PRACTICE EXAM 3: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the value of the digit 3 in the number 2,138,476?

A) 3,000

B) 30

C) 300

D) 30,000

2. (Algebra) A sequence begins: 2, 7, 12, 17, 22, ... Which rule describes this pattern?

A) Add 3 each time

B) Multiply by 5 each time

C) Add 5 each time

D) Add 7 each time

3. (Spatial Sense) How many vertices does a rectangular prism have?

A) 6

B) 8

C) 12

D) 4

4. (Number Sense) Calculate: 15.3 - 8.75

A) 6.55

B) 7.55

C) 6.45

D) 7.45

5. (Data Literacy) Students recorded their ages: 11, 12, 11, 13, 12, 11, 14. Which age appears most frequently?

A) 12

B) 13

C) 14

D) 11

6. (Number Sense) Which decimal is equivalent to 3/8?

A) 0.38

B) 0.83

C) 0.375

D) 0.338

7. (Financial Literacy) A backpack costs $45. If the price increases by 20%, what is the new price?

A) $50

B) $54

C) $47

D) $65

8. (Algebra) Solve for n: n ÷ 4 = 9

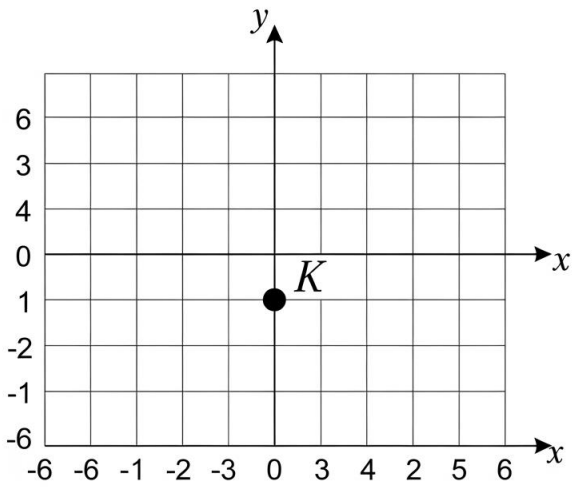
A) 36

B) 13

C) 5

D) 45

9. (Spatial Sense) The diagram shows a coordinate plane with point K marked.



What are the coordinates of point K?

A) (-2, 4)

B) (2, -4)

C) (-4, 2)

D) (4, -2)

10. (Number Sense) Convert 5/6 to a percent rounded to the nearest whole number.

A) 56%

B) 65%

C) 83%

D) 86%

11. (Algebra) In the expression 12n + 5, what does the coefficient 12 represent if n is the number of hours worked and the expression calculates total earnings in dollars?

A) Total earnings

B) Hourly wage

C) Hours worked

D) Bonus payment

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) What is 25% of 320?

A) 80

B) 64

C) 100

D) 75

13. (Spatial Sense) A triangle has angles measuring 35° and 72°. What is the measure of the third angle?

