**Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Number)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Develop number sense. |
| **Specific Outcomes**1. Determine and explain why a number is divisible by 2, 3, 4, 5, 6, 8, 9 or 10, and why a number cannot be divided by 0. | **Number Unit 1: Number Relationships** 1: Developing Divisibility Rules for 2, 4, 5, 8, and 102: Developing Divisibility Rules for 3, 6, and 93: Relating Factors, Multiples, and Divisibility | **Big Idea: Quantities and numbers can be operated on to determine how many and how much.****Investigating number and arithmetic properties**- Examines and classifies whole numbers based on their properties (e.g., even/odd; prime; composite; divisible by 2, 5, 10).* Uses reasoning and knowledge of factors to examine divisibility of numbers (by 4, 8, 3, 6, and 9).
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| 2. Demonstrate an understanding of the addition, subtraction, multiplication and division of decimals to solve problems (for more than 1-digit divisors or 2-digit multipliers, the use of technology is expected).  | **Number Unit 4: Operations with Decimals, Percents, and Fractions**16: Multiplying Decimals17: Dividing Decimals18: Applying the Order of Operations with Decimals **Number Unit 5: Financial Literacy**22: Calculating Sales Taxes and Tips23: Calculating Sales Taxes and Discounts | **Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.****Developing conceptual meaning of operations*** Demonstrates an understanding of decimal number computation through modelling and flexible strategies.

**Developing fluency of operations*** Solves decimal number computation using efficient strategies.

**Investigating number and arithmetic properties*** Evaluates equations with brackets using order of operations.
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| 3. Solve problems involving percents from 1% to 100%.  | **Number Unit 3: Fractions, Decimals, and Percents**14: Relating Fractions, Decimals, and Percents**Number Unit 4: Operations with Decimals, Percents, and Fractions**19: Working with Percents**Number Unit 5: Financial Literacy**22: Calculating Sales Taxes and Tips23: Calculating Sales Taxes and Discounts | **Big Idea: Numbers are related in many ways.****Using ratios, rates, proportions, and percents creates a relationship between quantities** * Understands and applies the concept of percentage as a rate per hundred (e.g., calculating sales tax, tips, or discounts).
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| 4. Demonstrate an understanding of the relationship between positive terminating decimals and positive fractions and between positive repeating decimals and positive fractions.  | **Number Unit 3: Fractions, Decimals, and Percents**12: Converting Between Fractions and Decimals | **Big Idea: Numbers are related in many ways.****Decomposing and composing numbers to investigate equivalencies** * Understands that all fractions are equivalent to either terminating or repeating decimals.
* Models and explains the relationship between a fraction and its equivalent decimal form.
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| 5. Demonstrate an understanding of adding and subtracting positive fractions and mixed numbers, with like and unlike denominators, concretely, pictorially and symbolically (limited to positive sums and differences).  | **Number Unit 4: Operations with Decimals, Percents, and Fractions**20: Adding Fractions and Mixed Numbers 21: Subtracting Fractions and Mixed Numbers  | **Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.****Developing conceptual meaning of operations*** Models and demonstrates an understanding of fraction addition and subtraction.

**Developing fluency of operations*** Solves fraction addition and subtraction using efficient strategies.
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| 6. Demonstrate an understanding of addition and subtraction of integers, concretely, pictorially and symbolically.  | **Number Unit 2: Fluency with Integers**5: Representing Integers 6: Adding Integers 7: Subtracting Integers 8: Solving Problems Involving Integers  | **Big Idea: The set of real numbers is infinite.****Extending whole number understanding to the set of real numbers*** Understands that a positive integer and its negative opposite are the same distance from zero (e.g., both 5 and –5 are five units from zero on a number line).

**Big Idea:** **Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)** * Compares, orders, and locates integers.

**Big Idea:** **Quantities and numbers can be operated on to determine how many and how much.****Developing conceptual meaning of operations*** Models and demonstrates an understanding of integer addition and subtraction.
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| 7. Compare and order positive fractions, positive decimals (to thousandths) and whole numbers by using: • benchmarks • place value • equivalent fractions and/or decimals. | **Number Unit 3: Fractions, Decimals, and Percents**13: Comparing and Ordering Fractions and Decimals  | **Big Idea: Numbers are related in many ways.** **Comparing and ordering quantities (multitude or magnitude)*** Compares, orders, and locates positive rational numbers using flexible strategies.
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 **Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Patterns and Relations: Patterns)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Use patterns to describe the world and to solve problems. |
| **Specific Outcomes**1. Demonstrate an understanding of oral and written patterns and their equivalent linear relations.  | **Patterning Unit 1: Linear Patterns and Equations**2: Writing an Expression to Describe a Linear Pattern | **Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.****Representing patterns, relations, and functions** * Matches different representations of the same linear relation (e.g., graph, equation, table of values).

