CAMPUS DES NATIONS · MATHEMATICS DEPARTMENT

Year 8 — Full learning objectives

66 objectives across 4 units · MYP Year 2

CONTENTS

UNIT 1

8.1 Ratio, Percentage and Proportion

Prerequisites

1. I can understand the concept of a fraction as a representation of division.
2. I can convert between mixed numerals and improper fractions.
3. I can simplify fractions and find equivalent fractions.
4. I can write fractions with a common denominator.
5. I can apply the four operations (addition, subtraction, multiplication, and division) to fractions.

Ratio, Unit Rates, and Percentages

6. I can define and apply the concept of a ratio.
7. I can identify and use equivalent ratios.
8. I can understand and calculate unit rates.
9. I can relate ratios to percentages.
10. I can find percentages, parts, and wholes in different contexts.
11. I can calculate percentage increases and decreases.

Proportions

12. I can define a proportional relationship.
13. I can test if two quantities are in a proportional relationship.
14. I can determine the constant of proportionality in proportional relationships.
15. I can graph proportional relationships and interpret their meaning.

Scale Drawing and Introduction to Similarity

16. I can create and interpret scale drawings.
17. I can understand and use the concept of scale factor.
18. I can use map scales to calculate distances.

UNIT 2

8.2 Number and Algebra

Prerequisites

1. I can add and subtract directed numbers.
2. I can apply the order of operations, including calculations with exponents.
3. I can understand basic algebraic vocabulary.
4. I can use algebraic notation and conventions correctly.
5. I can collect like terms in algebraic expressions.
6. I can understand and use algebraic products.
7. I can apply the order of operations to problems involving directed numbers.

Directed Numbers

8. I can multiply and divide directed numbers.
9. I can use the distributive property with a single bracket involving directed numbers.

Patterns

10. I can review numeric and visual patterns.
11. I can describe linear patterns using algebraic expressions (e.g., $3n + 4$).
12. I can verify if a given term is part of a sequence.
13. I can find the position n of a term in a sequence.

Algebraic Expressions

13. I can identify and work with equivalent expressions.
14. I can substitute values into algebraic expressions.
15. I can simplify algebraic products.
16. I can apply the distributive rule involving a single bracket.
17. I can factorize expressions involving a single bracket. $6x$.
18. I can simplify algebraic fractions (e.g., $3x$).

Equations

19. I can use function machines to understand algebraic operations.
20. I can solve equations involving a single variable.
21. I can solve multi-step equations, including those with x on both sides and fractional coefficients.

UNIT 3

8.3 Infographics — Data and Sampling

Prerequisites

1. I can understand measures of center: mean, median, mode, and range for ungrouped data.
2. I can read and interpret tally charts and frequency tables.

Sampling and Collecting Data

3. I can distinguish between sampling methods: census, survey, population, and sample.
4. I can understand how sample size can affect inferences.
5. I can apply random sampling techniques.
6. I can design a survey with valid, non-biased questions.
7. I can collect data and clean a dataset.

Presenting Data

8. I can present data using technology in a variety of representations: bar chart, pie chart, histogram, and line chart.

Analysing Data

9. I can understand statistical vocabulary: spread, symmetry, uniform, tail, outlier, positive/negative skew, and MAD (mean absolute deviation).
10. I can make comparative inferences across two datasets.
11. I can evaluate the validity of inferences.
12. I can use measures of center and variability to support or challenge claims.

UNIT 4

8.4 Geometry and Measurement in Art and Nature

Prerequisites

1. I can differentiate between concave and convex shapes.
2. I can identify and classify different types of angles.
3. I can understand the definition of a circle and the concept of π.
4. I can calculate the circumference and area of circles.

Triangles

5. I can label triangles using three capital letters for vertices.
6. I can name angles using capital letters with a hat.
7. I can name sides using a single lowercase letter or two capital letters for endpoints.
8. I can understand the triangle inequality and the uniqueness of triangles.

Angles, Parallel Lines, and Triangles

9. I can understand and calculate angles in parallel lines.
10. I can calculate interior and exterior angles in polygons.
11. I can apply the triangle angle sum theorem to determine unknown angles.

Constructions

12. I can use a protractor, compass, and ruler to construct geometric shapes.
13. I can construct and measure angles accurately.
14. I can perform constructions involving the "seed of life," circles, hexagons, and perpendicular bisectors.

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