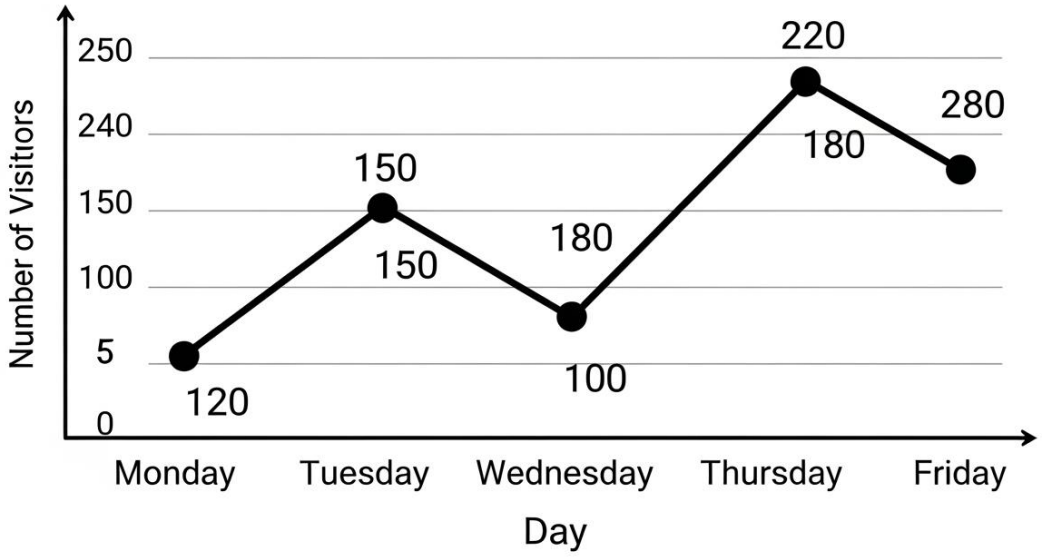
A) 107°

B) 37°

C) 63°

D) 73°

14. (Data Literacy) The line graph shows the number of visitors to a museum over five days.



On which day did the museum have 180 visitors?

A) Wednesday

B) Tuesday

C) Thursday

D) Friday

15. (Number Sense) Calculate: 384 ÷ 6

A) 62

B) 64

C) 68

D) 66

16. (Algebra) If the pattern rule is 9n + 4, what is the value when n = 8?

A) 76

B) 68

C) 84

D) 72

17. (Financial Literacy) Chen saves $22 per week. How much will he save in 15 weeks?

A) $300

B) $310

C) $320

D) $330

18. (Number Sense) Simplify: 18/24

A) 2/3

B) 9/12

C) 3/4

D) 6/8

19. (Spatial Sense) A cube has edges measuring 5 cm. What is its volume?

A) 25 cm^3

B) 125 cm^3

C) 75 cm^3

D) 150 cm^3

20. (Data Literacy) Eight test scores are recorded: 82, 76, 91, 82, 88, 76, 94, 82. What is the mode?

A) 82

B) 76

C) 88

D) 91

21. (Algebra) Find the missing number in the sequence: 4, 12, 36, 108, ___

A) 216

B) 144

C) 432

D) 324

22. (Number Sense) Convert 6.75 kilometers to meters.

A) 675 m

B) 67.5 m

C) 6,750 m

D) 67,500 m

STAGE 3 (Questions 23-33) — 30 minutes

23. (Spatial Sense) Point P at coordinates (-4, 1) is translated 5 units right and 3 units down. What are the new coordinates?

A) (-9, 4)

B) (1, -2)

C) (1, 4)

D) (-9, -2)

24. (Number Sense) Calculate: 7/12 + 1/6

A) 3/4

B) 8/18

C) 2/3

D) 5/6

25. (Algebra) Solve for x: 5x - 12 = 38

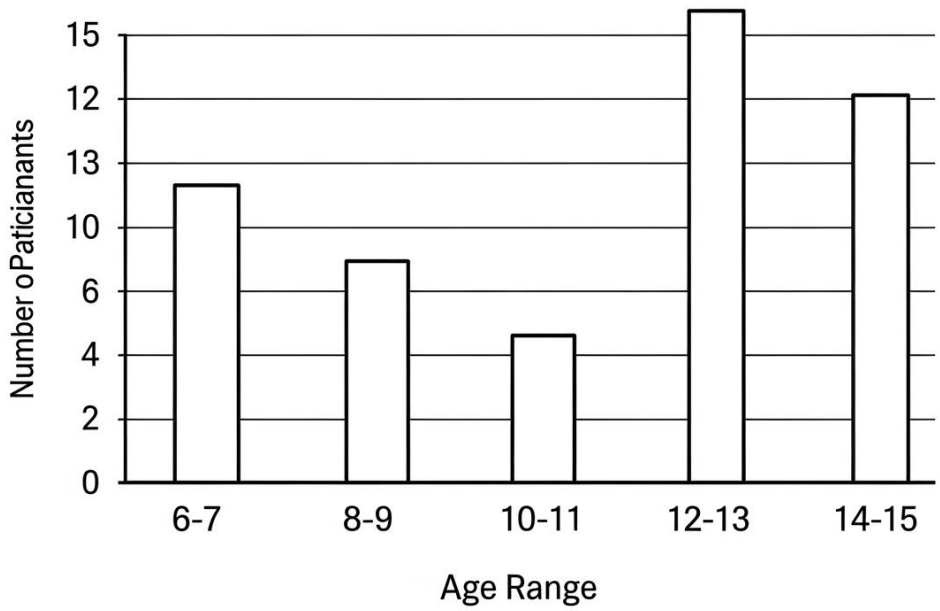
A) 5

B) 8

C) 26

D) 10

26. (Data Literacy) The histogram shows ages of participants in a summer program.



