flavors of students in Mr. Chen's class.



Which flavor was chosen by the most students?

- A) Vanilla
- B) Chocolate
- C) Strawberry
- D) Mint

6. (Number Sense) Which fraction is already in simplest form?

- A) $\frac{4}{8}$
- B) $\frac{6}{9}$
- C) $\frac{5}{12}$
- D) $\frac{10}{15}$

7. (Financial Literacy) Maria earns \$8.25 per hour. How much does she earn for working 4 hours?

- A) \$32.00
- B) \$33.00
- C) \$34.00
- D) \$34.50

8. (Algebra) Solve for k: $4k = 36$

- A) 4
- B) 32
- C) 40
- D) 9

9. (Spatial Sense) Which angle measures exactly 90° ?

- A) Right angle
- B) Acute angle
- C) Obtuse angle
- D) Straight angle

10. (Number Sense) Convert 4.7 meters to centimeters.

- A) 47 cm
- B) 4,700 cm
- C) 470 cm
- D) 0.047 cm

11. (Algebra) Which expression represents "twelve more than the product of 6 and a number n"?

- A) $12n + 6$
- B) $6 + 12n$
- C) $6(n + 12)$

D) $6n + 12$

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Calculate: 7×84

A) 568

B) 588

C) 598

D) 608

13. (Spatial Sense) A square has a side length of 11 cm. What is its perimeter?

A) 44 cm

B) 22 cm

C) 121 cm

D) 33 cm

14. (Data Literacy) Six runners recorded their lap times in seconds: 65, 72, 65, 80, 68, 65. What is the mode?

A) 72

B) 68

C) 65

D) 80

15. (Number Sense) Calculate: $504 \div 8$

A) 53

B) 73

C) 65

D) 63

16. (Algebra) Evaluate the expression $8m - 11$ when $m = 5$.

- A) 29
- B) 36
- C) 32
- D) 24

17. (Financial Literacy) A bookshelf costs \$120. It is on sale for 30% off. What is the sale price?

- A) \$90
- B) \$84
- C) \$36
- D) \$96

18. (Number Sense) Which fraction is equivalent to $\frac{8}{12}$?

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

19. (Spatial Sense) How many lines of symmetry does an equilateral triangle have?

- A) 1
- B) 2
- C) 6
- D) 3

20. (Data Literacy) A spinner has 10 equal sections: 4 yellow, 3 blue, 2 green, and 1 red. What is the probability of NOT spinning yellow?

- A) $\frac{6}{10}$
- B) $\frac{4}{10}$
- C) $\frac{1}{2}$

D) $\frac{3}{10}$

21. (Algebra) What is the next term in this sequence: 5, 11, 17, 23, 29, ___?

A) 33

B) 35

C) 36

D) 37

22. (Data Literacy) These values appear in a frequency table: 4, 7, 9, 7, 11, 7, 5. What is the mode?

A) 5

B) 9

C) 7

D) 11

STAGE 3 (Questions 23-33) — 30 minutes

23. (Spatial Sense) A triangle has vertices at A(2, 1), B(5, 1), and C(3, 4). The triangle is translated 4 units left and 3 units up. What are the new coordinates of vertex B?

A) (1, 4)

B) (9, -2)

C) (1, -2)

D) (9, 4)

