PRACTICE EXAM 20: EQAO GRADE 6 MATHEMATICS SIMULATION (44 QUESTIONS)

STAGE 1 (Questions 1-11) — 30 minutes

1. (Number Sense) What is the standard form of "three million, seven hundred eighty-five thousand, four hundred twenty-six"?

A) 3,785,246

B) 3,785,624

C) 3,785,426

D) 3,758,426

2. (Algebra) In a pattern, each term is found by squaring the previous term and then dividing by 2. If the first term is 4, what is the third term?

A) 8

B) 16

C) 64

D) 32

3. (Spatial Sense) How many faces does a triangular prism have?

A) 5

B) 6

C) 8

D) 9

4. (Number Sense) Calculate: 14.7 × 0.6

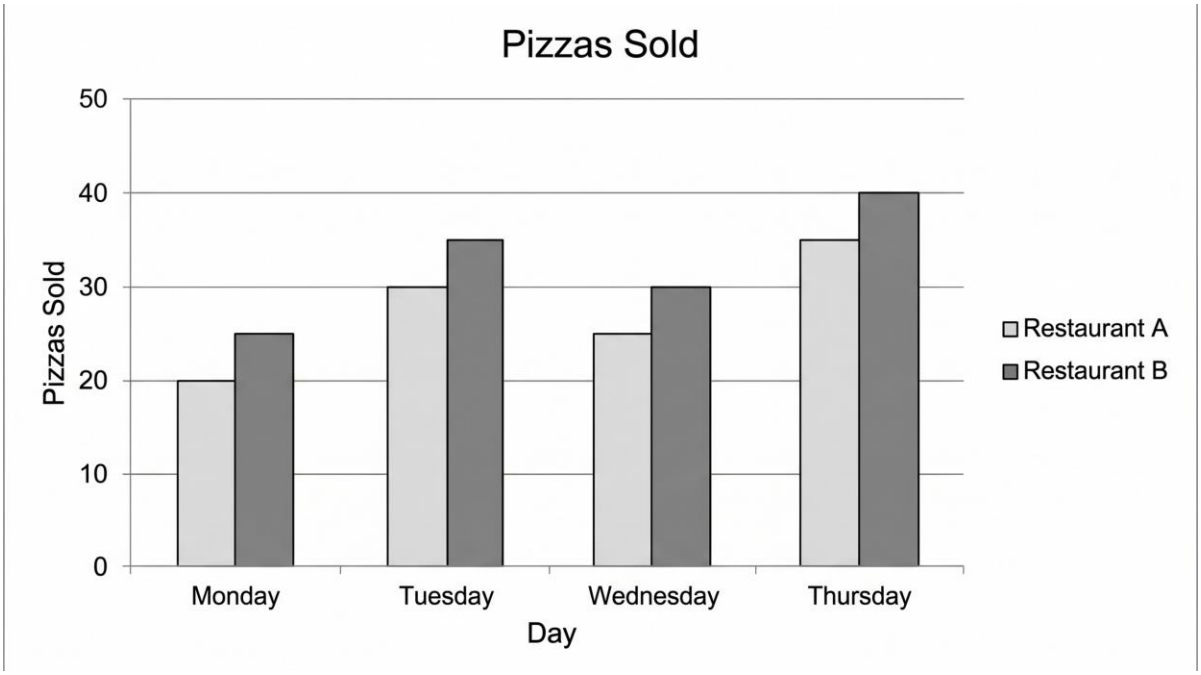
A) 7.82

B) 8.82

C) 9.42

D) 88.2

5. (Data Literacy) The double bar graph shows the number of pizzas sold at two restaurants over four days.



On which day did Restaurant B sell exactly 40 pizzas?

A) Monday

B) Tuesday

C) Wednesday

D) Thursday

6. (Number Sense) Calculate: 3/8 × 4/9

A) 1/6

B) 7/17

C) 12/17

D) 3/72

7. (Financial Literacy) A shirt is priced at $40. After applying a 30% discount and then a $5 coupon, what is the final price?

A) $25

B) $28

C) $23

D) $30

8. (Algebra) Which value of x satisfies the equation 3x - 7 = 2x + 8?

