PRACTICE EXAM 18: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the value of the digit 9 in the number 9,372,584?

A) 90,000

B) 900,000

C) 900

D) 9,000,000

2. (Algebra) In a pattern, each term is found by taking the previous term, multiplying by 2, and subtracting 3. If the first term is 5, what is the 3rd term?

A) 7

B) 11

C) 13

D) 17

3. (Spatial Sense) An equilateral triangle has a perimeter of 27 cm. What is the length of each side?

A) 9 cm

B) 8 cm

C) 7 cm

D) 13.5 cm

4. (Number Sense) Calculate: 8.4 × 1.5

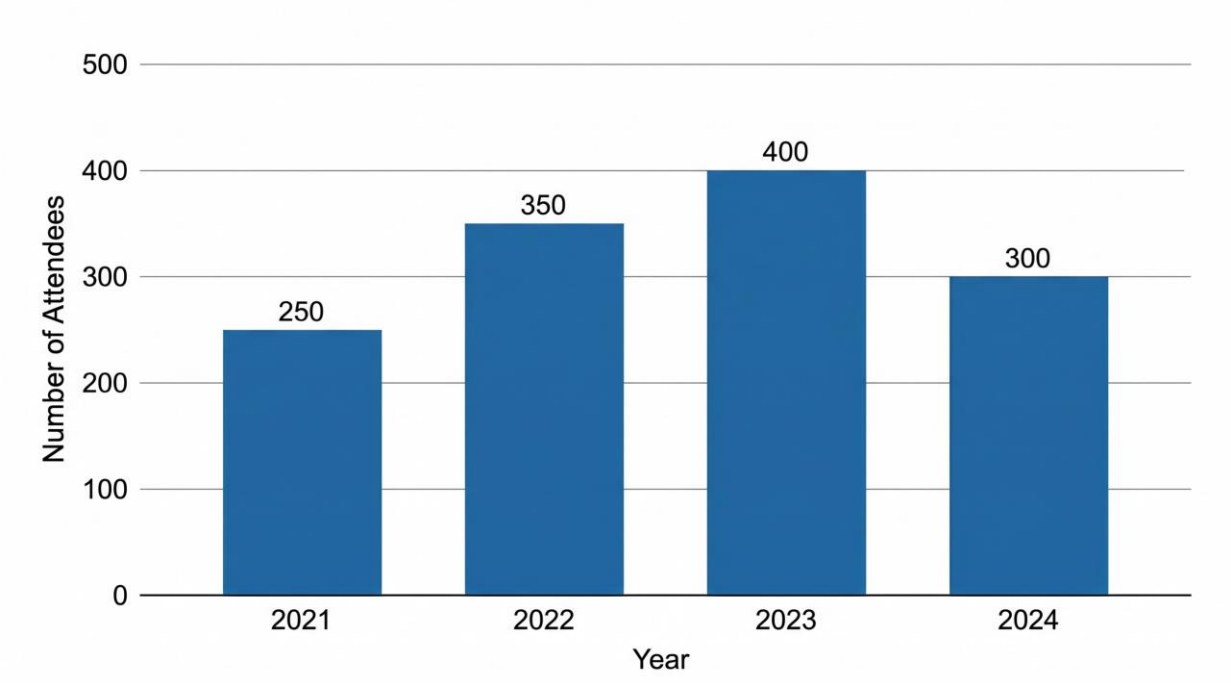
A) 9.6

B) 11.6

C) 12.6

D) 13.6

5. (Data Literacy) The bar graph shows the number of attendees at a community event over four years.



By how many attendees did the event grow from 2021 to 2023?

A) 100

B) 150

C) 200

D) 50

6. (Number Sense) Which expression has a value greater than 1?

A) 0.5 + 0.4

B) 3/4 - 1/8

C) 2/3 × 1/2

D) 0.8 + 0.7

7. (Financial Literacy) Mia's monthly budget is $300. She spends $120 on food, $80 on transportation, and saves the rest. How much does she save each month?

