

Book Chapters of the Subject Area



Learning Outcome

What students are required to know, understand, and able to do BY THE END OF THE GRADE. **Must be assessed and reported**

Understanding

Gives significance to knowledge statements

Skills and Procedures

What students need to be able to do to show understanding of learning outcome.

PRINTING TIP

Download slides as a PDF. Print your PDF with '4 pages per sheet' and you will get 'cue card' sized slides that you can manipulate and use for your planning.

Want the speaker notes (i.e. EQ and knowledge) too?

In the 'Print Settings and Preview' select 'Slide with Notes' and save download as a PDF. Print your PDF with 2 pages per sheet and you can fold the bottom half back so the slide is visible from the front and the notes on the back.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students apply place value to decimal numbers.

Understanding

Decimal numbers are numbers between natural numbers.

Decimal numbers are fractions with denominators of 10, 100, etc.

The separation between wholes and parts, including dollars and cents, can be represented using decimal notation.

Patterns in place value are used to read and write numbers, including wholes and parts.

Skills and Procedures

Identify the place value of each digit in a number, including tenths and hundredths.

Relate the values of adjacent places, including tenths and hundredths.

Determine the value of each digit in a number, including tenths and hundredths.

Express numbers, including decimal numbers, using words and numerals.

Express various compositions of a number, including decimal numbers, using place value.

Recognize decimal notation expressed in English and in French.

Round numbers to various places, including tenths.

Compare and order numbers, including decimal numbers. Express the relationship between two numbers, including decimal numbers, using $>$, $<$, or $=$.

Express a monetary value in cents as a monetary value in dollars using decimal notation.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students add and subtract within 10 000, including decimal numbers to hundredths.

Understanding

Standard algorithms for addition and subtraction may be used for any decimal numbers.

Skills and Procedures

Add and subtract numbers, including decimal numbers, using standard algorithms.

Assess the reasonableness of a sum or difference using estimation.

Solve problems using addition and subtraction, including problems involving money.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students explain properties of prime and composite numbers using multiplication and division.

Understanding

Different factors can compose the same product.

Different products can share factors.

A number divided by one of its factors will result in a remainder of 0.

Skills and Procedures

Determine the factors of a number within 100.

Describe a number as prime or composite.

Determine the first five multiples of a given number within 100.

Recognize the greatest common factor (greatest common divisor) of two numbers within 100.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students multiply and divide natural numbers within 10 000.

Understanding

Multiplication and division strategies can be chosen based on the nature of the numbers.

Skills and Procedures

Recall and apply multiplication number facts, with factors to 12, and related division number facts.

Investigate patterns in multiplication and division of natural numbers by 10, 100, and 1000.

Multiply and divide 3-digit natural numbers by 1-digit natural numbers using personal strategies.

Examine standard algorithms for multiplication and division.

Multiply and divide 3-digit natural numbers by 1-digit natural numbers using standard algorithms.

Divide and express a quotient with or without a remainder.

Investigate strategies for estimation of products and quotients.

Assess the reasonableness of a product or quotient using estimation.

Solve problems using multiplication and division.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students apply equivalence to the interpretation of fractions.

Understanding

**There are infinitely many equivalent fractions that represent the same number.
Exactly one of infinitely many equivalent fractions is in simplest form.**

Skills and Procedures

Model equivalent fractions by partitioning a whole in multiple ways.

Determine fractions equivalent to a given fraction.

Relate the position of equivalent fractions on the number line.

Identify fractions in which the numerator and denominator have a common factor.

Simplify a given fraction by dividing the numerator and denominator by a common factor.

Express a fraction in simplest form. Compare and order fractions.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students apply equivalence to the interpretation of fractions.

Understanding

Decimal numbers that terminate (do not repeat) are fractions with denominators of 10, 100, etc. Fractions and decimal numbers that represent the same number are associated with the same point on the number line.

Skills and Procedures

Relate fractions and equivalent decimal numbers to their positions on the number line.

Express fractions as decimal numbers and vice versa, limited to tenths and hundredths.



Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.

Learning Outcome

Students interpret percentages.

Understanding

Fractions, decimals, and percentages can represent the same part-whole relationship.

Skills and Procedures

Investigate percentage in familiar situations.

Compare percentages within 100 .

Express the fraction, decimal, and percentage representations of the same part-whole relationship.



Algebra: Equations express relationships between quantities

Learning Outcome

Students represent and apply equality in multiple ways.

Understanding

There are infinitely many expressions that represent the same number. The order in which operations are performed can affect the value of an expression.

Skills and Procedures

Evaluate expressions according to the order of operations.

Create various expressions of the same number using one or more operations.



Algebra: Equations express relationships between quantities

Learning Outcome

Students represent and apply equality in multiple ways.

Understanding

An equation is solved by determining an unknown value that makes the left and right sides of the equation equal.

Skills and Procedures

Write equations involving one operation to represent a situation. Investigate preservation of equality using a balance model.

Investigate preservation of equality using an equation without an unknown value.

Apply preservation of equality to determine the unknown value in an equation, limited to equations with one operation. Solve problems using equations, limited to equations with one operation.



