PRACTICE EXAM 12: 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 7 in the number 3,475,608?

A) 7,000

B) 7

C) 700

D) 70,000

2. (Algebra) A pattern follows the rule "multiply by 2 and then add 1." If the first term is 3, what is the third term?

A) 7

B) 11

C) 15

D) 31

3. (Spatial Sense) How many edges does a triangular pyramid (tetrahedron) have?

A) 4

B) 6

C) 8

D) 12

4. (Number Sense) Calculate: 17.83 - 9.46

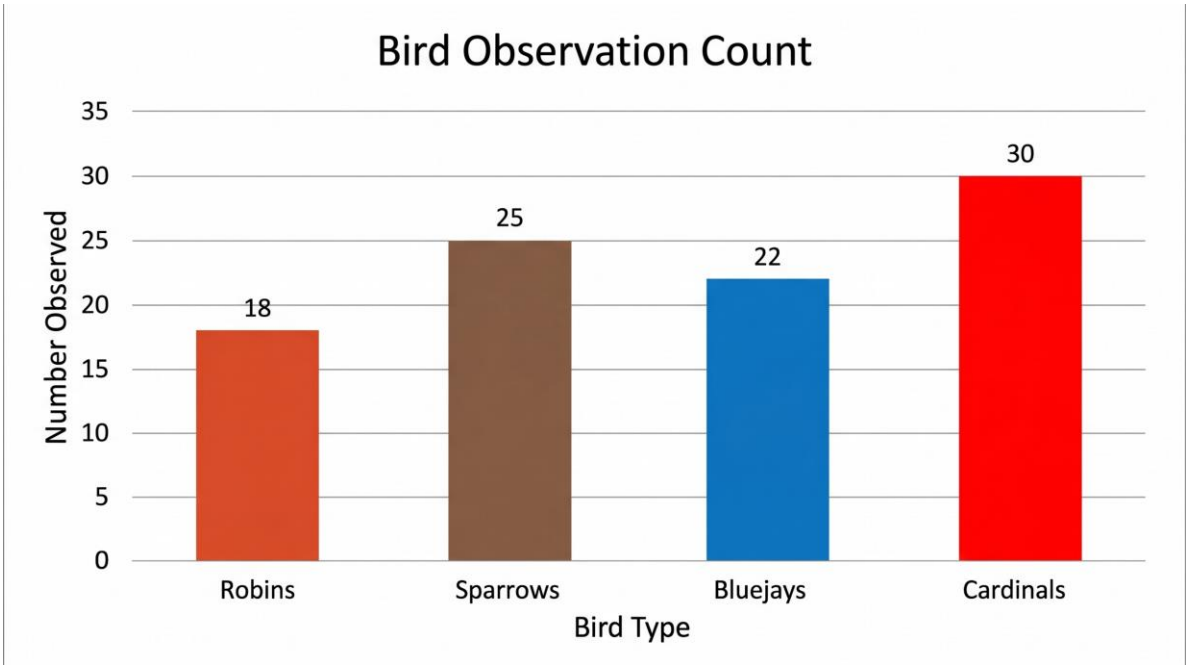
A) 8.37

B) 8.47

C) 7.37

D) 8.27

5. (Data Literacy) The bar graph shows the number of different bird species observed in a park.



How many sparrows were observed?

A) 18

B) 22

C) 25

D) 30

6. (Number Sense) Which fraction is greater than 5/9?

A) 1/2

B) 2/3

C) 4/9

D) 1/3

7. (Financial Literacy) A pair of shoes costs $80. The store offers a 15% discount. What is the discount amount?

A) $15

B) $8

C) $68

D) $12

8. (Algebra) Solve for n: $n \times 9 = 72$

A) 8

B) 9

C) 7

D) 11

9. (Spatial Sense) What is the sum of the interior angles of any quadrilateral?

A) 90°

B) 180°

C) 360°

D) 540°

10. (Number Sense) Convert 3.6 liters to milliliters.

A) 36 mL

B) 360 mL

C) 3.6 mL

D) 3,600 mL

11. (Algebra) Which expression represents "six times the sum of a number n and four"?