A) $100

B) $80

C) $120

D) $200

8. (Algebra) Solve for x: 2x + 7 = 5x - 8

A) 3

B) 4

C) 5

D) 6

9. (Spatial Sense) A triangle has angles in the ratio 1:2:3. What is the measure of the largest angle?

A) 60°

B) 90°

C) 120°

D) 30°

10. (Number Sense) What is the greatest common factor (GCF) of 36 and 54?

A) 18

B) 12

C) 9

D) 6

11. (Algebra) A pattern is described by the rule: term = 3n + 5, where n is the term number. What is the 6th term?

A) 18

B) 25

C) 20

D) 23

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Calculate: $7^2 - 2^3 + 4 \times 5$

A) 41

B) 45

C) 61

D) 55

13. (Spatial Sense) Point M is at coordinates (5, -2). When M is reflected across the y-axis, what are the new coordinates?

A) (-5, -2)

B) (5, 2)

C) (-5, 2)

D) (2, 5)

14. (Data Literacy) A class has 24 students. The ratio of boys to girls is 5:7. How many boys are in the class?

A) 12

B) 14

C) 10

D) 8

15. (Number Sense) What is the value of $4^3 \times 5$?

A) 256

B) 320

C) 60

D) 64

16. (Algebra) Evaluate the expression 3a + 2b - 5 when a = 4 and b = 7.

A) 14

B) 17

C) 25

D) 21

17. (Financial Literacy) A bicycle priced at $250 is on sale for 20% off. Sales tax of 5% is then applied to the sale price. What is the final price?

A) $190

B) $215

C) $210

D) $245

18. (Number Sense) A rectangular pool is 9 m by 6 m. A path 1 m wide surrounds the pool on all sides. What is the area of the path alone?

A) 34 m²

B) 22 m²

C) 30 m²

D) 88 m²

19. (Spatial Sense) What is the measure of each interior angle of a regular hexagon?

A) 60°

B) 120°

C) 90°

D) 150°

20. (Data Literacy) The mean of 6 numbers is 25. When a 7th number is added, the mean becomes 28. What is the 7th number?

A) 28

B) 30

C) 36

D) 46

21. (Algebra) Which expression is equivalent to $5x + 12$?

A) $5(x + 12)$

B) $7x - 2x + 8$

C) $3x + 4 + 2x + 8$

D) $5x + 4 + 6$

22. (Number Sense) Which fraction is equivalent to the decimal 0.375?

A) 3/8

B) 5/12

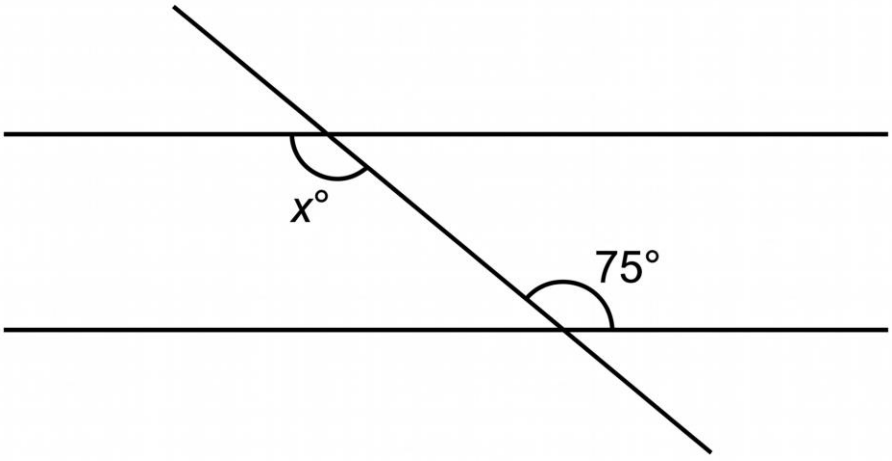
C) 1/3

D) 2/5

STAGE 3 (Questions 23-33) — 30 minutes

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

[Figure PQ-2]



These two angles are co-interior (same-side interior) angles.

What is the value of x?

A) 75°

B) 90°

C) 25°

D) 105°

24. (Data Literacy) In a class, 18 students like chocolate ice cream, 12 like vanilla, and 6 like strawberry. What is the ratio of vanilla lovers to total students, in simplest form?