How many participants are in the 10-11 age range?

A) 9

B) 7

C) 13

D) 4

27. (Number Sense) Express 7/8 as a decimal.

A) 0.78

B) 0.875

C) 0.87

D) 0.785

28. (Financial Literacy) A jacket originally priced at $80 is marked down 30%. What is the sale price?

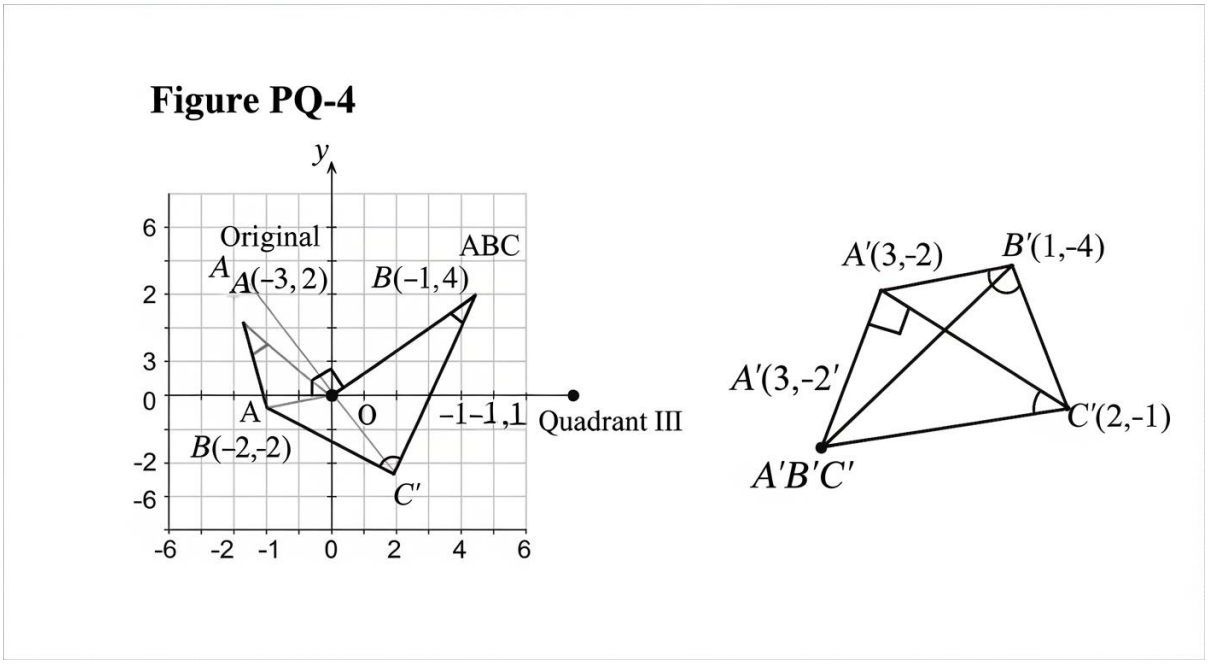
A) $56

B) $50

C) $60

D) $24

29. (Spatial Sense) The figure shows a triangle rotated 180° around the origin.



What are the coordinates of point B'?

A) (1, 4)

B) (-1, -4)

C) (4, 1)

D) (1, -4)

30. (Algebra) Which expression represents "9 less than the product of 5 and a number"?

A) 9 - 5n

B) 5 - 9n

C) 5n - 9

D) 5(n - 9)

31. (Number Sense) Calculate: $4^2 \times 3 - 7$

A) 38

B) 41

C) 55

D) 45

32. (Data Literacy) A dataset has values: 15, 22, 28, 22, 35, 40. What is the range?