Geometry: Shapes are defined and related by geometric attributes.

Learning Outcome

Students analyze and explain geometric properties.

Understanding

Geometric properties are measurable.

Geometric properties define a hierarchy for classifying shapes.

Skills and Procedures

Identify relationships between the sides of a polygon, including parallel, equal length, or perpendicular, by measuring.

Identify relationships between angles at vertices of a polygon, including equal, supplementary, and complementary, by measuring.

Identify relationships between the faces of three-dimensional models of prisms, including parallel or perpendicular, by measuring.

Describe triangles according to side length. Classify triangles as right, acute, or obtuse using geometric properties related to angles.

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Classify quadrilaterals in a hierarchy according to geometric properties.

Identify relationships between the faces of three-dimensional models of prisms, including parallel or perpendicular, by measuring.

Describe triangles according to side length.

Classify triangles as right, acute, or obtuse using geometric properties related to angles.

Classify quadrilaterals in a hierarchy according to geometric properties.



Geometry: Shapes are defined and related by geometric attributes.

Learning Outcome

Students analyze and explain geometric properties.

Understanding

A shape resembling a polygon that does not share the defining geometric properties of the polygon is a close approximation.

Skills and Procedures

Show, using geometric properties, that a close approximation of a polygon is not the same as the polygon.

Verify geometric properties of polygons by translating, rotating, or reflecting using hands-on materials or digital applications.



Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.

Learning Outcome

Students interpret and express area.

Understanding

Area is a measurable attribute that describes the amount of two dimensional space contained within a region.

Area may be interpreted as the result of motion of a length.

An area remains the same when decomposed or rearranged.

Area is measured with equal-sized units that themselves have area and do not need to resemble the region being measured.

The area of a rectangle can be perceived as square-shaped units structured in a two-dimensional array.

Skills and Procedures

Model area by dragging a length using hands-on materials or digital applications.

Recognize the rearrangement of area in First Nations, Métis, or Inuit design.

Compare non-standard units that tile to non-standard units that do not tile.

Measure area with non-standard units by tiling.

Measure area with standard units by tiling with square centimetres.

Visualize and model the area of various rectangles as two-dimensional arrays of square shaped units.

Determine the area of a rectangle using multiplication.

Solve problems involving area of rectangles.



Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.

Learning Outcome

Students interpret and express area.

Understanding

Area can be estimated when less accuracy is required.

Skills and Procedures

Identify referents for a square centimetre.

Estimate an area by visualizing the iteration of a referent for a square centimetre.

Estimate an area by rearranging or combining partial units



Measurement: Attributes such as length, area, volume, and angle are quantified by measurement.

Learning Outcome

Students determine and express angles using standard units

Understanding

**Angles are quantified by measurement and based on the division of a circle.
An angle is measured with equal-sized units that themselves are angles.**

Skills and Procedures

Measure an angle with degrees using a protractor.

Describe an angle as acute, right, obtuse, or straight.

Relate angles of 90° , 180° , 270° , and 360° to fractions of a circle.

Estimate angles by comparing to benchmarks of 45° , 90° , 180° , 270° , and 360° .



Patterns: Awareness of patterns supports problem solving in various situations.

Learning Outcome

Students interpret and explain arithmetic and geometric sequences.

Understanding

Sequences may increase or decrease.

Different representations can provide new perspectives of the increase or decrease of a sequence.

An arithmetic sequence has a constant difference between consecutive terms.

A geometric sequence has a constant multiplicative change between consecutive terms.

Skills and Procedures

Investigate increasing sequences, including the Fibonacci sequence, in multiple representations.

Create and explain increasing or decreasing sequences, including numerical sequences.

Express a numerical sequence to represent a concrete or pictorial sequence.

Recognize arithmetic and geometric sequences.

Describe the initial term and the constant change in an arithmetic sequence.

Express the first five terms of an arithmetic sequence related to a given initial term and constant change.

Describe the initial term and the constant change in a geometric sequence.

Express the first five terms of a geometric sequence related to a given initial term and constant change.



Time: Duration is described and quantified by time.

Learning Outcome

Students communicate duration with standard units of time.

Understanding

Analog clocks can relate duration to a circle.

Skills and Procedures

Relate durations of 15 minutes, 20 minutes, 30 minutes, 40 minutes, and 45 minutes to fractions of a circle.

Express time of day using fractions.

Determine duration in minutes using a clock.

Apply addition and subtraction strategies to the calculation of duration.

Convert between hours, minutes, and seconds.

Compare the duration of events using standard units.

Solve problems involving duration



Statistics: The science of collecting, analyzing, visualizing, and interpreting data can inform understanding and decision making.

Learning Outcome

Students evaluate the use of scale in graphical representations of data.

Understanding

Representation is part of a statistical problem-solving process.

Representation can express many-to-one correspondence by defining a scale.

Different representations tell different stories about the same data.

Skills and Procedures

Engage in a statistical problem-solving process.

Select an appropriate scale to represent data.

Represent data in a graph using many-to-one correspondence.

Describe the effect of scale on representation.

Justify the choice of graph used to represent certain data.

Compare different graphs of the same data. Interpret data represented in various graphs