A) 12:36

B) 1:3

C) 1:6

D) 2:5

25. (Algebra) Solve for y: (y + 8) ÷ 3 = 11

A) 19

B) 21

C) 25

D) 33

26. (Data Literacy) A box-and-whisker plot shows test scores. The lower quartile is 70, the median is 80, the upper quartile is 88, and the maximum is 95. What percent of students scored between 70 and 88?

A) 50%

B) 25%

C) 75%

D) 100%

27. (Number Sense) What is 5/12 of 84?

A) 30

B) 35

C) 42

D) 28

28. (Financial Literacy) Aaron has $250 in savings. He earns $25 per week from a part-time job and spends $10 per week. After how many weeks will he have $400?

A) 6 weeks

B) 8 weeks

C) 12 weeks

D) 10 weeks

29. (Spatial Sense) A cylinder has a circular base with a radius of 5 cm. What is the area of the base? (Use $\pi \approx 3.14$)

A) 78.5 cm^2

B) 31.4 cm^2

C) 25 cm^2

D) 15.7 cm^2

30. (Algebra) A taxi service charges a flat rate of $5 plus $2.25 per kilometer. A customer paid $25.25 for one trip. How many kilometers were driven?

A) 7 km

B) 8 km

C) 9 km

D) 11 km

31. (Number Sense) A garden hose fills a pool at 12 liters per minute. The pool has a capacity of 1,440 liters. How long does it take to fill the pool?

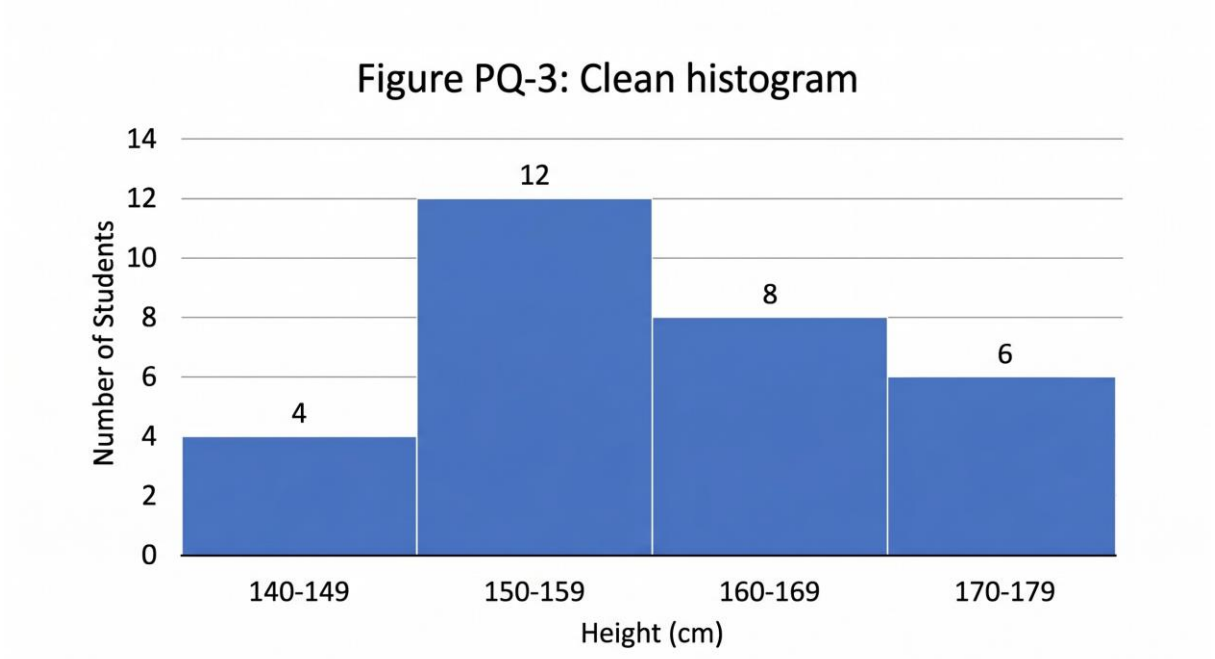
A) 12 hours

B) 12 minutes

C) 0.5 hours

D) 2 hours

32. (Data Literacy) The histogram shows the heights of students in a class.