A) 25

B) 15

C) 22

D) 40

33. (Spatial Sense) A rectangular prism has dimensions 10 cm × 6 cm × 4 cm. What is its surface area?

A) 240 cm^2

B) 200 cm^2

C) 220 cm^2

D) 248 cm^2

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) Which shows these integers ordered from greatest to least? -2, 5, -8, 1, 0

A) 5, 1, -2, 0, -8

B) -8, -2, 0, 1, 5

C) 5, 1, 0, -2, -8

D) 5, 0, 1, -2, -8

35. (Algebra) If $4x + 9 = 41$, what is the value of x?

A) 10

B) 8

C) 12

D) 13

36. (Data Literacy) A spinner has 15 equal sections: 6 blue, 5 red, 4 green. What is the probability of landing on red?

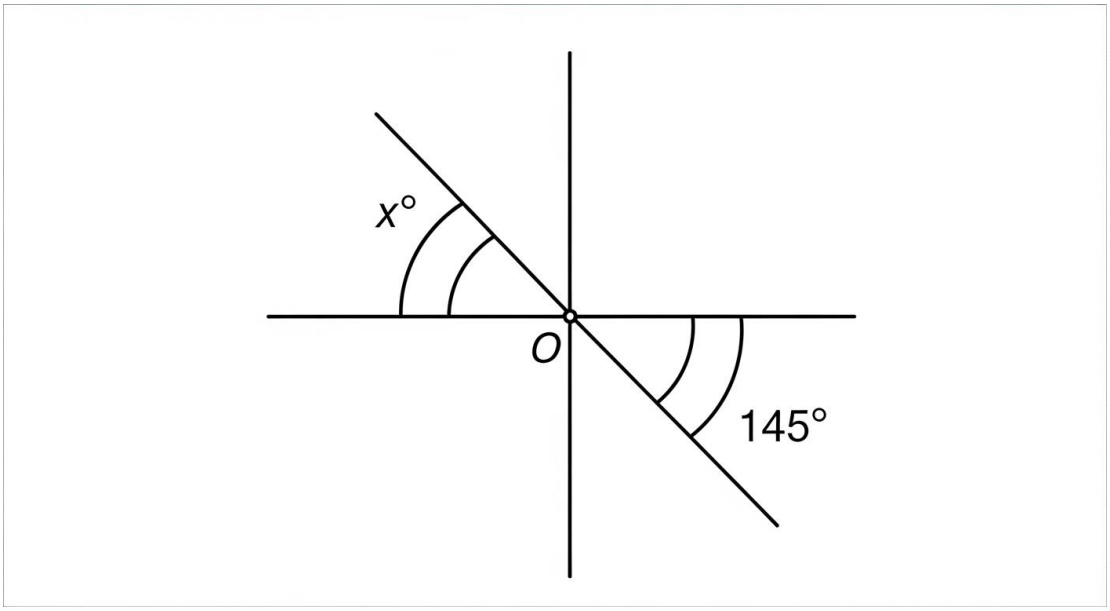
A) 1/3

B) 2/5

C) 5/15

D) 6/15

37. (Spatial Sense) The diagram shows two angles formed by intersecting lines.



What is the measure of angle x?

A) 35°

B) 45°

C) 90°

D) 145°

38. (Number Sense) Evaluate: (15 - 6) × 2 + 8 ÷ 4

A) 16

B) 24

C) 20

D) 22

39. (Financial Literacy) Marcus deposits $600 in an account earning 3% simple interest per year. How much interest will he earn after 4 years?

A) $18

B) $72

C) $24

D) $60

40. (Algebra) A rectangle has length L and width W. The length is 7 more than twice the width. Which expression represents the length?

A) 2W + 7

B) 7W + 2

C) 2(W + 7)

D) 7(2W)

41. (Number Sense) What number makes this true? 7/8 = ?/32

A) 24

B) 30

C) 35

D) 28

42. (Data Literacy) Six measurements (in cm) are recorded: 24, 30, 27, 24, 33, 28. What is the mean?

