PRACTICE EXAM 16: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the digit in the millions place of the number 7,358,492?

A) 3

B) 5

C) 7

D) 8

2. (Algebra) A pattern starts at 5 and follows the rule "multiply by 2 then subtract 1." What is the third term?

A) 17

B) 19

C) 21

D) 11

3. (Spatial Sense) What is the name of a polygon with 7 sides?

A) Hexagon

B) Octagon

C) Pentagon

D) Heptagon

4. (Number Sense) Calculate: 52.7 + 38.45

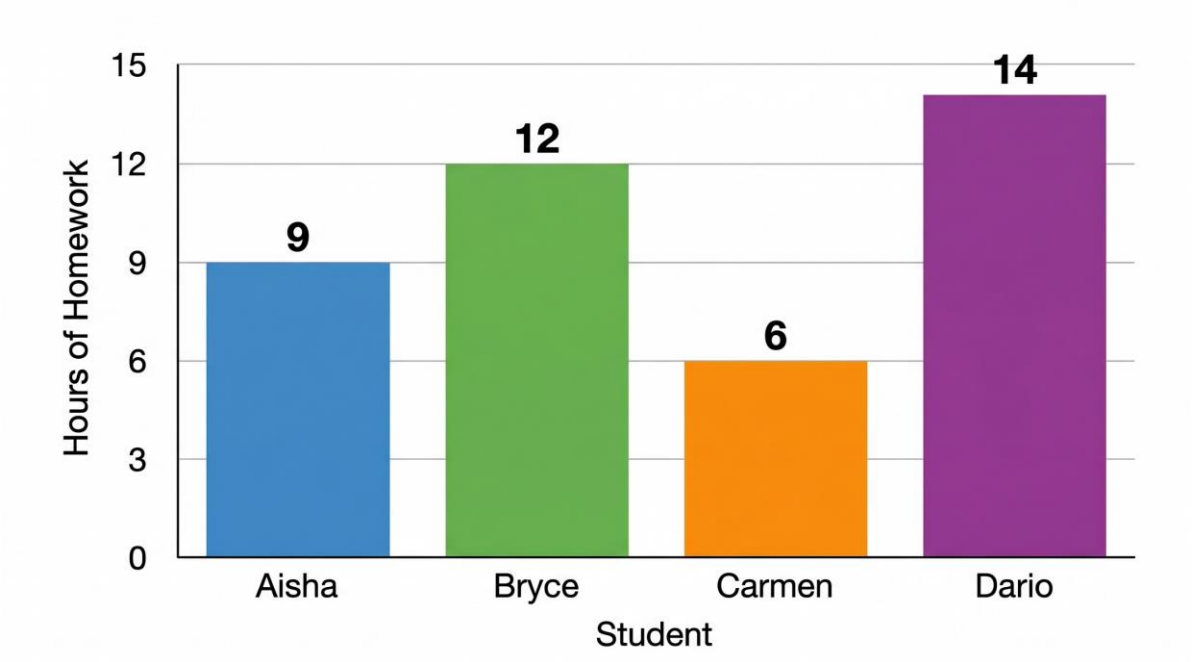
A) 90.15

B) 91.15

C) 90.45

D) 91.45

5. (Data Literacy) The bar graph shows the hours of homework completed by four students in one week.



Which student completed the fewest hours of homework?

A) Aisha

B) Bryce

C) Carmen

D) Dario

6. (Number Sense) Which fraction is greater than 3/8?

A) 1/4

B) 1/2

C) 1/3

D) 2/8

7. (Financial Literacy) Hannah earns $9.40 per hour. How much does she earn for working 5 hours?

A) $47.00

B) $45.00

C) $48.50

D) $46.50

8. (Algebra) Solve for n: n + 32 = 47

A) 79

B) 32

C) 47

D) 15

9. (Spatial Sense) What is a 180° angle called?

A) Right

B) Acute

C) Straight

D) Obtuse

10. (Number Sense) Convert 7.2 kilometers to meters.

A) 7,200 m

B) 720 m

C) 72 m

D) 0.0072 m

11. (Algebra) Which expression represents "four times the difference between a number n and 5"?

A) 4n - 5

B) 4(n - 5)

C) 5n - 4

D) (n - 5)/4

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Calculate: 9 × 67

A) 583

B) 593

C) 613

D) 603

13. (Spatial Sense) A triangle has angles measuring 45°, 45°, and 90°. What type of triangle is it?