24. (Number Sense) Calculate: $\frac{3}{4} + \frac{5}{6}$

A) $\frac{8}{10}$

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

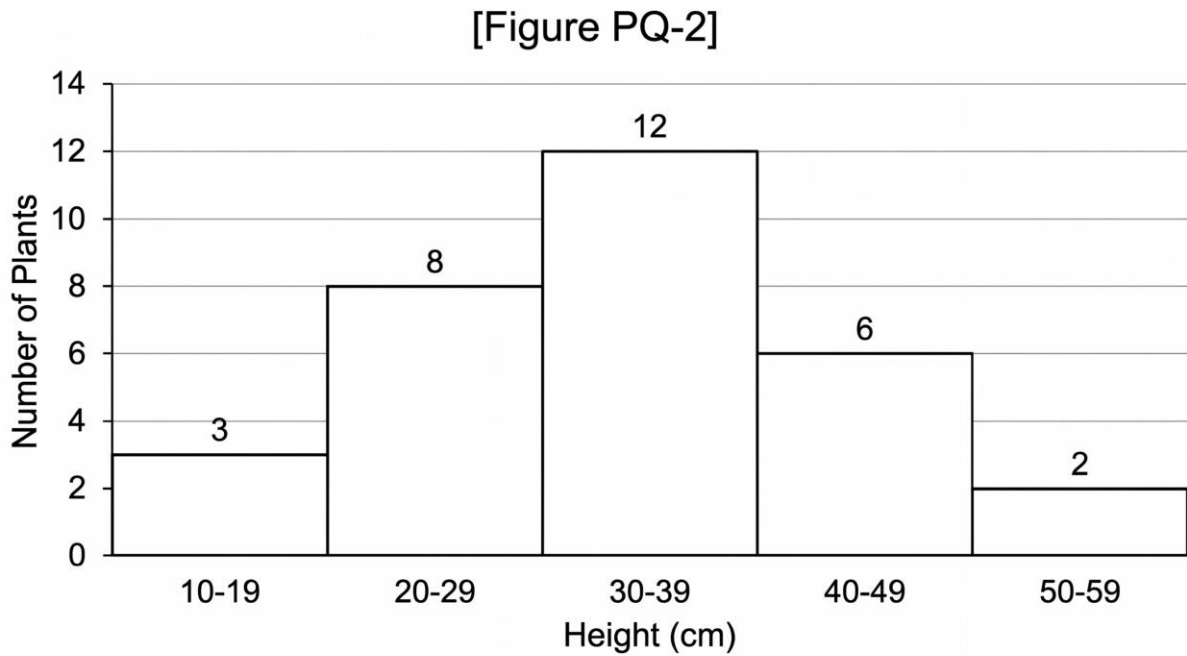
C) $\frac{15}{24}$

D) $\frac{19}{12}$

25. (Algebra) Solve for x : $4x + 7 = 39$

- A) 7
- B) 8
- C) 9
- D) 10

26. (Data Literacy) The histogram shows the heights of plants in a garden.



How many plants have heights in the 30-39 cm range?

- A) 8
- B) 6
- C) 12
- D) 3

27. (Number Sense) What is $\frac{4}{5}$ written as a percent?

- A) 80%
- B) 45%

- C) 54%
- D) 75%

28. (Financial Literacy) Ben deposits \$450 in a savings account at 6% simple interest per year. How much interest will he earn after 2 years?

- A) \$27
- B) \$108
- C) \$30
- D) \$54

29. (Spatial Sense) A rectangular prism has dimensions $7 \text{ cm} \times 5 \text{ cm} \times 4 \text{ cm}$. What is its volume?

- A) 28 cm^3
- B) 140 cm^3
- C) 47 cm^3
- D) 160 cm^3

30. (Algebra) A baker charges \$3.50 per cupcake plus a \$10 delivery fee. Which expression represents the total cost for c cupcakes delivered?

- A) $10c + 3.50$
- B) $3.50 + 10c$
- C) $3.50c + 10$
- D) $13.50c$

31. (Number Sense) Calculate: $6^2 + 4 \times 3 - 5$

- A) 53
- B) 25
- C) 41
- D) 43

32. (Data Literacy) Six measurements were recorded: 18, 24, 30, 15, 21, 28. What is the range?

- A) 15
- B) 30
- C) 18
- D) 22

33. (Spatial Sense) What is the sum of the interior angles of a pentagon?

- A) 360°
- B) 540°
- C) 720°
- D) 900°

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) Which list shows these integers in order from greatest to least? -5, 3, -1, 0, -8

- A) -8, -5, -1, 0, 3
- B) -1, -5, -8, 0, 3
- C) 3, 0, -1, -5, -8
- D) 0, 3, -1, -5, -8

35. (Algebra) If $5n - 8 = 27$, what is the value of n ?