A) 6n + 4

B) $6(n + 4)$

C) $6n \times 4$

D) $6 + 4n$

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Calculate: 7×86

A) 602

B) 562

C) 692

D) 642

13. (Spatial Sense) A rectangle has a length of 15 cm and a width of 8 cm. What is its perimeter?

A) 23 cm

B) 120 cm

C) 46 cm

D) 56 cm

14. (Data Literacy) Six athletes recorded their long jump distances in centimeters: 285, 320, 305, 285, 340, 310. What is the mode?

A) 305

B) 285

C) 320

D) 310

15. (Number Sense) Calculate: $756 \div 9$

A) 74

B) 80

C) 82

D) 84

16. (Algebra) Evaluate the expression 4n + 17 when n = 6.

A) 41

B) 44

C) 47

D) 35

17. (Financial Literacy) A book costs $24 before tax. The sales tax is 13%. What is the total cost including tax?

A) $24.13

B) $26.50

C) $27.12

D) $30.24

18. (Number Sense) Which fraction is equivalent to 18/30?

A) 1/2

B) 4/5

C) 2/3

D) 3/5

19. (Spatial Sense) How many lines of symmetry does a square have?

A) 4

B) 2

C) 6

D) 8

20. (Data Literacy) A jar contains 50 jellybeans: 15 cherry, 10 lemon, 12 grape, and 13 orange. What is the probability of randomly choosing a lemon jellybean?

A) 15/50

B) 1/5

C) 12/50

D) 13/50

21. (Algebra) What is the next term in this sequence: 100, 92, 84, 76, ___?

A) 84

B) 70

C) 68

D) 72

22. (Number Sense) Convert 8.5 meters to centimeters.

A) 850 cm

B) 85 cm

C) 8,500 cm

D) 0.085 cm

STAGE 3 (Questions 23-33) — 30 minutes

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

A) (-1, 7)

B) (5, 7)

C) (-1, 3)

D) (5, 3)

24. (Number Sense) Calculate: 5/8 - 1/4

A) 4/8

B) 3/8

C) 1/2

D) 2/8

25. (Algebra) Solve for x: 7x - 4 = 38

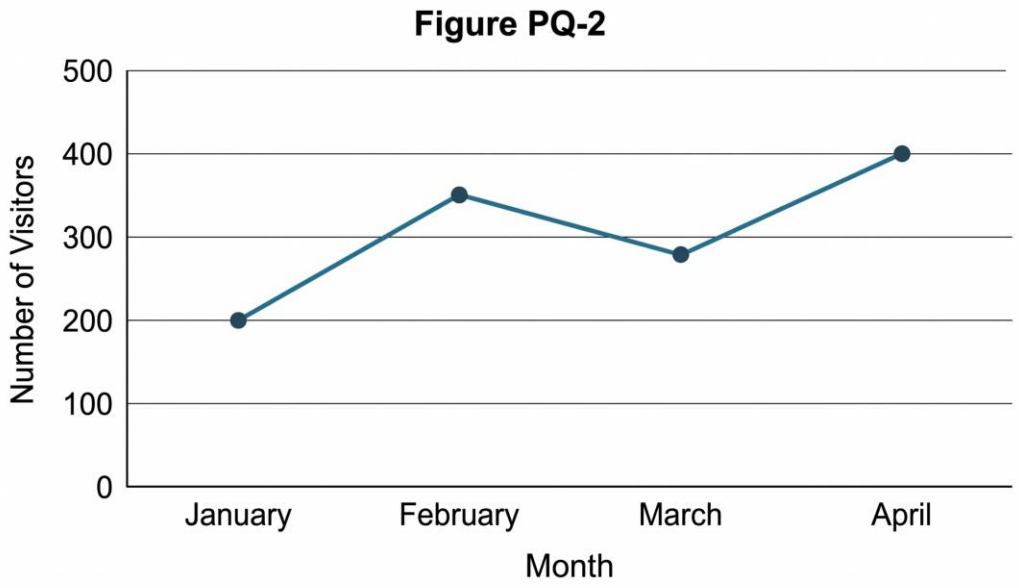
A) 4

B) 5

C) 6

D) 7

26. (Data Literacy) The line graph shows monthly visitors to a museum over four months.