A) Equilateral

B) Scalene

C) Isosceles right

D) Obtuse

14. (Data Literacy) Find the mean of this data set: 18, 24, 30, 27, 21.

A) 21

B) 24

C) 27

D) 30

15. (Number Sense) Calculate: 672 ÷ 8

A) 84

B) 86

C) 74

D) 96

16. (Algebra) Evaluate the expression 5p - 8 when p = 9.

A) 41

B) 53

C) 45

D) 37

17. (Financial Literacy) A pair of jeans costs $45. The store offers 20% off. What is the sale price?

A) $9

B) $36

C) $40

D) $54

18. (Number Sense) Which decimal is equivalent to 7/20?

A) 0.7

B) 0.20

C) 0.35

D) 0.5

19. (Spatial Sense) How many edges does a pentagonal prism have?

A) 15

B) 10

C) 7

D) 12

20. (Data Literacy) A spinner has 12 equal sections: 3 red, 4 blue, 2 green, and 3 yellow. What is the probability of spinning blue or green?

A) 4/12

B) 2/12

C) 6/8

D) 1/2

21. (Algebra) What is the next term in this sequence: 2, 6, 18, 54, ___?

A) 72

B) 162

C) 108

D) 216

22. (Number Sense) Which expression shows the prime factorization of 48?

A) $2^4 \times 3$

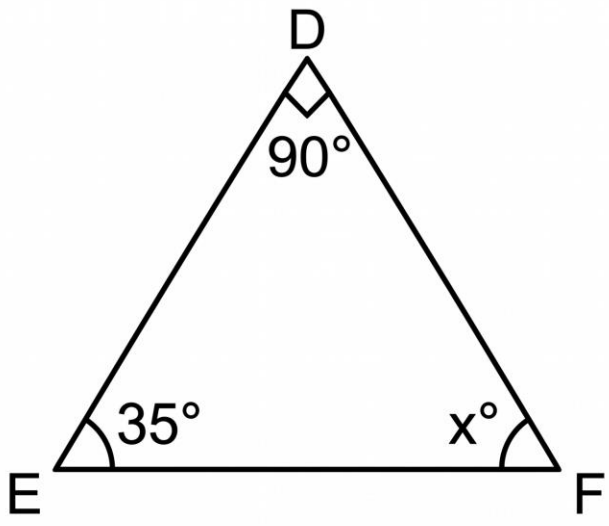
B) 2×24

C) $2^3 \times 6$

D) 4×12

STAGE 3 (Questions 23-33) — 30 minutes

23. (Spatial Sense) The diagram shows triangle DEF.



What is the measure of angle x?