A) 1

B) 15

C) 5

D) 11

9. (Spatial Sense) A regular hexagon has each side measuring 8 cm. What is its perimeter?

A) 48 cm

B) 36 cm

C) 56 cm

D) 64 cm

10. (Number Sense) What is 5/12 written as a decimal, rounded to two decimal places?

A) 0.83

B) 0.50

C) 0.40

D) 0.42

11. (Algebra) Maria writes a number pattern starting with 7. Each term is found by tripling the previous term and adding 1. What is the 3rd term?

A) 28

B) 64

C) 67

D) 70

STAGE 2 (Questions 12-22) — 30 minutes

12. (Number Sense) Round 4,386,529 to the nearest ten thousand.

A) 4,400,000

B) 4,390,000

C) 4,380,000

D) 4,386,500

13. (Spatial Sense) A triangle has angles measuring 50°, 60°, and 70°. How is this triangle classified by its angles?

A) Acute

B) Right

C) Obtuse

D) Equilateral

14. (Data Literacy) The mean of five numbers is 32. Four of the numbers are 28, 30, 35, and 33. What is the fifth number?

A) 30

B) 32

C) 34

D) 36

15. (Number Sense) What is the greatest common factor (GCF) of 48 and 72?

A) 6

B) 12

C) 18

D) 24

16. (Algebra) A pattern is described by the rule t = 5n - 3, where n is the term number. What is the 9th term?

A) 47

B) 42

C) 38

D) 45

17. (Financial Literacy) A bicycle helmet costs $32 before tax. The sales tax is 13%. What is the total cost?

A) $33.32

B) $35.16

C) $36.16

D) $37.32

18. (Number Sense) Jenna bakes 8 dozen cookies. She sells 5/8 of them. How many cookies does she have left?

A) 36

B) 24

C) 48

D) 60

19. (Spatial Sense) Point P is at coordinates (3, -4) on the coordinate plane. What are the new coordinates after a translation of 5 units left and 6 units up?

A) (8, 2)

B) (-2, -10)

C) (2, -2)

D) (-2, 2)

20. (Data Literacy) In a class survey, 6 students prefer cats, 9 prefer dogs, 3 prefer fish, and 2 prefer birds. What fraction of students prefer dogs, in simplest form?

A) 9/9

B) 9/20

C) 1/9

D) 9/2

21. (Algebra) Which equation has a solution of $x = 4$?

A) $3x - 2 = 8$

B) $2x + 5 = 9$

C) $5x - 6 = 14$

D) $x + 7 = 15$

22. (Number Sense) Calculate: $-8 + 15 - 6$

A) -1

B) -29

C) 13

D) 1

STAGE 3 (Questions 23-33) — 30 minutes

23. (Spatial Sense) A right triangle has legs measuring 5 cm and 12 cm. What is its area?

A) 30 cm^2

B) 60 cm^2

C) 17 cm^2

D) 25 cm²

24. (Number Sense) A car travels at a steady speed of 75 km/h. How far will it travel in 2.5 hours?