During which month was attendance the lowest?

A) January

B) February

C) March

D) April

27. (Number Sense) What is 0.075 written as a fraction in simplest form?

A) 75/100

B) 3/40

C) 7/100

D) 15/200

28. (Financial Literacy) Sara saves $25 each week. How many weeks will it take her to save $400?

A) 12

B) 14

C) 15

D) 16

29. (Spatial Sense) A triangle has one angle measuring 35° and a right angle. What is the measure of the third angle?

A) 65°

B) 45°

C) 55°

D) 35°

30. (Algebra) In the expression 7t + 12, where t represents tickets sold, what does the coefficient 7 most likely represent?

A) The price per ticket

B) The number of tickets sold

C) A fixed bonus or fee

D) The total revenue amount

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

A) 17

B) 18

C) 13

D) 15

32. (Data Literacy) Six measurements were recorded: 45, 52, 48, 55, 50, 58. What is the range?

A) 45

B) 10

C) 13

D) 58

33. (Spatial Sense) A regular octagon has a perimeter of 56 cm. What is the length of each side?

A) 8 cm

B) 7 cm

C) 6 cm

D) 9 cm

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) Which list shows these integers ordered from least to greatest? -3, 5, -8, 0, 2

A) -8, -3, 0, 2, 5

B) -3, -8, 0, 2, 5

C) 5, 2, 0, -3, -8

D) 0, -3, -8, 2, 5

35. (Algebra) If 6m + 7 = 43, what is the value of m?

A) 4

B) 5

C) 7

D) 6

36. (Data Literacy) A spinner has 16 equal sections: 6 red, 4 blue, 4 green, and 2 yellow. What is the probability of NOT spinning red?

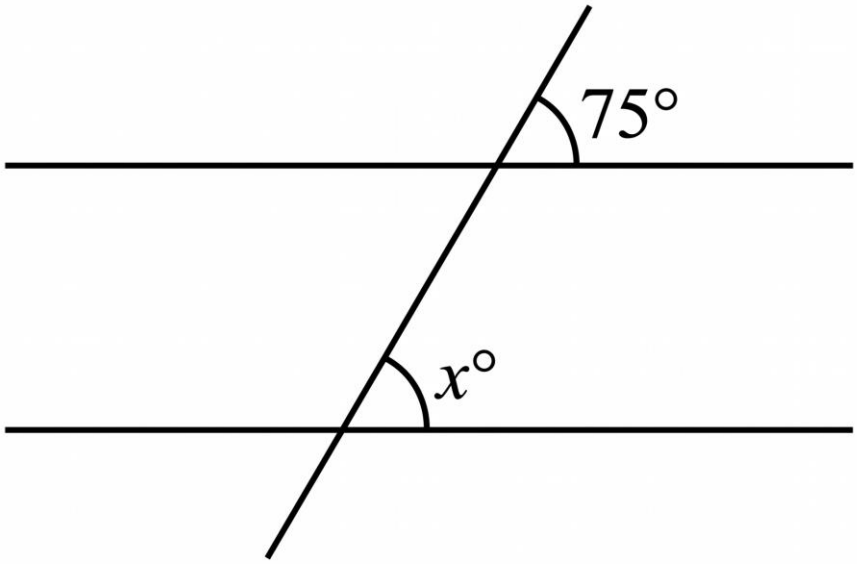
A) 6/16

B) 5/8

C) 4/16

D) 1/2

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



What is the measure of angle x (the corresponding angle)?

A) 75°

B) 105°

C) 90°

D) 65°

38. (Number Sense) What is 2/3 of 45?

A) 15

B) 60

C) 22.5

D) 30

39. (Financial Literacy) Ahmed invests $250 in a savings account at 4% simple interest per year. How much interest will he earn after 5 years?