A) 45°

B) 65°

C) 55°

D) 75°

24. (Number Sense) Calculate: 5/6 + 1/4

A) 6/10

B) 5/24

C) 7/12

D) 13/12

25. (Algebra) Solve for y: 6y - 11 = 31

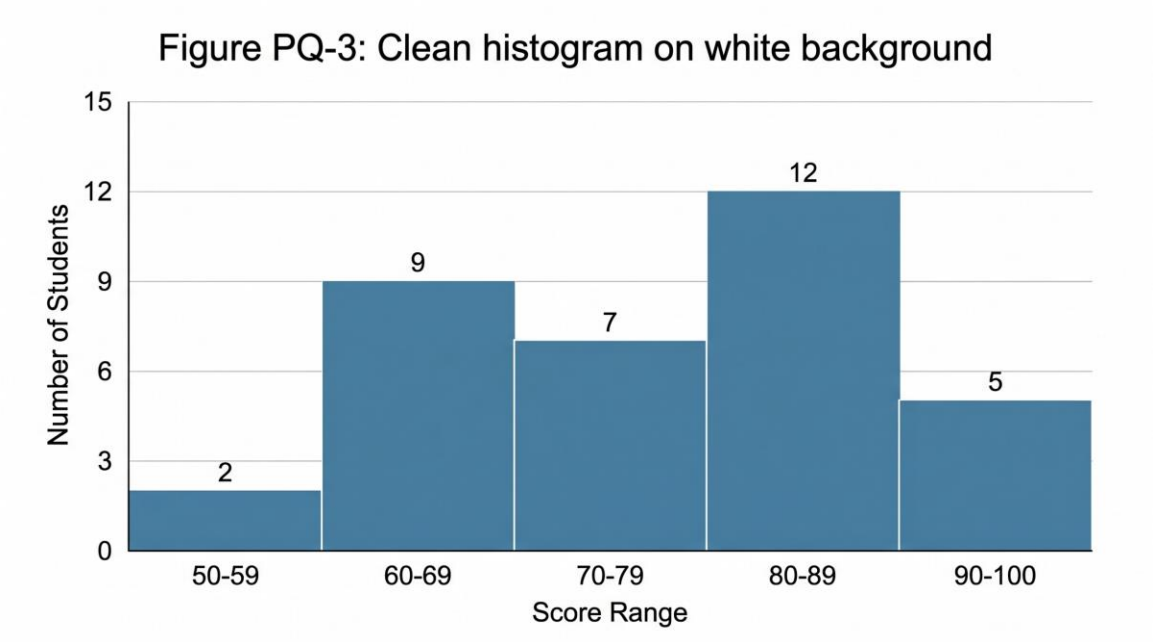
A) 7

B) 6

C) 5

D) 8

26. (Data Literacy) The histogram shows the scores on a math test.



How many students scored between 60-69?

A) 7

B) 9

C) 12

D) 5

27. (Number Sense) Evaluate: $5^2 + 18 \div 3 - 4$

A) 31

B) 18

C) 15

D) 27

28. (Financial Literacy) Marco invests $300 at 5% simple interest per year. How much will be in the account after 4 years?

A) $60

B) $315

C) $360

D) $400

29. (Spatial Sense) A circle has a radius of 9 cm. What is its diameter?

A) 9 cm

B) 18 cm

C) 4.5 cm

D) 27 cm

30. (Algebra) A vendor sells popcorn for $4 per bag and water for $2 per bottle. Which expression represents the total revenue for p bags of popcorn and w bottles of water?

A) $4p + 2w$

B) $2p + 4w$

C) $6(p + w)$

D) $8pw$

31. (Number Sense) What is the value of 8^3?

A) 24

B) 64

C) 512

D) 256

32. (Data Literacy) Six values were recorded: 14, 19, 17, 14, 22, 25. What is the mode?

A) 17

B) 19

C) 22

D) 14

33. (Spatial Sense) A regular octagon has each side measuring 7 cm. What is its perimeter?

A) 56 cm

B) 49 cm

C) 64 cm

D) 42 cm

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) Which integer has the greatest absolute value?

A) -7

B) -9

C) 6

D) 3

35. (Algebra) If $3x + 9 = 42$, what is the value of x?

A) 9

B) 12

C) 11

D) 14

36. (Data Literacy) Find the median of this data set: 47, 35, 52, 29, 41.

A) 41

B) 35

C) 47

D) 29

37. (Data Literacy) In a class of 25 students, 15 walk to school and the rest take the bus. What percentage takes the bus?

A) 60%

B) 30%

C) 50%

D) 40%

38. (Financial Literacy) A coat costs $80. The sales tax is 12%. What is the total cost including tax?