How many students are taller than 159 cm?

A) 12

B) 14

C) 8

D) 6

33. (Spatial Sense) A rectangular prism has a base of 6 cm by 4 cm and a total volume of 96 cm^3. What is its height?

A) 6 cm

B) 8 cm

C) 4 cm

D) 12 cm

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) What is the simplified value of $(2^3 \times 3^2) \div 6$?

A) 12

B) 24

C) 36

D) 18

35. (Algebra) Lily is twice as old as her brother Sam. In 4 years, the sum of their ages will be 32. How old is Lily now?

A) 8

B) 10

C) 12

D) 16

36. (Data Literacy) A spinner is divided into 5 unequal sections: red 36°, blue 72°, green 108°, yellow 90°, and purple 54°. What is the probability of spinning blue?

A) 72/180

B) 1/5

C) 1/4

D) 72/100

37. (Spatial Sense) A triangle has sides measuring 8 cm, 15 cm, and 17 cm. What type of triangle is it, based on its angles?

A) Right

B) Acute

C) Obtuse

D) Equilateral

38. (Number Sense) What is the result of -7 + 12 - 5?

A) -2

B) 24

C) 0

D) -24

39. (Financial Literacy) Emma deposits $600 in a savings account that earns 3% simple interest annually. How much money will be in the account after 5 years?

A) $90

B) $603

C) $625

D) $690

40. (Algebra) Which equation has x = 6 as a solution?

A) 2x - 5 = 7

B) 3x + 4 = 16

C) 4x = 30

D) x + 8 = 16

41. (Data Literacy) A coach recorded basketball points scored by a player in 8 games: 12, 18, 15, 22, 18, 20, 18, 25. Which measure of central tendency best represents the typical score, and what is its value?

A) Mean of 18.5

B) Mode of 18

C) Median of 20

D) Range of 13

42. (Number Sense) Mark spent 2/5 of his money on a gift and 1/3 of his money on lunch. What fraction of his money does he have left?

A) 6/15

B) 1/3

C) 4/15

D) 2/15

43. (Spatial Sense) The figure shows triangle ABC plotted on a coordinate plane.

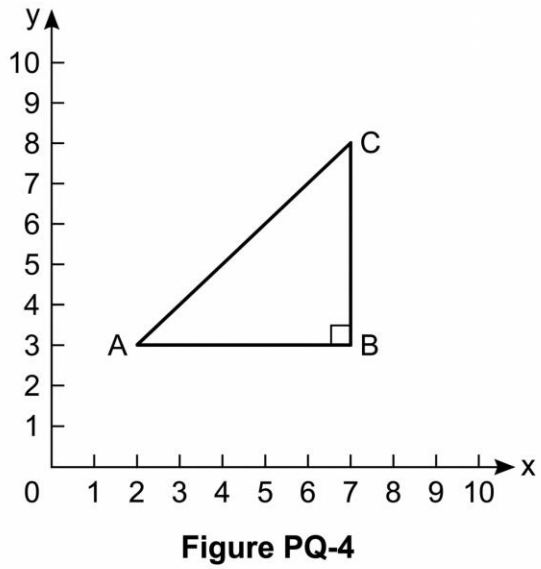


Figure PQ-4

What is the area of triangle ABC?

A) 25 sq units

B) 10 sq units

C) 15 sq units

D) 12.5 sq units

44. (Number Sense) Sarah has 3/4 of a pizza left. She gives 1/3 of what she has to a friend. What fraction of the original pizza does she give away?

A) 1/12

B) 1/4

C) 7/12

D) 5/12

Practice Exam 18: Answer Key and Explanations

1. D — The digit 9 occupies the millions place in 9,372,584. Reading positions from right to left (ones, tens, hundreds, thousands, ten-thousands, hundred-thousands, millions), the digit 9 sits in the seventh position with a value of 9 × 1,000,000 = 9,000,000. Place value identification is fundamental for reading large numbers.