A) 24

B) 27.5

C) 28

D) 30

43. (Spatial Sense) A parallelogram has a base of 18 cm and height of 7 cm. What is its area?

A) 25 cm²

B) 126 cm²

C) 50 cm²

D) 63 cm²

44. (Number Sense) A recipe uses 3/4 cup of oil. To make 2/3 of the recipe, how much oil is needed?

A) 1/2 cup

B) 9/12 cup

C) 2/3 cup

D) 5/6 cup

Practice Exam 3: Answer Key and Explanations

1. D — The digit 3 is in the ten-thousands place in 2,138,476. Reading positions from right to left (ones, tens, hundreds, thousands, ten-thousands), the digit 3 sits in the fifth position, giving it a value of 3 × 10,000 = 30,000. Place value determines a digit's worth based on its location within the number.

2. C — The sequence increases by 5 each time: 2 → 7 (+5), 7 → 12 (+5), 12 → 17 (+5), 17 → 22 (+5). This constant difference of +5 identifies the pattern as an arithmetic sequence. Recognizing the constant difference between consecutive terms is key to describing pattern rules accurately.

3. B — A rectangular prism has 8 vertices, located at each corner where three edges meet. The prism has 6 faces, 12 edges, and 8 vertices according to Euler's formula (V - E + F = 2). Understanding vertices, edges, and faces is fundamental for analyzing three-dimensional shapes.

4. A — Align decimal points and subtract: 15.30 - 8.75 = 6.55. Borrowing is required in both the tenths place (3 borrows from 5 to become 13) and the ones place. Proper alignment of decimal places ensures correct subtraction with money and measurements.

5. D — The mode is the value appearing most frequently. In the dataset {11, 12, 11, 13, 12, 11, 14}, the age 11 appears three times, more than any other value. Mode identifies the most common occurrence and is the only measure of central tendency suitable for categorical data.

6. C — Convert by dividing numerator by denominator: 3 ÷ 8 = 0.375. The fraction 3/8 represents 3 parts out of 8 equal parts, equivalent to 0.375 in decimal form. Memorizing common fraction-decimal equivalents like 1/8 = 0.125 helps with quick conversions.

7. B — Calculate 20% of $45: 0.20 × 45 = $9. Add the increase to the original price: $45 + $9 = $54. Percent increase requires finding the percentage of the original amount and adding it to find the new total. This applies to sales tax, price increases, and tip calculations.

8. A — Solve by multiplying both sides by 4: n ÷ 4 = 9 → n = 9 × 4 = 36. Multiplication is the inverse operation of division, used to isolate the variable. Check: 36 ÷ 4 = 9 ✓. One-step division equations build foundational algebra skills.

9. D — Point K is located 4 units right of the origin (positive x) and 2 units below (negative y), giving coordinates (4, -2). The x-coordinate represents horizontal position and the y-coordinate represents vertical position. Negative y-values indicate points below the x-axis in the lower half of the coordinate plane.

10. C — Convert fraction to percent: 5 ÷ 6 = 0.8333... Multiply by 100 to get 83.33%, which rounds to 83%. Some fractions produce repeating decimals when converted, requiring rounding to a specified place value for practical use.

11. B — In the expression 12n + 5 where n is hours worked, the coefficient 12 multiplies n, representing the rate per hour—the hourly wage. The constant 5 represents a fixed bonus or starting amount that doesn't depend on hours worked. Understanding expression components helps interpret real-world algebraic models.

12. A — Calculate 25% of 320: 25% equals 1/4, so 320 ÷ 4 = 80. Alternatively, 0.25 × 320 = 80. Recognizing common percent equivalents (25% = 1/4, 50% = 1/2, 75% = 3/4) speeds mental calculation in everyday situations.

13. D — The interior angles of any triangle sum to 180°. The third angle equals 180° - 35° - 72° = 73°. This angle sum property holds for all triangles regardless of type, making it a powerful tool for finding missing angles in geometric problems.

14. C — Reading the line graph, the data point at Thursday reaches a height of 180 visitors on the y-axis. Line graphs display how values change over time or across a continuous variable. Locating specific values requires careful reading of both axes and the corresponding data points.