A) $20

B) $40

C) $50

D) $60

40. (Algebra) A rental car company charges $40 per day plus $0.15 per kilometer driven. Which expression represents the cost for d days and k kilometers?

A) 40 + 0.15dk

B) 40d + 0.15k

C) 40(d + k)

D) 0.15(d + k) + 40

41. (Data Literacy) Five students' heights in centimeters were recorded: 145, 152, 148, 150, 155. What is the mean height?

A) 150 cm

B) 148 cm

C) 152 cm

D) 145 cm

42. (Data Literacy) Find the median of this data set: 22, 38, 18, 27, 31, 25, 29.

A) 25

B) 29

C) 27

D) 31

43. (Spatial Sense) A cube has a volume of 125 cm^3. What is the length of one edge?

A) 25 cm

B) 12 cm

C) 4 cm

D) 5 cm

44. (Number Sense) A recipe needs 3/4 cup of milk. How much milk is needed for 2/3 of the recipe?

A) 5/12 cup

B) 1/2 cup

C) 9/12 cup

D) 1/3 cup

Practice Exam 12: Answer Key and Explanations

1. D — The digit 7 occupies the ten-thousands place in 3,475,608. Reading positions from right to left (ones, tens, hundreds, thousands, ten-thousands), the digit 7 sits in the fifth position with a value of 7 × 10,000 = 70,000. Place value identification is fundamental for reading, writing, and comparing large numbers.

2. C — Starting at 3 and applying "multiply by 2 then add 1" each time: term 1 = 3, term 2 = (3 × 2) + 1 = 7, term 3 = (7 × 2) + 1 = 15. Compound pattern rules require applying both operations in sequence to each new term. Tracking each step carefully prevents errors.

3. B — A tetrahedron (triangular pyramid) has 6 edges: 3 edges form the triangular base, and 3 additional edges connect each base vertex to the apex. Euler's formula (V - E + F = 2) confirms this: 4 - 6 + 4 = 2. Counting edges systematically prevents miscounting in 3D shapes.

4. A — Align decimal points and subtract: 17.83 - 9.46 = 8.37. Borrowing is required in both the hundredths place (3 from 13 becomes 13-6=7) and the tenths place (7 from 17 becomes 17-4=13). Proper decimal alignment ensures accurate operations.

5. C — Reading the bar graph, the sparrows bar reaches a height of 25 birds. Bar graphs allow direct reading of values by matching the top of each bar to the corresponding y-axis value. Identifying specific categorical data points supports interpretation of survey results.

6. B — Convert fractions to decimals for comparison: 5/9 ≈ 0.556, 1/2 = 0.5, 2/3 ≈ 0.667, 4/9 ≈ 0.444, 1/3 ≈ 0.333. Only 2/3 exceeds 5/9. Converting fractions to decimals provides a straightforward comparison method when denominators differ.

7. D — Calculate 15% of $80: 0.15 × $80 = $12. Alternatively, find 10% ($8) plus 5% ($4) to get $12. The discount amount represents the reduction in price, not the final sale price. This distinction supports informed consumer decisions.

8. A — Solve by dividing both sides by 9: n × 9 = 72 → n = 72 ÷ 9 = 8. Division is the inverse operation of multiplication, used to isolate the variable. Check: 8 × 9 = 72 ✓. One-step equations build foundational algebraic skills.

9. C — The interior angles of any quadrilateral sum to 360°. This property applies to all four-sided polygons regardless of type (square, rectangle, parallelogram, trapezoid, etc.). The formula (n - 2) × 180° gives this: (4 - 2) × 180° = 360°. Understanding angle sums supports geometric problem-solving.

10. D — Convert liters to milliliters by multiplying by 1,000: 3.6 L × 1,000 = 3,600 mL. The metric system uses base-10 conversions, with 1 L equal to 1,000 mL. Moving from larger to smaller units requires multiplication, producing a larger numerical value.

11. B — "The sum of n and 4" translates to (n + 4), and "six times" means multiply by 6, giving 6(n + 4). The parentheses ensure both n and 4 are multiplied by 6, not just n. Distribution would give 6n + 24, but the original form 6(n + 4) correctly represents the verbal expression.