2. B — Starting at 5 and applying "multiply by 2, then subtract 3" each time: term 1 = 5, term 2 = (5 × 2) - 3 = 7, term 3 = (7 × 2) - 3 = 11. Compound pattern rules require applying both operations in sequence to each new term. Tracking each step carefully prevents errors.

3. A — Divide perimeter by number of sides: 27 cm ÷ 3 = 9 cm. An equilateral triangle has three equal sides, so dividing total perimeter by 3 yields the length of each side. This reverses the standard perimeter calculation for regular polygons.

4. C — Multiply 8.4 × 1.5: Think of 8.4 × 1.5 as 8.4 × 1 + 8.4 × 0.5 = 8.4 + 4.2 = 12.6. Alternatively, 84 × 15 = 1,260, then place decimal two positions from right (since both factors have one decimal place): 12.60. Decimal multiplication requires careful decimal point placement.

5. B — Subtract 2021's attendance from 2023's: 400 - 250 = 150 attendees. Reading specific values from a bar graph and finding the difference between two categories measures growth or change over time. Bar graphs make these comparisons direct and visual.

6. D — Evaluate each option: 0.5 + 0.4 = 0.9, 3/4 - 1/8 = 5/8 = 0.625, 2/3 × 1/2 = 1/3 ≈ 0.333, 0.8 + 0.7 = 1.5. Only 0.8 + 0.7 exceeds 1. Comparing expressions requires evaluating each completely before comparing to the target value.

7. A — Subtract total spending from the budget: $300 - $120 - $80 = $100. The remaining amount after expenses goes to savings. Budget calculations support financial planning by tracking income, expenses, and savings systematically.

8. C — Solve by combining like terms: $2x + 7 = 5x - 8 \rightarrow 7 + 8 = 5x - 2x \rightarrow 15 = 3x \rightarrow x = 5$. Variables on both sides require moving variables to one side and constants to the other. Check: $2(5) + 7 = 17$ and $5(5) - 8 = 17$ ✓.

9. B — The ratio 1:2:3 represents $1 + 2 + 3 = 6$ total parts. Divide 180° by 6: $180 \div 6 = 30°$ per part. The largest angle is 3 parts: $3 \times 30 = 90°$. Ratios proportionally divide a whole based on the given relationship.

10. A — Find common factors of 36 and 54. Prime factorizations: $36 = 2^2 \times 3^2$ and $54 = 2 \times 3^3$. GCF takes the lowest power of each common prime: $2^1 \times 3^2 = 2 \times 9 = 18$. Verification: $36 \div 18 = 2$ and $54 \div 18 = 3$ ✓.

11. D — Substitute $n = 6$ into the formula: $3(6) + 5 = 18 + 5 = 23$. Term formulas like $3n + 5$ give a direct calculation for any term position without listing previous terms. Order of operations requires multiplication before addition.

12. C — Apply order of operations: exponents first: $7^2 = 49$ and $2^3 = 8$; then multiplication: $4 \times 5 = 20$; finally subtract and add left to right: $49 - 8 + 20 = 41 + 20 = 61$. BEDMAS ensures consistent evaluation across multiple operations.

13. A — Reflection across the y-axis changes the sign of the x-coordinate while y remains unchanged: $(x, y) \rightarrow (-x, y)$. Point M at (5, -2) reflects to (-5, -2). The y-axis acts as a vertical mirror, flipping points horizontally while maintaining vertical position.

14. C — The ratio 5:7 represents $5 + 7 = 12$ total parts. Divide total students by parts: $24 \div 12 = 2$ students per part. Boys account for 5 parts: $5 \times 2 = 10$ boys. Ratios proportionally divide a whole into specified groups based on the given relationship.

15. B — Calculate 4^3 first: $4 \times 4 \times 4 = 64$. Then multiply by 5: $64 \times 5 = 320$. Order of operations requires evaluating exponents before multiplication. Cubed numbers represent the volume of a cube with that side length.

16. D — Substitute $a = 4$ and $b = 7$: $3(4) + 2(7) - 5 = 12 + 14 - 5 = 26 - 5 = 21$. Multiple-variable expressions require careful substitution of each value before applying order of operations. Evaluating expressions connects symbolic algebra to numerical results.