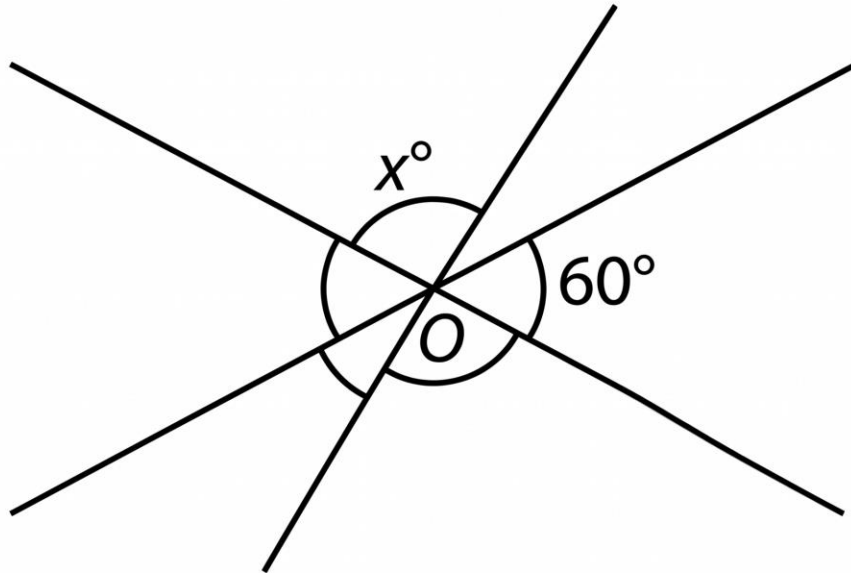
- A) 4
- B) 5
- C) 6
- D) 7

36. (Data Literacy) Find the median of this data set: 28, 35, 42, 28, 39, 31, 28.

- A) 31

- B) 28
- C) 35
- D) 39

37. (Spatial Sense) The diagram shows two intersecting lines forming four angles.



What is the value of x ?

- A) 60°
- B) 90°
- C) 120°
- D) 30°

38. (Number Sense) Evaluate: $30 \div (8 - 2) \times 4$

- A) 15
- B) 20
- C) 24
- D) 28

39. (Financial Literacy) Amir saves \$35 each month. How long will it take him to save \$420?

- A) 10 months
- B) 11 months
- C) 13 months
- D) 12 months

40. (Algebra) A rectangle has a width of w . Its length is 8 more than twice the width. Which expression represents the perimeter?

- A) $6w + 16$
- B) $4w + 16$
- C) $6w + 8$
- D) $8w + 16$

41. (Number Sense) Which number makes this statement true? $\frac{5}{6} = \frac{?}{42}$

- A) 30
- B) 32
- C) 35
- D) 36

42. (Data Literacy) A bag contains 24 marbles: 6 red, 8 blue, 4 green, and 6 yellow. What is the probability of drawing a blue marble, expressed in simplest form?

- A) $\frac{6}{24}$
- B) $\frac{1}{3}$
- C) $\frac{4}{24}$
- D) $\frac{8}{12}$

43. (Spatial Sense) A square has an area of 144 cm^2 . What is the length of one side?

- A) 6 cm
- B) 24 cm

- C) 36 cm
- D) 12 cm

44. (Number Sense) A recipe needs $\frac{5}{6}$ cup of sugar. How much sugar is needed for $\frac{1}{2}$ of the recipe?

- A) $\frac{5}{8}$ cup
- B) $\frac{5}{12}$ cup
- C) $\frac{1}{3}$ cup
- D) $\frac{6}{12}$ cup

Practice Exam 13: Answer Key and Explanations

1. A — The digit 5 occupies the hundred-thousands place in 2,548,917. Reading positions from right to left (ones, tens, hundreds, thousands, ten-thousands, hundred-thousands), the digit 5 sits in the sixth position with a value of $5 \times 100,000 = 500,000$. Place value identification is fundamental for reading and comparing large numbers.