A) 150 km

B) 187.5 km

C) 200 km

D) 225 km

25. (Algebra) Solve for n: (n - 4) ÷ 5 = 7

A) 31

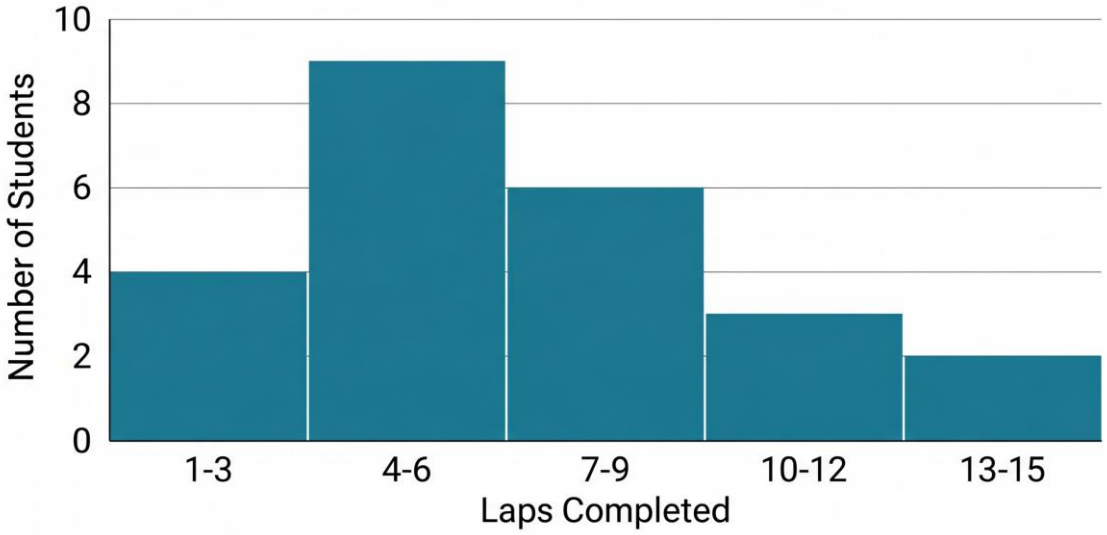
B) 35

C) 39

D) 43

26. (Data Literacy) The histogram shows the number of laps run by students in PE class.

Figure PQ-2
Students' Laps Completed Histogram



How many students ran fewer than 7 laps?

A) 13

B) 9

C) 11

D) 15

27. (Number Sense) What is the value of $(-3) \times 4 + 7 \times (-2)$?

A) -10

B) -14

C) -19

D) -26

28. (Financial Literacy) Aisha earns $9.50 per hour babysitting. After working 12 hours in a week, she puts 25% of her earnings into savings. How much does she save?

A) $22.50

B) $25.00

C) $28.50

D) $30.00

29. (Spatial Sense) What is the volume of a rectangular prism with dimensions 5 cm × 4 cm × 3 cm?

A) 12 cm^3

B) 60 cm^3

C) 47 cm^3

D) 80 cm^3

30. (Algebra) A taxi company charges a flat fee of $3.50 plus $1.25 per kilometer. Sara pays $13.50 for a trip. How many kilometers did she travel?

A) 8 km

B) 10 km

C) 12 km

D) 14 km

31. (Number Sense) Evaluate: $3 \times (8 - 5)^2 - 4$

A) 17

B) 19

C) 23

D) 29

32. (Data Literacy) A box-and-whisker plot for student heights in centimeters shows: minimum = 140, lower quartile = 150, median = 158, upper quartile = 165, maximum = 175. What is the interquartile range?

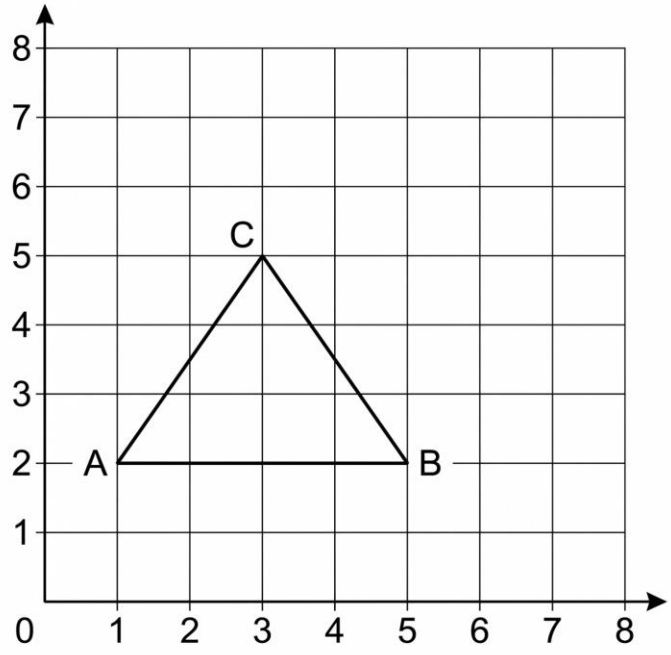
A) 35

B) 25

C) 18

D) 15

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



What is the area of triangle ABC?