17. C — Calculate the discount: 20% of $250 = $0.20 \times $250 = $50. Sale price: $250 - $50 = $200. Apply tax: 5% of $200 = $0.05 \times $200 = $10. Final: $200 + $10 = $210. Sequential calculations require completing each step before the next.

18. A — Calculate the area of the outer rectangle (pool plus path): $(9 + 2) \times (6 + 2) = 11 \times 8 = 88$ m². The path adds 1 m on each side, so dimensions increase by 2 m. Pool area: $9 \times 6 = 54$ m². Path area: $88 - 54 = 34$ m².

19. B — The interior angle sum of a polygon is (n - 2) × 180°. For a hexagon: (6 - 2) × 180° = 720°. Each angle in a regular hexagon: 720 ÷ 6 = 120°. Regular polygons have equal interior angles found by dividing the total sum by the number of angles.

20. D — Calculate the original sum: 6 × 25 = 150. Calculate the new sum needed: 7 × 28 = 196. The seventh number equals the difference: 196 - 150 = 46. Working backward from mean values requires applying the relationship: sum = mean × count.

21. C — Combine like terms in option C: 3x + 4 + 2x + 8 = (3x + 2x) + (4 + 8) = 5x + 12. The other options evaluate differently: 5(x + 12) = 5x + 60; 7x - 2x + 8 = 5x + 8; 5x + 4 + 6 = 5x + 10. Like terms have the same variable and exponent.

22. A — Convert 0.375 to a fraction: 0.375 = 375/1000. Simplify by dividing both by 125: 375/1000 = 3/8. Verification: 3 ÷ 8 = 0.375 ✓. Decimal-to-fraction conversion requires placing the decimal over the appropriate power of 10, then reducing.

23. D — Co-interior angles (also called same-side interior angles) formed by parallel lines and a transversal are supplementary, summing to 180°. So: x + 75 = 180 → x = 105°. This property distinguishes co-interior angles from alternate interior or corresponding angles, which are equal.

24. B — Calculate total students: 18 + 12 + 6 = 36. The ratio of vanilla lovers to total is 12:36. Simplify by dividing both terms by 12: 12:36 = 1:3. Ratios in simplest form use the greatest common factor to reduce, similar to fractions.

25. C — Multiply both sides by 3 first: (y + 8) ÷ 3 = 11 → y + 8 = 33. Then subtract 8: y = 25. Check: (25 + 8) ÷ 3 = 33 ÷ 3 = 11 ✓. Equations with parentheses require eliminating the grouping before isolating the variable.

26. A — In a box-and-whisker plot, the box itself (between Q1 and Q3) always contains the middle 50% of the data. The range from lower quartile (70) to upper quartile (88) defines the interquartile range, which spans exactly half of all data points by definition.

27. B — Calculate 5/12 of 84: (5/12) × 84 = (5 × 84)/12 = 420/12 = 35. Alternatively, find 1/12 of 84 (which is 7), then multiply by 5: 7 × 5 = 35. Finding fractional parts of whole numbers connects to multiplication and division.

28. D — Calculate net weekly savings: $25 - $10 = $15 per week. Determine amount still needed: $400 - $250 = $150. Divide: $150 ÷ $15 = 10 weeks. Multi-step financial problems require separating components before combining for the final answer.

29. A — Area of a circle = $\pi \times r^2 = 3.14 \times 5^2 = 3.14 \times 25 = 78.5$ cm². The radius is squared first, then multiplied by π. Squaring the radius gives the area of the corresponding square; multiplying by π adjusts for the circular shape.

30. C — Subtract the flat rate from the total: $25.25 - $5.00 = $20.25 for the variable portion. Divide by the per-kilometer rate: $20.25 ÷ $2.25 = 9 km. Working backward from total cost requires separating fixed and variable charges.

31. D — Calculate total minutes: 1,440 ÷ 12 = 120 minutes. Convert to hours: 120 ÷ 60 = 2 hours. Rate problems use the relationship time = volume ÷ rate. Unit conversion at the end (minutes to hours) presents the answer in the requested form.