A) $80.12

B) $89.60

C) $92.00

D) $96.00

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

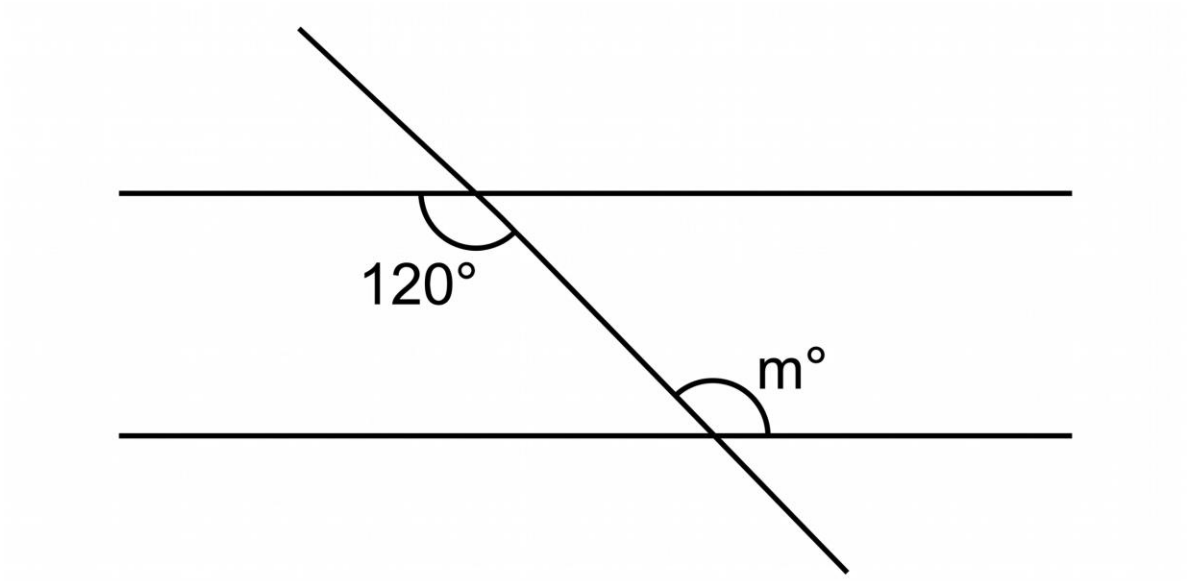


Figure PQ-4

What is the measure of angle m?

A) 60°

B) 90°

C) 120°

D) 30°

40. (Algebra) A water tank is being filled at a rate of 15 liters per minute. The tank already contains 50 liters. Which expression represents the total amount of water in the tank after m minutes?

A) 50 + 15m

B) 15m - 50

C) 15(50 + m)

D) 65m

41. (Data Literacy) A class of 30 students was surveyed about their favorite sport: 12 chose soccer, 8 chose basketball, 6 chose hockey, and 4 chose tennis. What fraction of the class chose soccer, in simplest form?

A) 12/30

B) 6/15

C) 1/2

D) 2/5

42. (Number Sense) What number completes this equivalent fraction? 7/12 = 21/?

A) 24

B) 36

C) 28

D) 42

43. (Spatial Sense) A trapezoid has parallel sides of 10 cm and 14 cm, and a height of 6 cm. What is its area?

A) 84 cm^2

B) 60 cm^2

C) 72 cm^2

D) 144 cm^2

44. (Number Sense) A pizza is divided into 12 equal slices. Anna eats 1/4 of the pizza and Ben eats 1/3 of the pizza. How many slices are left?

A) 7

B) 9

C) 4

D) **5**

Practice Exam 16: Answer Key and Explanations

1. C — The digit 7 occupies the millions place in 7,358,492. Reading positions from right to left (ones, tens, hundreds, thousands, ten-thousands, hundred-thousands, millions), the digit 7 sits in the seventh position with a value of 7,000,000. Place value identification is fundamental for reading and comparing large numbers.

2. A — Starting at 5 and applying "multiply by 2 then subtract 1" each time: term 1 = 5, term 2 = (5 × 2) - 1 = 9, term 3 = (9 × 2) - 1 = 17. Compound pattern rules require applying both operations in sequence to each new term. Tracking each step carefully prevents errors.

3. D — A heptagon has 7 sides, with the prefix "hepta-" meaning seven. A hexagon has 6 sides, an octagon has 8 sides, and a pentagon has 5 sides. Recognizing polygon names supports geometric reasoning and identification of shapes by their number of sides.

4. B — Align decimal points and add: 52.70 + 38.45 = 91.15. Writing 52.7 as 52.70 ensures matching decimal places before adding. Proper alignment of place values is essential for accurate decimal operations in measurement and money contexts.

5. C — Reading the bar graph, Carmen's bar reaches only 6 hours, lower than Aisha (9), Bryce (12), or Dario (14). Identifying minimum values on bar graphs requires comparing all bar heights to find the shortest. Bar graphs make categorical comparisons direct and visual.

6. B — Convert fractions to decimals for comparison: 3/8 = 0.375, 1/4 = 0.25, 1/2 = 0.5, 1/3 ≈ 0.333, 2/8 = 0.25. Only 1/2 (0.5) exceeds 3/8 (0.375). Converting fractions to decimals provides a straightforward comparison method when denominators differ.

7. A — Multiply hourly rate by hours worked: \$9.40 × 5 = \$47.00. Breaking down: \$9 × 5 = \$45, plus \$0.40 × 5 = \$2.00, totaling \$47.00. Accurate decimal multiplication is essential for calculating wages and other financial transactions.

8. D — Solve by subtracting 32 from both sides: n + 32 = 47 → n = 47 - 32 = 15. Subtraction is the inverse operation of addition, used to isolate the variable. Check: 15 + 32 = 47 ✓. One-step equations build foundational algebraic skills.

9. C — A straight angle measures exactly 180° and forms a straight line, with its two rays extending in opposite directions from the vertex. Right angles measure 90°, acute angles less than 90°, and obtuse angles between 90° and 180°. Recognizing angle measures supports geometric reasoning.