A) 4 sq units

B) 6 sq units

C) 8 sq units

D) 12 sq units

STAGE 4 (Questions 34-44) — 30 minutes

34. (Number Sense) What is 36/48 expressed in simplest form?

A) 3/4

B) 6/8

C) 9/12

D) 18/24

35. (Algebra) A rectangle has a perimeter of 36 cm. Its length is 3 cm more than twice its width. What is the width?

A) 3 cm

B) 4 cm

C) 6 cm

D) 5 cm

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

A) 1/2

B) 6/16

C) 5/8

D) 3/4

37. (Spatial Sense) A regular polygon has interior angles each measuring 135°. How many sides does the polygon have?

A) 8

B) 6

C) 10

D) 12

38. (Data Literacy) In a survey of 60 people, the ratio of those who prefer tea to those who prefer coffee is 3:7. How many prefer coffee?

A) 30

B) 42

C) 21

D) 28

39. (Financial Literacy) Marcus puts $250 in a savings account at 6% simple interest per year. How much money will be in the account after 4 years?

A) $260

B) $290

C) $300

D) $310

40. (Algebra) Which expression is equivalent to $3(2x + 5) - 4$?

A) $6x + 5$

B) $6x + 9$

C) $6x + 11$

D) $6x + 15$

41. (Number Sense) A recipe needs 2 1/2 cups of flour. To make 1/4 of the recipe, how much flour is needed?

A) 1/2 cup

B) 5/8 cup

C) 3/4 cup

D) 1/4 cup

42. (Data Literacy) A bag has 50 candies: 12 chocolate, 18 caramel, 10 mint, and the rest are fruit-flavored. What percent of the candies are fruit-flavored?

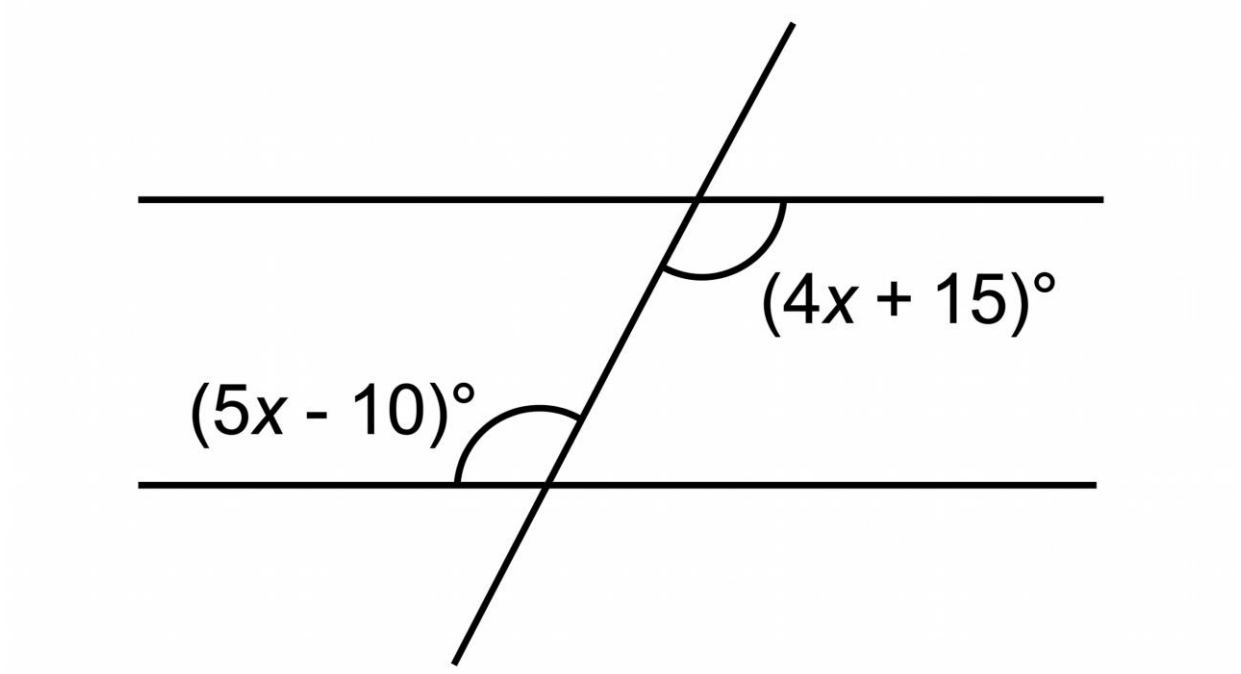
A) 20%

B) 24%

C) 30%

D) 36%

43. (Spatial Sense) The diagram shows two parallel lines cut by a transversal, with alternate interior angles labeled.