12. A — Multiply 7 × 86: using the distributive property, 7 × 86 = 7 × (80 + 6) = 560 + 42 = 602. Breaking large multiplications into manageable parts using place value reduces calculation errors. Verification: 602 ÷ 7 = 86 ✓.

13. C — Perimeter of a rectangle = 2(length + width) = 2(15 + 8) = 2 × 23 = 46 cm. Perimeter measures the total distance around a shape, calculated by adding all four sides or using the formula for rectangles. This calculation supports practical applications like fencing or framing.

14. B — The mode is the value occurring most frequently. In the dataset {285, 320, 305, 285, 340, 310}, the value 285 appears twice while all other values appear only once. Mode identifies the most common occurrence, useful for analyzing repeated measurements.

15. D — Divide 756 by 9: breaking this down, 720 ÷ 9 = 80, plus 36 ÷ 9 = 4, giving 80 + 4 = 84. Verification: 9 × 84 = 756 ✓. Division efficiency improves with familiarity with multiplication facts and partial quotient strategies.

16. A — Substitute n = 6 into the expression 4n + 17: 4(6) + 17 = 24 + 17 = 41. Order of operations requires performing multiplication before addition per BEDMAS. Evaluating algebraic expressions connects symbolic algebra to numerical results.

17. C — Calculate 13% tax: 0.13 × $24 = $3.12. Add tax to original price: $24.00 + $3.12 = $27.12. Sales tax calculations require finding the percent of the base price and adding it to determine total cost. This skill supports daily financial decisions.

18. D — Simplify 18/30 by dividing both numerator and denominator by their greatest common factor (6): 18/30 = (18÷6)/(30÷6) = 3/5. Equivalent fractions represent the same value despite different appearance. Reducing to simplest form supports easier comparison and operations.

19. A — A square has 4 lines of symmetry: two diagonal lines and two lines through the midpoints of opposite sides. Each line divides the square into two mirror-image halves. Regular polygons have the same number of lines of symmetry as their number of sides.

20. B — Probability equals favorable outcomes divided by total outcomes: P(lemon) = 10 lemon / 50 total = 10/50 = 1/5 in simplest form. Reducing fractions to lowest terms makes probability easier to interpret. The probability of choosing lemon is 1 out of 5.

21. C — The pattern subtracts 8 each time: 100 - 8 = 92, 92 - 8 = 84, 84 - 8 = 76, 76 - 8 = 68. This arithmetic sequence has a constant difference of -8. Identifying the common difference enables prediction of subsequent terms.

22. A — Convert meters to centimeters by multiplying by 100: 8.5 m × 100 = 850 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.

23. D — Apply translation to vertex C(2, 5): 3 units right adds 3 to x-coordinate (2 + 3 = 5); 2 units down subtracts 2 from y-coordinate (5 - 2 = 3). New coordinates: (5, 3). Translations slide shapes without rotating or reflecting them, preserving size and orientation.

24. B — Find common denominator (8): 5/8 - 1/4 = 5/8 - 2/8 = 3/8. Converting 1/4 to eighths by multiplying numerator and denominator by 2. Like denominators are required for subtracting fractions so numerators represent parts of the same-sized whole.

25. C — Solve the two-step equation: 7x - 4 = 38 → add 4 to both sides: 7x = 42 → divide both sides by 7: x = 6. Check: 7(6) - 4 = 42 - 4 = 38 ✓. Two-step equations require systematic application of inverse operations.

26. A — Reading the line graph, January reaches the lowest point at 200 visitors, below February (350), March (280), and April (400). Identifying minimum values on line graphs requires comparing all plotted points to find the lowest. Line graphs effectively show changes over time.

27. B — Convert 0.075 to a fraction: 0.075 = 75/1000. Simplify by dividing both numerator and denominator by their greatest common factor (25): 75/1000 = 3/40. Decimal-to-fraction conversion requires placing the decimal over the appropriate power of 10, then reducing.