10. A — Convert kilometers to meters by multiplying by 1,000: 7.2 km × 1,000 = 7,200 m. The metric system uses base-10 conversions, with 1 km equal to 1,000 m. Moving from larger to smaller units requires multiplication, producing a larger numerical value.

11. B — "The difference between n and 5" translates to (n - 5) using parentheses to group, and "four times" means multiply by 4, producing 4(n - 5). The parentheses ensure 4 multiplies the entire difference, not just n. Distribution would give 4n - 20, distinct from option A's 4n - 5.

12. D — Multiply 9 × 67: using the distributive property, 9 × 67 = 9 × (70 - 3) = 630 - 27 = 603. Alternatively, 9 × 60 + 9 × 7 = 540 + 63 = 603. Verification: 603 ÷ 9 = 67 ✓. Breaking large multiplications into manageable parts reduces errors.

13. C — A triangle with angles 45°, 45°, and 90° is an isosceles right triangle. It has two equal angles (45° each) making it isosceles, and one 90° angle making it right. The two sides opposite the 45° angles are equal in length, characteristic of isosceles triangles.

14. B — Calculate mean by summing values and dividing by count: (18 + 24 + 30 + 27 + 21) ÷ 5 = 120 ÷ 5 = 24. 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.

15. A — Divide 672 by 8: breaking this down, 640 ÷ 8 = 80, plus 32 ÷ 8 = 4, giving 80 + 4 = 84. Verification: 8 × 84 = 672 ✓. Division efficiency improves with familiarity with multiplication facts and partial quotient strategies.

16. D — Substitute p = 9 into the expression 5p - 8: 5(9) - 8 = 45 - 8 = 37. Order of operations requires performing multiplication before subtraction per BEDMAS. Evaluating algebraic expressions connects symbolic algebra to numerical results.

17. B — Calculate the discount: 20% of $45 = 0.20 × $45 = $9. Subtract from original price: $45 - $9 = $36. Recognizing 20% as 1/5 enables quick mental calculation: $45 ÷ 5 = $9 discount. Sale price calculations support informed consumer decisions.

18. C — Convert 7/20 to a decimal by finding an equivalent fraction with denominator 100: 7/20 = 35/100 = 0.35. Multiplying both numerator and denominator by 5 reaches hundredths. Alternatively, 7 ÷ 20 = 0.35 by long division.

19. A — A pentagonal prism has 15 edges total: 5 edges on the top pentagon base, 5 edges on the bottom pentagon base, and 5 vertical edges connecting corresponding vertices. Euler's formula (V - E + F = 2) confirms: 10 - 15 + 7 = 2 ✓. Counting edges systematically prevents miscounting.

20. D — Probability of blue or green equals their combined sections divided by total: (4 + 2)/12 = 6/12 = 1/2 simplified. When events are mutually exclusive (cannot occur simultaneously), their probabilities are added together. Simplifying gives the probability in lowest terms.

21. B — The pattern multiplies by 3 each time: $2 \times 3 = 6$, $6 \times 3 = 18$, $18 \times 3 = 54$, $54 \times 3 = 162$. This geometric sequence has a common ratio of 3 between consecutive terms. Identifying the multiplicative relationship distinguishes geometric patterns from arithmetic ones.

22. A — Prime factorization expresses a number as a product of prime numbers. For 48: $48 = 2 \times 24 = 2 \times 2 \times 12 = 2 \times 2 \times 2 \times 6 = 2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3$. The other options contain composite numbers (24, 6, 4, 12), not prime factors. Verification: $2^4 \times 3 = 16 \times 3 = 48$ ✓.

23. C — The interior angles of any triangle sum to 180°. With one angle at 90° and another at 35°: 180° - 90° - 35° = 55°. This angle sum property holds for all triangles regardless of type, enabling calculation of unknown angles from known ones.

24. D — Find common denominator (12): $5/6 + 1/4 = 10/12 + 3/12 = 13/12$. Converting 5/6 to twelfths (multiply by 2) and 1/4 to twelfths (multiply by 3). The improper fraction 13/12 represents the correct sum, equal to 1 1/12 as a mixed number.

25. A — Solve the two-step equation: $6y - 11 = 31$ → add 11 to both sides: $6y = 42$ → divide both sides by 6: $y = 7$. Check: $6(7) - 11 = 42 - 11 = 31$ ✓. Two-step equations require systematic application of inverse operations.