15. B — Divide 384 by 6: 384 ÷ 6 = 64. Long division or breaking the problem into parts (360 ÷ 6 = 60, 24 ÷ 6 = 4, total 64) confirms the result. Verification: 6 × 64 = 384 ✓. Division efficiency improves with practice and familiarity with multiplication facts.

16. A — Substitute n = 8 into the expression 9n + 4: 9(8) + 4 = 72 + 4 = 76. Evaluating algebraic expressions requires replacing the variable with the given value, then applying order of operations. Multiplication is performed before addition per BEDMAS.

17. D — Multiply weekly savings by number of weeks: $22 × 15 = $330. Breaking down: $22 × 10 = $220, plus $22 × 5 = $110, totaling $330. Calculating total savings over time supports financial planning and goal-setting for purchases.

18. C — Simplify 18/24 by dividing both numerator and denominator by their greatest common factor (6): 18/24 = (18÷6)/(24÷6) = 3/4. Reducing fractions to simplest form requires finding the largest number that divides both parts evenly. Simplified fractions are easier to compare and work with.

19. B — Volume of a cube equals edge length cubed: $V = s^3 = 5^3 = 5 \times 5 \times 5 = 125$ cm³. Volume measures three-dimensional space occupied by an object, expressed in cubic units. The cube formula reflects that a cube's three equal dimensions multiply together.

20. A — The mode is the value appearing most frequently. Counting occurrences: 82 appears 3 times, 76 appears 2 times, 91 appears once, 88 appears once, 94 appears once. The mode is 82. Mode identifies the most common value, particularly useful when analyzing categorical data or test scores.

21. D — The pattern multiplies by 3 each time: 4 × 3 = 12, 12 × 3 = 36, 36 × 3 = 108, 108 × 3 = 324. This geometric sequence has a common ratio of 3 between consecutive terms. Identifying the multiplicative relationship distinguishes geometric patterns from arithmetic ones.

22. C — Convert kilometers to meters by multiplying by 1,000: 6.75 km × 1,000 = 6,750 m. The metric system's base-10 structure makes conversions efficient—simply shift the decimal point three places to the right when moving from kilometers to meters. Decimal placement is critical for accurate metric conversions.

23. B — Apply translation to point (-4, 1): 5 units right adds 5 to x-coordinate (-4 + 5 = 1); 3 units down subtracts 3 from y-coordinate (1 - 3 = -2). New coordinates: (1, -2). Translations slide shapes without rotation or reflection, preserving size and orientation.

24. A — Find common denominator (12): 7/12 + 1/6 = 7/12 + 2/12 = 9/12 = 3/4 simplified. Converting 1/6 to twelfths by multiplying numerator and denominator by 2. Always simplify the final answer when possible to express fractions in lowest terms.

25. D — Solve the two-step equation: 5x - 12 = 38 → add 12 to both sides: 5x = 50 → divide both sides by 5: x = 10. Check: 5(10) - 12 = 50 - 12 = 38 ✓. Two-step equations require inverse operations applied in reverse order of operations.

26. C — Reading the histogram, the bar for the 10-11 age range reaches a height of 13 participants on the y-axis. 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. B — Convert 7/8 to decimal by dividing: 7 ÷ 8 = 0.875. The fraction 7/8 represents 7 out of 8 equal parts, equivalent to 875/1000 = 0.875. Recognizing 7/8 as just below 1 (which equals 8/8) provides a useful estimation benchmark.

28. A — Calculate the discount: 30% of $80 = 0.30 × 80 = $24. Subtract from original price: $80 - $24 = $56. Sale price calculations require finding the discount amount and subtracting from the original cost. This essential skill applies to shopping decisions and budget management.

29. D — A 180° rotation around the origin transforms (x, y) → (-x, -y). Point B at (-1, 4) rotates to B'(-(-1), -(4)) = (1, -4). This rotation produces a point diagonally opposite the original through the origin, making rotated figures appear "flipped" through the center.