2. D — Starting at 80 and subtracting 6 repeatedly: term 1 = 80, term 2 = 74, term 3 = 68, term 4 = 62, term 5 = 56, term 6 = 50. This arithmetic sequence has a constant difference of -6. Tracking each term carefully ensures accurate identification of any specific position.

3. C — A square pyramid has exactly 5 faces (1 square base + 4 triangular faces), 8 edges (4 base edges + 4 slant edges), and 5 vertices (4 base vertices + 1 apex). This combination uniquely identifies the square pyramid among common 3D solids. Understanding shape properties supports geometric reasoning.

4. B — Align decimal points and add: $47.60 + 13.85 = 61.45$. Writing 47.6 as 47.60 ensures matching decimal places. Proper alignment of place values is essential for accurate decimal operations in money and measurement contexts.

5. A — Reading the bar graph, vanilla reaches the tallest height at 16 students, exceeding chocolate (12), strawberry (8), and mint (4). Comparing bar heights enables quick identification of maximum values in categorical data. Bar graphs efficiently show comparisons across discrete categories.

6. C — A fraction is in simplest form when the greatest common factor (GCF) of numerator and denominator is 1. For $\frac{5}{12}$, the GCF of 5 and 12 is 1, so it cannot be reduced further. The others simplify: $\frac{4}{8} = \frac{1}{2}$, $\frac{6}{9} = \frac{2}{3}$, $\frac{10}{15} = \frac{2}{3}$. Simplest form supports clear fraction communication.

7. B — Multiply hourly rate by hours worked: $\$8.25 \times 4 = \33.00 . Breaking down: $\$8 \times 4 = \32 , plus $\$0.25 \times 4 = \1.00 , totaling $\$33.00$. Accurate decimal multiplication is essential for calculating wages and other financial transactions.

8. D — Solve by dividing both sides by 4: $4k = 36 \rightarrow k = 36 \div 4 = 9$. Division is the inverse operation of multiplication, used to isolate the variable. Check: $4 \times 9 = 36 \checkmark$. One-step equations build foundational algebraic skills.

9. A — A right angle measures exactly 90° and is marked with a small square symbol at its vertex. Right angles form the corners of squares, rectangles, and perpendicular lines. Acute angles measure less than 90° , obtuse angles between 90° and 180° , and straight angles exactly 180° .

10. C — Convert meters to centimeters by multiplying by 100: $4.7 \text{ m} \times 100 = 470 \text{ cm}$. The metric system uses base-10 conversions, with 1 m equal to 100 cm. Moving from larger to smaller units requires multiplication, producing a larger numerical value for the same length.

11. D — "The product of 6 and a number n" translates to $6n$ (multiplication first), and "twelve more than" means add 12, producing $6n + 12$. The phrase "more than" indicates addition, and standard convention places the variable expression first followed by the added constant.

12. B — Multiply 7×84 : using the distributive property, $7 \times 84 = 7 \times (80 + 4) = 560 + 28 = 588$. Breaking large multiplications into manageable parts using place value reduces calculation errors. Verification: $588 \div 7 = 84 \checkmark$.

13. A — A square has four equal sides. Perimeter equals the sum of all sides: $4 \times 11 = 44 \text{ cm}$. The formula $P = 4s$ applies to all squares, where s is the side length. Perimeter measures the total distance around a shape, useful for fencing and border calculations.

14. C — The mode is the value occurring most frequently in a dataset. In $\{65, 72, 65, 80, 68, 65\}$, the value 65 appears three times while all other values appear only once. Mode identifies the most common occurrence, useful for analyzing repeated measurements.

15. D — Divide 504 by 8: breaking this down, $480 \div 8 = 60$, plus $24 \div 8 = 3$, giving $60 + 3 = 63$. Verification: $8 \times 63 = 504 \checkmark$. Division efficiency improves with familiarity with multiplication facts and partial quotient strategies.