32. B — Sum the bars for intervals above 159 cm. The intervals 160-169 (8 students) and 170-179 (6 students) both qualify. Total: 8 + 6 = 14 students. Reading histograms requires identifying which intervals satisfy the condition, then summing frequencies.

33. C — Apply the volume formula: V = length × width × height. Substitute known values: 96 = 6 × 4 × h → 96 = 24h. Solve for h: h = 96 ÷ 24 = 4 cm. Working backward from volume requires isolating the unknown dimension by division.

34. A — Evaluate exponents first: $2^3 = 8$ and $3^2 = 9$. Multiply: 8 × 9 = 72. Divide: 72 ÷ 6 = 12. Order of operations requires exponents before multiplication and division. Verification: 6 × 12 = 72 ✓.

35. D — Let Sam = s and Lily = 2s (twice as old). In 4 years: Sam = s + 4, Lily = 2s + 4. Sum equation: (s + 4) + (2s + 4) = 32 → 3s + 8 = 32 → 3s = 24 → s = 8. Lily's current age: 2(8) = 16. Check: (8+4) + (16+4) = 32 ✓.

36. B — A full circle measures 360°. P(blue) = blue section ÷ total = 72°/360° = 1/5 in simplest form. The probability of spinning a section is proportional to its angle measure. Simplifying 72/360 by dividing both by 72 gives 1/5.

37. A — Apply the Pythagorean theorem test: $8^2 + 15^2 = 64 + 225 = 289$. Compare to $17^2 = 289$. Since $8^2 + 15^2 = 17^2$, the triangle has a right angle opposite the longest side. The Pythagorean relationship identifies right triangles from side lengths alone.

38. C — Add and subtract left to right: -7 + 12 = 5; then 5 - 5 = 0. Integer operations require careful attention to signs. Adding a positive to a negative reduces magnitude, and subtraction is equivalent to adding the opposite: -7 + 12 - 5 = -7 + 12 + (-5) = 0.

39. D — Calculate interest: I = P × r × t = $600 × 0.03 × 5 = $90. Add to principal: $600 + $90 = $690. The simple interest formula uses principal, rate (as decimal), and time in years. Total balance equals starting deposit plus interest earned.

40. A — Substitute x = 6 into each equation to find which is satisfied. For A: 2(6) - 5 = 12 - 5 = 7 ✓. The others fail: B gives 22 ≠ 16; C gives 24 ≠ 30; D gives 14 ≠ 16. Verifying solutions by substitution confirms which equation a value satisfies.

41. B — The mode (18) appears three times in the data set, more often than any other value, making it the best representation of the "typical" score when one value occurs most frequently. Option A states the mean as 18.5, which is the correct sum (148 ÷ 8 = 18.5), but the mean is pulled upward by the outlier 25 and

does not capture what is most typical. Option C states the median as 20, which is incorrect: with the data sorted (12, 15, 18, 18, 18, 20, 22, 25), the median is the average of the 4th and 5th values, (18 + 18) ÷ 2 = 18, not 20. Option D states the range as 13, which is numerically correct (25 - 12 = 13) but range measures spread, not central tendency.

42. C — Find common denominator (15): 2/5 = 6/15 and 1/3 = 5/15. Total spent: 6/15 + 5/15 = 11/15. Remaining: 1 - 11/15 = 15/15 - 11/15 = 4/15. Subtracting from a whole requires expressing 1 as the equivalent fraction with matching denominator.

43. D — Find the lengths of the legs: AB is horizontal from (2,3) to (7,3), so AB = 7 - 2 = 5 units. BC is vertical from (7,3) to (7,8), so BC = 8 - 3 = 5 units. Area = (1/2) × base × height = (1/2)(5)(5) = 12.5 square units.

44. B — Calculate 1/3 of 3/4 by multiplying: (1/3) × (3/4) = 3/12 = 1/4 in simplest form. When multiplying fractions, multiply numerators together and denominators together, then simplify. The fraction of the original pizza given equals 1/3 of the 3/4 that remained.