What is the value of x?

A) 15

B) 20

C) 30

D) 25

44. (Number Sense) Order these numbers from least to greatest: 7/8, 0.85, 4/5, 0.9

A) 0.85, 4/5, 7/8, 0.9

B) 4/5, 0.85, 7/8, 0.9

C) 7/8, 4/5, 0.85, 0.9

D) 4/5, 0.85, 0.9, 7/8

Practice Exam 20: Answer Key and Explanations

1. C — Translate the word form by combining each named place value: 3,000,000 (three million) + 785,000 (seven hundred eighty-five thousand) + 426 (four hundred twenty-six) = 3,785,426. Reading large numbers from left to right matches their place values systematically.

2. D — Starting at 4 and applying "square then divide by 2": term 1 = 4, term 2 = $4^2/2 = 16/2 = 8$, term 3 = $8^2/2 = 64/2 = 32$. Compound rules require performing both operations in order for each new term, tracking the changing value carefully.

3. A — A triangular prism has 5 faces total: 2 triangular bases plus 3 rectangular faces connecting the bases. The formula for prism faces equals 2 (bases) + n (sides matching the base's sides). Recognizing 3D shapes from face counts supports spatial reasoning.

4. B — Multiply 14.7 × 0.6: think of 147 × 6 = 882, then place the decimal two positions from the right since the factors have one decimal place each: 8.82. Verification: 14.7 × 0.6 ≈ 15 × 0.6 = 9, and 8.82 is close to 9. ✓

5. D — Reading the double bar graph, Restaurant B's Thursday bar reaches exactly 40 pizzas. Double bar graphs compare two categories across the same time periods, requiring careful identification of which bar belongs to each category before reading values.

6. A — Multiply fractions by multiplying numerators and denominators: (3 × 4)/(8 × 9) = 12/72. Simplify by dividing both by 12: 12/72 = 1/6. Cross-cancellation could also simplify before multiplying: 3 and 9 share a factor of 3, and 4 and 8 share a factor of 4.

7. C — Calculate the percent discount: 30% of \$40 = 0.30 × \$40 = \$12. Apply discount: \$40 - \$12 = \$28. Subtract the coupon: \$28 - \$5 = \$23. Sequential discounts require completing each reduction before applying the next, in the order described.

8. B — Solve by combining like terms: 3x - 7 = 2x + 8 → 3x - 2x = 8 + 7 → x = 15. Variables on both sides require moving variables to one side and constants to the other. Check: 3(15) - 7 = 38 and 2(15) + 8 = 38 ✓.

9. A — A regular hexagon has 6 equal sides. Perimeter equals the sum of all sides: $6 \times 8 = 48$ cm. Regular polygons (all sides equal) have perimeters calculated by multiplying side length by the number of sides. This shortcut applies to any regular polygon.

10. D — Divide 5 by 12: $5 \div 12 = 0.41666...$ Rounding to two decimal places: examine the third decimal (6, which is ≥ 5), so round up the second decimal from 1 to 2: 0.42. Long division and rounding rules work together to convert fractions to decimals.

11. C — Starting at 7 and applying "triple then add 1": term 1 = 7, term 2 = $(7 \times 3) + 1 = 22$, term 3 = $(22 \times 3) + 1 = 67$. Compound pattern rules require applying both operations in sequence to each new term to find subsequent values.

12. B — To round 4,386,529 to the nearest ten thousand, examine the digit immediately to the right (thousands place): 6. Since $6 \geq 5$, round up. The ten-thousands digit (8) increases to 9, and digits to the right become zero: 4,390,000.