16. A — Substitute $m = 5$ into the expression $8m - 11$: $8(5) - 11 = 40 - 11 = 29$. Order of operations requires performing multiplication before subtraction per BEDMAS. Evaluating algebraic expressions connects symbolic algebra to numerical results.

17. B — Calculate the discount: 30% of $\$120 = 0.30 \times \$120 = \$36$. Subtract from original price: $\$120 - \$36 = \$84$. Recognizing 30% as $3/10$ enables alternative calculation: $\$120 \div 10 = \12 , then $\times 3 = \$36$ discount. Sale price calculations support consumer decisions.

18. C — Simplify $8/12$ by dividing both numerator and denominator by their greatest common factor (4): $8/12 = (8 \div 4)/(12 \div 4) = 2/3$. Equivalent fractions represent the same value despite different appearance. Reducing fractions to simplest form supports easier comparison and operations.

19. D — An equilateral triangle has 3 lines of symmetry, each running from one vertex to the midpoint of the opposite side. These lines divide the triangle into two mirror-image halves. Regular polygons have the same number of lines of symmetry as their number of sides.

20. A — The probability of not yellow equals total non-yellow sections divided by total: $(3 + 2 + 1)/10 = 6/10$. Complementary probabilities (yellow vs. not yellow) always sum to 1: $4/10 + 6/10 = 10/10 = 1$. The fraction $6/10$ represents the chance of any non-yellow outcome.

21. B — The pattern adds 6 each time: $5 + 6 = 11$, $11 + 6 = 17$, $17 + 6 = 23$, $23 + 6 = 29$, $29 + 6 = 35$. This arithmetic sequence has a constant difference of +6. Identifying the common difference enables prediction of subsequent terms.

22. C — The mode is the value occurring most frequently. Counting occurrences: 4 appears once, 7 appears three times, 9 appears once, 11 appears once, 5 appears once. The mode is 7, the most commonly occurring value. Mode identifies the most frequent value in a dataset.

23. A — Apply translation to vertex B(5, 1): 4 units left subtracts 4 from x-coordinate ($5 - 4 = 1$); 3 units up adds 3 to y-coordinate ($1 + 3 = 4$). New coordinates: (1, 4). Translations slide shapes without rotating or reflecting them, preserving size and orientation.

24. D — Find common denominator (12): $3/4 = 9/12$ and $5/6 = 10/12$. Add: $9/12 + 10/12 = 19/12$. This improper fraction equals $1\ 7/12$ as a mixed number. Like denominators are required for adding fractions so numerators represent parts of the same-sized whole.

25. B — Solve the two-step equation: $4x + 7 = 39 \rightarrow$ subtract 7 from both sides: $4x = 32 \rightarrow$ divide both sides by 4: $x = 8$. Check: $4(8) + 7 = 32 + 7 = 39 \checkmark$. Two-step equations require systematic application of inverse operations in reverse order of operations.

26. C — Reading the histogram, the bar for the 30-39 cm height range reaches a height of 12 plants. 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. A — Convert $4/5$ to a percent by finding an equivalent fraction with denominator 100: $4/5 = 80/100 = 80\%$. Multiplying both numerator and denominator by 20 reaches hundredths. Alternatively, $4 \div 5 = 0.8 = 80\%$. Percent means "per hundred," making this conversion straightforward.

28. D — Use the simple interest formula: $I = P \times r \times t = \$450 \times 0.06 \times 2 = \54 . Principal (\$450) times rate (6% = 0.06) times time (2 years) gives interest earned. Simple interest calculates earnings only on the original principal, foundational for understanding savings growth.

29. B — Volume of rectangular prism: $V = \text{length} \times \text{width} \times \text{height} = 7 \times 5 \times 4 = 140 \text{ cm}^3$. Volume measures the three-dimensional space occupied by an object, expressed in cubic units. The order of multiplication doesn't affect the result due to the commutative property.

30. C — Multiply the price per cupcake by the number of cupcakes ($3.50c$) and add the fixed delivery fee (\$10): $3.50c + 10$. Linear expressions like this combine variable terms (variable costs) with constant terms (fixed costs), modeling real-world purchasing scenarios.