26. B — Reading the histogram, the bar for the 60-69 score range reaches a height of 9 students. Histograms display frequency distributions for grouped data, with bar height representing the count within each interval. Identifying specific values requires careful reading of both axes.

27. D — Follow order of operations: exponent first: $5^2 = 25$; then division: $18 \div 3 = 6$; finally add and subtract left to right: $25 + 6 - 4 = 31 - 4 = 27$. BEDMAS dictates this sequence: exponents before division before addition/subtraction.

28. C — Calculate interest first: $I = P \times r \times t = \$300 \times 0.05 \times 4 = \$60$. Then add to original deposit: $\$300 + \$60 = \$360$. The total account balance equals principal plus interest earned. Simple interest grows savings predictably over time.

29. B — The diameter of a circle equals twice the radius: $d = 2r = 2 \times 9 = 18$ 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.

30. A — Multiply price per popcorn by quantity (4p) and multiply price per water by quantity (2w), then add the two products: $4p + 2w$. This expression models total revenue when items have different prices and quantities. Each rate multiplies its corresponding variable before combining.

31. C — The expression 8^3 means 8 multiplied by itself three times: $8 \times 8 \times 8 = 64 \times 8 = 512$. Cubed numbers represent the volume of a cube with that side length. Exponents condense repeated multiplication into a compact form.

32. D — The mode is the value occurring most frequently. In {14, 19, 17, 14, 22, 25}, the value 14 appears twice while all others appear only once. Mode identifies the most common occurrence in a dataset, useful for analyzing repeated measurements.

33. A — A regular octagon has 8 equal sides. Perimeter equals the sum of all sides: $8 \times 7 = 56$ 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.

34. B — Absolute value measures distance from zero on the number line, always positive. Comparing: $|-7| = 7$, $|-9| = 9$, $|6| = 6$, $|3| = 3$. The integer -9 has the greatest absolute value at 9, even though it is the smallest number on the number line.

35. C — Solve: $3x + 9 = 42 \rightarrow$ subtract 9 from both sides: $3x = 33 \rightarrow$ divide both sides by 3: $x = 11$. Check: $3(11) + 9 = 33 + 9 = 42$ ✓. Two-step equation solving applies inverse operations systematically to isolate the variable.

36. A — Order the values: 29, 35, 41, 47, 52. With 5 values (odd count), the median is the middle value at position 3, which is 41. Two values fall below and two above this middle point. Median represents the center of ordered data.

37. D — Calculate students taking the bus: 25 - 15 = 10 students. Find the percentage: $10/25 = 40/100 = 40\%$. Converting to percent requires creating an equivalent fraction with denominator 100, or multiplying the fraction by 100%.

38. B — Calculate 12% tax: $0.12 \times \$80 = \$9.60$. Add tax to original price: $\$80.00 + \$9.60 = \$89.60$. Sales tax calculations require finding the percent of the base price and adding it to determine total cost. This skill supports daily financial decisions.

39. C — When parallel lines are cut by a transversal, alternate exterior angles are equal. The angle of 120° and angle m occupy alternate exterior positions (outside the parallel lines, on opposite sides of the transversal), making $m = 120°$. This property enables calculation of unknown angles.

40. A — The starting amount is 50 liters (constant), and water is added at 15 liters per minute. For m minutes, the added amount is 15m. Total water: 50 + 15m. The constant term represents the initial amount while the variable term represents the rate of change.

41. D — The fraction of students choosing soccer equals soccer students divided by total: 12/30. Simplify by dividing both numerator and denominator by their greatest common factor (6): $12/30 = 2/5$ in simplest form. Reducing fractions supports clearer comparison.

42. B — The numerator changes from 7 to 21, which is multiplying by 3 ($7 \times 3 = 21$). Apply the same factor to the denominator: $12 \times 3 = 36$. Therefore, $7/12 = 21/36$. Equivalent fractions are created by multiplying both parts by the same value, preserving the ratio.

43. C — Area of a trapezoid = (1/2) × (sum of parallel sides) × height = (1/2) × (10 + 14) × 6 = (1/2) × 24 × 6 = 72 cm^2. The trapezoid formula averages the parallel sides and multiplies by the perpendicular height. The height must be perpendicular to the parallel sides.

44. D — Calculate slices eaten: Anna ate (1/4) × 12 = 3 slices; Ben ate (1/3) × 12 = 4 slices. Total eaten: 3 + 4 = 7 slices. Slices remaining: 12 - 7 = 5 slices. Multi-step fraction problems require finding parts of a whole, then combining and subtracting.