28. D — Divide the savings goal by the weekly amount: $400 ÷ $25 = 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 angles of a triangle sum to 180°. With one angle at 35° and another at 90°: 180° - 35° - 90° = 55°. This angle sum property holds for all triangles regardless of type, enabling calculation of unknown angles from known ones.

30. A — In linear expressions like 7t + 12 modeling ticket sales, the coefficient (7) multiplies the variable representing the per-unit rate—the price per ticket. The constant (12) represents a fixed amount independent of ticket count. Recognizing expression components helps interpret real-world models.

31. D — Follow order of operations: exponent first: $5^2 = 25$; then multiplication: $3 \times 4 = 12$; finally add and subtract left to right: 25 - 12 + 2 = 13 + 2 = 15. BEDMAS dictates this sequence: exponents before multiplication before addition/subtraction.

32. C — Range equals maximum minus minimum: maximum = 58, minimum = 45, so range = 58 - 45 = 13. 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 — A regular octagon has 8 equal sides. Divide perimeter by number of sides to find each side: 56 cm ÷ 8 = 7 cm. Regular polygons have all sides equal, so dividing the perimeter by the side count gives each side's length. This reverses the perimeter calculation.

34. A — Order from least to greatest requires placing the most negative number first, then increasing: -8 (most negative), -3, 0, 2, 5 (greatest). With negative numbers, the larger the absolute value, the smaller the number. Ordering integers applies to temperature, elevation, and financial contexts.

35. D — Solve: 6m + 7 = 43 → subtract 7 from both sides: 6m = 36 → divide both sides by 6: m = 6. Check: 6(6) + 7 = 36 + 7 = 43 ✓. Two-step equation solving applies inverse operations systematically to isolate the variable.

36. B — The probability of not red equals total non-red sections divided by total: (4 + 4 + 2)/16 = 10/16 = 5/8 in simplest form. Complementary probabilities (red vs. not red) always sum to 1: 6/16 + 10/16 = 16/16 = 1. Simplifying fractions provides cleaner probability expressions.

37. A — When parallel lines are cut by a transversal, corresponding angles are equal. The angle of 75° and angle x occupy corresponding positions (both upper-right at their intersection points), making x = 75°. This property enables calculation of unknown angles in parallel line configurations.

38. D — Calculate 2/3 of 45: (2/3) × 45 = (2 × 45)/3 = 90/3 = 30. Alternatively, find 1/3 of 45 (which is 15), then multiply by 2: 15 × 2 = 30. Finding fractional parts of whole numbers connects fractions to multiplication and division operations.

39. C — Use the simple interest formula: $I = P \times r \times t = \$250 \times 0.04 \times 5 = \$50$. Principal ($250) times rate (4% = 0.04) times time (5 years) gives interest earned. Simple interest calculates earnings only on the original principal, fundamental for understanding savings.

40. B — The variable cost is $40 per day times d days (40d) plus $0.15 per kilometer times k kilometers (0.15k). Total cost combines both rates: 40d + 0.15k. Each rate multiplies its corresponding variable, then the products are added to find the total cost.

41. A — Calculate mean by summing values and dividing by count: (145 + 152 + 148 + 150 + 155) ÷ 5 = 750 ÷ 5 = 150 cm. 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. C — Order the values: 18, 22, 25, 27, 29, 31, 38. With 7 values (odd count), the median is the middle value at position 4, which is 27. Three values fall below and three above this middle point. Median represents the center of ordered data.

43. D — Volume of a cube equals edge length cubed: $V = s^3 = 125$ cm³. Find the edge by taking the cube root: $\sqrt[3]{125} = 5$ cm (since 5 × 5 × 5 = 125). Verification: $5^3 = 125$ ✓. Cube root operations reverse cubing, finding the original edge from a known volume.

44. B — Calculate 2/3 of 3/4 by multiplying the fractions: $(3/4) \times (2/3) = (3 \times 2)/(4 \times 3) = 6/12 = 1/2$ cup in simplest form. When multiplying fractions, multiply numerators together and denominators together, then simplify. Scaling recipes requires proportional adjustment of all ingredients.