**Using variables, algebraic expressions, and equations to represent mathematical relations** * Identiﬁes and describes the meaning of parts of an equation using mathematical terms (e.g., sum, coefﬁcient, factor, variable, constant).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).
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| 2. Create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.  | **Patterning Unit 1: Linear Patterns and Equations**1: Representing Patterns 6: Writing and Solving Patterns Involving Linear Relations | **Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically**. **Representing patterns, relations, and functions** * Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.
* Generates ordered pairs for a linear relation and plots the coordinates on a graph. (Limited to integer values on four quadrants.)
* Matches different representations of the same linear relation (e.g., graph, equation, table of values)
* Differentiates between linear and non-linear relations by their graphical representation.
* Models and solves problems with integers using linear equations in different forms (e.g., a*x* = *b*; *ax* + *b* = *c*; *a*(*x* + *b*) = *c*).

**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions. Using variables, algebraic expressions, and equations to represent mathematical relations*** Evaluates algebraic expressions, including formulas, given speciﬁc values for the variables (e.g., evaluate 3*r* – 12, when *r* = 3; $\frac{1}{2}b$*h*, when base is 12 cm and height is 5 cm).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).

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 **Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Patterns and Relations: Variables and Equations)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Represent algebraic expressions in multiple ways. |
| **Specific Outcomes**3. Demonstrate an understanding of preservation of equality by: • modelling preservation of equality, concretely, pictorially and symbolically • applying preservation of equality to solve equations.  | **Patterning Unit 1: Linear Patterns and Equations**4: Modelling and Solving One-Step Equations6: Writing and Solving Problems Involving Linear Relations | **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.****Understanding equality and inequality, building on generalized properties of numbers and operations.*** Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).
* Applies arithmetic properties (e.g., distributive, commutative, identities) to identify, transform, and generate equivalent numeric expressions

(e.g., 3(2 + 5) = (2 + 5) + (2 + 5) + (2 + 5)). * Models the preservation of equality to solve equations involving integer coefﬁcients

(e.g., –4*m* + 16 = –12). **Using variables, algebraic expressions, and equations to represent mathematical relations*** Evaluates algebraic expressions, including formulas, given speciﬁc values for the variables (e.g., evaluate 3*r* – 12, when *r* = 3; $\frac{1}{2}b$*h*, when base is 12 cm and height is 5 cm).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).

**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.****Representing patterns, relations, and functions*** Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.
* Models and solves problems with integers using linear equations in different forms (e.g., a*x* = *b*; *ax* + *b* = *c*; *a*(*x* + *b*) = *c*).
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| 4. Explain the difference between an expression and an equation.  | **Patterning Unit 1: Linear Patterns and Equations**3: Evaluating Expressions and Writing Equations | **Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.****Representing patterns, relations, and functions*** Matches different representations of the same linear relation (e.g., graph, equation, table of values)

**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions. Using variables, algebraic expressions, and equations to represent mathematical relations*** Evaluates algebraic expressions, including formulas, given speciﬁc values for the variables (e.g., evaluate 3*r* – 12, when *r* = 3; $\frac{1}{2}b$*h*, when base is 12 cm and height is 5 cm).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).
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| 5. Evaluate an expression, given the value of the variable(s).  | **Patterning Unit 1: Linear Patterns and Equations**3: Evaluating Expressions and Writing Equations | **Big Idea**: **Regularity and repetition form patterns that can be generalized and predicted mathematically.****Representing patterns, relations, and functions** * Matches different representations of the same linear relation (e.g., graph, equation, table of values)

**Big Idea: Patterns and relations can be represented with symbols, equations, and expressions. Using variables, algebraic expressions, and equations to represent mathematical relations*** Evaluates algebraic expressions, including formulas, given speciﬁc values for the variables (e.g., evaluate 3*r* – 12, when *r* = 3; $\frac{1}{2}b$*h*, when base is 12 cm and height is 5 cm).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).
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| 6. Model and solve, concretely, pictorially and symbolically, problems that can be represented by one-step linear equations of the form *x* + *a* = *b*, where *a* and *b* are integers.  | **Patterning Unit 1: Linear Patterns and Equations**4: Modelling and Solving One-Step Equations | **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.****Understanding equality and inequality, building on generalized properties of numbers and operations.*** Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).
* Applies arithmetic properties (e.g., distributive, commutative, identities) to identify, transform, and generate equivalent numeric expressions