13. A — A triangle with all angles less than 90° is classified as acute. The angles 50°, 60°, and 70° are each less than 90°, satisfying this definition. Right triangles have one 90° angle, and obtuse triangles have one angle greater than 90°.

14. C — Calculate the total sum: $5 \times 32 = 160$. Subtract the four known values: $160 - 28 - 30 - 35 - 33 = 160 - 126 = 34$. Working backward from the mean uses sum = mean × count, then isolating the unknown.

15. D — Find prime factorizations: $48 = 2^4 \times 3$ and $72 = 2^3 \times 3^2$. GCF takes the lowest power of each common prime: $2^3 \times 3 = 8 \times 3 = 24$. Verification: $48 \div 24 = 2$ and $72 \div 24 = 3$ ✓. GCF is the largest factor common to both numbers.

16. B — Substitute n = 9 into the formula: $5(9) - 3 = 45 - 3 = 42$. Term formulas allow direct calculation for any position without listing previous terms. Order of operations requires multiplication before subtraction.

17. C — Calculate 13% tax: $0.13 \times \$32 = \$4.16$. Add tax to original price: $\$32.00 + \$4.16 = \$36.16$. Sales tax calculations require finding the percent of the base price and adding it to determine total cost.

18. A — Convert dozens to individual cookies: $8 \times 12 = 96$ cookies. Calculate cookies sold: $(5/8) \times 96 = 60$. Subtract from total: $96 - 60 = 36$ cookies left. Multi-step problems require completing each part sequentially.

19. D — Apply translation to point P(3, -4): 5 units left subtracts 5 from x-coordinate ($3 - 5 = -2$); 6 units up adds 6 to y-coordinate ($-4 + 6 = 2$). New coordinates: (-2, 2). Translations slide points without rotating or reflecting them.

20. B — Calculate total students: $6 + 9 + 3 + 2 = 20$. The fraction preferring dogs is 9/20, which is already in simplest form since GCF(9, 20) = 1. Fractions in simplest form support clearer interpretation of part-to-whole relationships.

21. C — Substitute x = 4 into each equation: A) 3(4) - 2 = 10 ≠ 8; B) 2(4) + 5 = 13 ≠ 9; C) 5(4) - 6 = 14 ✓; D) 4 + 7 = 11 ≠ 15. Only equation C is satisfied. Verifying solutions confirms which equation a value satisfies.

22. D — Add and subtract left to right: -8 + 15 = 7; then 7 - 6 = 1. Integer operations require careful sign attention. Combining a negative with a larger positive produces a positive result, while subtracting a positive reduces the value.

23. A — Area of a right triangle = (1/2) × leg_1 × leg_2 = (1/2) × 5 × 12 = 30 cm^2. The two perpendicular legs serve as base and height. The right angle's sides provide the simplest base and height to use.

24. B — Multiply rate by time: 75 km/h × 2.5 h = 187.5 km. The product of speed and time gives distance traveled. Decimal multiplication can be calculated as 75 × 2 = 150 plus 75 × 0.5 = 37.5, totaling 187.5 km.

25. C — Multiply both sides by 5 first to eliminate division: (n - 4) ÷ 5 = 7 → n - 4 = 35. Then add 4: n = 39. Check: (39 - 4) ÷ 5 = 35 ÷ 5 = 7 ✓. Equations with division require multiplying first to clear the operation.

26. A — Sum the bars for intervals below 7 laps. The intervals 1-3 (4 students) and 4-6 (9 students) both qualify. Total: 4 + 9 = 13 students. Reading histograms requires identifying which intervals satisfy the condition.

27. D — Apply order of operations: multiplications first: (-3) × 4 = -12 and 7 × (-2) = -14. Add the products: -12 + (-14) = -26. Multiplying a negative by a positive gives a negative result; adding two negatives gives a more negative result.

28. C — Calculate weekly earnings: $9.50 × 12 = $114.00. Find 25% of earnings: 0.25 × $114 = $28.50. Two-step problems require completing each calculation in sequence to find the savings amount.

29. B — Volume of a rectangular prism = length × width × height = 5 × 4 × 3 = 60 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.