31. D — Follow order of operations: exponent first: $6^2 = 36$; then multiplication: $4 \times 3 = 12$; finally add and subtract left to right: $36 + 12 - 5 = 48 - 5 = 43$. BEDMAS dictates this sequence: exponents before multiplication before addition/subtraction.

32. A — Range equals maximum minus minimum: maximum = 30, minimum = 15, so range = $30 - 15 = 15$. Range measures variability or spread in data, indicating how far apart the extreme values are. This simple measure provides a quick sense of data dispersion.

33. B — The interior angle sum of a polygon equals $(n - 2) \times 180^\circ$, where n is the number of sides. For a pentagon ($n = 5$): $(5 - 2) \times 180^\circ = 3 \times 180^\circ = 540^\circ$. This formula derives from dividing any polygon into $(n - 2)$ triangles, each contributing 180° .

34. C — Order from greatest to least requires placing the largest positive number first, then decreasing values: 3 (greatest), 0, -1, -5, -8 (least). With negative numbers, the larger the absolute value, the smaller the number. Integer ordering applies to temperature, elevation, and financial contexts.

35. D — Solve: $5n - 8 = 27 \rightarrow$ add 8 to both sides: $5n = 35 \rightarrow$ divide both sides by 5: $n = 7$. Check: $5(7) - 8 = 35 - 8 = 27 \checkmark$. Two-step equation solving applies inverse operations systematically to isolate the variable.

36. A — Order the values: 28, 28, 28, 31, 35, 39, 42. With 7 values (odd count), the median is the middle value at position 4, which is 31. Three values fall below and three above this middle point. Median represents the center of ordered data.

37. C — Angles forming a linear pair (on a straight line) are supplementary, summing to 180° . The angle of 60° and angle x share a straight line, so $x = 180^\circ - 60^\circ = 120^\circ$. This angle relationship enables calculation of unknown angles when adjacent angles share a straight line.

38. B — Apply order of operations: brackets first: $(8 - 2) = 6$; then division and multiplication left to right: $30 \div 6 = 5$, then $5 \times 4 = 20$. BEDMAS requires parentheses first, then division/multiplication from left to right. Skipping or reordering operations produces incorrect results.

39. D — Divide the savings goal by the monthly amount: $\$420 \div \$35 = 12$ months. This calculation determines how long regular savings will take to reach a target. Breaking large savings goals into manageable monthly amounts supports financial planning.

40. A — The length is $2w + 8$ (8 more than twice the width). Perimeter = $2(\text{length}) + 2(\text{width}) = 2(2w + 8) + 2w = 4w + 16 + 2w = 6w + 16$. Combining like terms ($4w + 2w = 6w$) simplifies the expression to its final form.

41. C — The denominator changes from 6 to 42, which is multiplying by 7 ($6 \times 7 = 42$). Apply the same factor to the numerator: $5 \times 7 = 35$. Therefore, $5/6 = 35/42$. Equivalent fractions are created by multiplying both parts by the same value, preserving the ratio.

42. B — Probability equals favorable outcomes divided by total outcomes: $P(\text{blue}) = 8/24$. Simplify by dividing both by 8: $8/24 = 1/3$. The simplified form expresses the probability in lowest terms. Probability values range from 0 (impossible) to 1 (certain).

43. D — A square has all sides equal. $\text{Area} = \text{side}^2 = 144 \text{ cm}^2$. Find the side length by taking the square root: $\sqrt{144} = 12 \text{ cm}$. Verification: $12 \times 12 = 144 \checkmark$. Square root operations reverse squaring, finding the original side length from a known area.

44. B — Calculate $1/2$ of $5/6$ by multiplying the fractions: $(5/6) \times (1/2) = (5 \times 1)/(6 \times 2) = 5/12$ cup. When multiplying fractions, multiply numerators together and denominators together. Scaling recipes requires proportional adjustment of all ingredients.