30. C — "Product of 5 and a number" translates to 5n (multiplication). "9 less than" means subtract 9, producing 5n - 9. Order matters with subtraction: "less than" indicates what is being subtracted FROM. This phrase structure is a common source of translation errors.

31. B — Follow order of operations: exponent first: $4^2 = 16$; then multiplication: 16 × 3 = 48; finally subtraction: 48 - 7 = 41. BEDMAS dictates this sequence—exponents before multiplication before subtraction. Skipping or reordering steps produces incorrect results.

32. A — Range equals maximum minus minimum: max = 40, min = 15, so range = 40 - 15 = 25. Range measures variability or spread in data, indicating how far apart the extreme values are. While simple to calculate, range is influenced by outliers and only considers two data points.

33. D — Surface area of rectangular prism: SA = 2(lw) + 2(lh) + 2(wh) = 2(10×6) + 2(10×4) + 2(6×4) = 120 + 80 + 48 = 248 cm^2. Each pair of opposite faces is congruent, so the formula doubles the area of three different face types. Surface area determines material needed to cover the prism.

34. C — Order from greatest to least requires placing positive numbers first (largest to smallest), then zero, then negative numbers (closer to zero first): 5, 1, 0, -2, -8. With negatives, the larger the absolute value, the smaller the number. This skill applies to temperature, elevation, and financial contexts.

35. B — Solve: 4x + 9 = 41 → subtract 9 from both sides: 4x = 32 → divide both sides by 4: x = 8. Check: 4(8) + 9 = 32 + 9 = 41 ✓. Two-step equation solving applies inverse operations systematically to isolate the variable.

36. A — Probability equals favorable outcomes divided by total outcomes: P(red) = 5/15. Simplify by dividing both by 5: 5/15 = 1/3. Probability expresses likelihood as a fraction, with simplified forms easier to interpret and compare. The probability of landing on red is 1/3.

37. D — Vertically opposite angles formed by intersecting lines are always equal in measure. The angle x and the 145° angle are vertically opposite (across from each other through the intersection point), so x = 145°. This property holds regardless of the angle measures involved.

38. C — Apply order of operations: brackets first: (15 - 6) = 9; then division and multiplication left to right: 9 × 2 = 18, and 8 ÷ 4 = 2; finally addition: 18 + 2 = 20. BEDMAS ensures consistent evaluation. Multiplication and division have equal priority, performed left to right.

39. B — Simple interest formula: I = P × r × t = $600 × 0.03 × 4 = $72. Principal ($600) times rate (3% = 0.03) times time (4 years) gives interest earned. Simple interest calculates earnings on the original principal only, not on accumulated interest.

40. A — "Twice the width" translates to 2W (multiplication). "7 more than" means add 7, producing 2W + 7. Translating multi-step relationships requires identifying each operation and applying them in correct order. This algebraic expression models the geometric relationship between length and width.

41. D — The denominator changes from 8 to 32, which is multiplying by 4 (8 × 4 = 32). Apply the same factor to the numerator: 7 × 4 = 28. Therefore 7/8 = 28/32. Equivalent fractions are created by multiplying both parts by the same value, preserving the ratio.

42. C —Calculate mean by summing values and dividing by count: (24 + 30 + 27 + 24 + 33 + 28) ÷ 6 = 168 ÷ 6 = 28. Option A, 24, is the mode (the most frequently occurring value), not the mean. Option B, 27.5, is the median (the average of the two middle values, 27 and 28, after ordering). Option D, 30, is one of the individual data points, not a measure of central tendency for the set. The mean represents the central balancing point of the dataset and is the most commonly used measure of central tendency.

43. B — Area of parallelogram: A = base × height = 18 × 7 = 126 cm². The height must be perpendicular to the base, not the slant side length. Parallelograms have the same area formula as rectangles because the slanted shape can be rearranged into a rectangle with identical base and height dimensions.

44. A — Calculate 2/3 of 3/4 by multiplying the fractions: (2/3) × (3/4) = (2×3)/(3×4) = 6/12 = 1/2 cup simplified. When multiplying fractions, multiply numerators together and denominators together, then simplify the result. Scaling recipes requires proportional adjustment of all ingredients.