30. A — Subtract the flat fee from total: $13.50 - $3.50 = $10.00. Divide by the per-kilometer rate: $10.00 ÷ $1.25 = 8 km. Working backward from total cost requires separating fixed and variable components.

31. C — Apply order of operations: brackets first: (8 - 5) = 3; then exponent: 3^2 = 9; then multiplication: 3 × 9 = 27; finally subtraction: 27 - 4 = 23. BEDMAS dictates this sequence: brackets, exponents, multiplication, subtraction.

32. D — Interquartile range (IQR) equals upper quartile minus lower quartile: 165 - 150 = 15. IQR measures the spread of the middle 50% of data, providing a robust measure of variability less affected by outliers than the full range.

33. B — Find the lengths of the legs: base AB is horizontal from (1, 2) to (5, 2), so AB = 5 - 1 = 4 units. Height is the vertical distance from C(3, 5) to line AB, so height = 5 - 2 = 3 units. Area = (1/2)(4)(3) = 6 square units.

34. A — Simplify 36/48 by dividing both numerator and denominator by their greatest common factor (12): 36/48 = (36÷12)/(48÷12) = 3/4. The other options (6/8, 9/12, 18/24) are equivalent to 36/48 but not in simplest form. Only 3/4 has GCF(3,4) = 1.

35. D — Let w = width. Length = 2w + 3 (3 more than twice the width). Perimeter: 2(2w + 3) + 2w = 36 → 4w + 6 + 2w = 36 → 6w + 6 = 36 → 6w = 30 → w = 5 cm. Check: length = 13, perimeter = 26 + 10 = 36 ✓.

36. C — The probability of not blue equals total non-blue sections divided by total: (4 + 4 + 2)/16 = 10/16 = 5/8 simplified. Complementary probabilities (blue vs. not blue) always sum to 1: 6/16 + 10/16 = 16/16 = 1.

37. A — Use the interior angle formula: (n - 2) × 180° / n = 135°. Solve: (n - 2) × 180 = 135n → 180n - 360 = 135n → 45n = 360 → n = 8. A regular octagon has interior angles of 135°. Verification: (8 - 2) × 180 / 8 = 1080/8 = 135° ✓.

38. B — The ratio 3:7 represents 3 + 7 = 10 total parts. Divide total people by parts: 60 ÷ 10 = 6 people per part. Coffee preference accounts for 7 parts: 7 × 6 = 42 people. Ratios proportionally divide a whole into specified groups.

39. D — Calculate simple interest: I = P × r × t = \$250 × 0.06 × 4 = \$60. Add to principal: \$250 + \$60 = \$310. The total account balance equals starting deposit plus interest earned. Simple interest grows savings predictably over time.

40. C — Distribute the 3 across the parentheses: 3(2x + 5) = 6x + 15. Subtract 4: 6x + 15 - 4 = 6x + 11. Distribution multiplies each term inside parentheses by the outside factor, then combine like terms (constants 15 and -4) for the final expression.

41. B — Convert 2 1/2 to improper fraction: 5/2. Multiply by 1/4: (5/2) × (1/4) = (5 × 1)/(2 × 4) = 5/8 cup. When multiplying fractions, multiply numerators and denominators separately. Scaling recipes requires proportional adjustment.

42. A — Subtract known flavors from total: 50 - 12 - 18 - 10 = 10 fruit-flavored candies. Convert to percent: 10/50 = 1/5 = 20%. Percent calculations express part-to-whole ratios using 100 as the standard total.

43. D — Alternate interior angles formed by parallel lines and a transversal are equal: 4x + 15 = 5x - 10. Subtract 4x from both sides: 15 = x - 10. Add 10: x = 25. Check: 4(25) + 15 = 115 and 5(25) - 10 = 115 ✓.

44. B — Convert all values to decimals for comparison: 7/8 = 0.875, 0.85 = 0.85, 4/5 = 0.8, 0.9 = 0.9. Order from least to greatest: 0.8 < 0.85 < 0.875 < 0.9, which corresponds to 4/5, 0.85, 7/8, 0.9.