(e.g., 3(2 + 5) = (2 + 5) + (2 + 5) + (2 + 5)). * Models the preservation of equality to solve equations involving integer coefﬁcients

(e.g., –4*m* + 16 = –12).  |
| 7. Model and solve, concretely, pictorially and symbolically, problems that can be represented by linear equations of the form: • *ax* + *b* = *c* • *ax* = *b* • $\frac{x}{a}$ = *b,* a ≠ 0 where *a*, *b* and *c* are whole numbers.  | **Patterning Unit 1: Linear Patterns and Equations**5: Modelling and Solving Multi-Step Equations6: Writing and Solving Problems Involving Linear Relations | **Big Idea: Patterns and relations can be represented with symbols, equations, and expressions.****Understanding equality and inequality, building on generalized properties of numbers and operations.*** Investigates and models the meaning of preservation of equality of single variable equations (e.g., 3*x* = 12).
* Models the preservation of equality to solve equations involving integer coefﬁcients (e.g., –4*m* + 16 = –12).

**Using variables, algebraic expressions, and equations to represent mathematical relations*** Evaluates algebraic expressions, including formulas, given speciﬁc values for the variables (e.g., evaluate 3*r =* 12, when *r* = 3; $\frac{1}{2}bh$, when base is 12 cm and height is 5 cm).
* Writes expressions to describe patterns and contexts representing linear relations (e.g., 5, 8, 11, 14 can be represented as 3*n* + 2).

**Big Idea: Regularity and repetition form patterns that can be generalized and predicted mathematically.****Representing patterns, relations, and functions*** Represents a mathematical context or problem with expressions and equations using variables to represent unknowns.
* Models and solves problems with integers using linear equations in different forms (e.g., a*x* = *b*;

*ax* + *b* = *c*; *a*(*x* + *b*) = *c*).  |

 **Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Shape and Space: Measurement)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Use direct and indirect measurement to solve problems. |
| **Specific Outcomes**1. Demonstrate an understanding of circles by:• describing the relationships among radius, diameter and circumference • relating circumference to pi • determining the sum of the central angles • constructing circles with a given radius or diameter • solving problems involving the radii, diameters and circumferences of circles.  | **Measurement Unit 1:** **2-D Shapes and 3-D Solids**1: Exploring Circles 2: Calculating Circumference 3: Exploring Central Angles  | **Big Idea: Many things in our world (e.g., objects, spaces, events) have attributes that can be measured and compared.****Understanding attributes that can be measured, compared, or ordered*** Understands circumference as the measure around a circle.

**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.****Selecting and using units to estimate, measure, construct, and make comparisons*** Relates angle measures to arcs and sectors of a circle.
* Constructs circles based on radius and diameter measures.

**Understanding relationships among measured units*** Develops and generalizes strategies to compute the circumference and area of circles.
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| 2. Develop and apply a formula for determining the area of: • triangles • parallelograms • circles.  | **Measurement Unit 1:** **2-D Shapes and 3-D Solids**4: Determining the Area of Triangles and Parallelograms5: Estimating and Determining the Area of a Circle  | **Big Idea:** **Assigning a unit to a continuous attribute allows us to measure and make comparisons.****Understanding relationships among measured units*** Develops and generalizes strategies to compute the circumference and area of circles.

**Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.****Investigating 2-D shapes, 3-D solids, and their attributes through composition and decomposition*** Constructs and decomposes polygons into shapes with known areas (e.g., triangles, rectangles).

**Big Idea: Assigning a unit to a continuous attribute allows us to measure and make comparisons.****Understanding relationships among measured units*** Develops and generalizes strategies to compute area of triangles, quadrilaterals, and other polygons (e.g., decomposing a parallelogram and rearranging to form a rectangle).
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 **Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Shape and Space: 3-D Objects and 2-D Shapes)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them. |
| **Specific Outcomes** 3. Perform geometric constructions, including: • perpendicular line segments • parallel line segments • perpendicular bisectors • angle bisectors.  | **Measurement Unit 1:** **2-D Shapes and 3-D Solids**6: Constructing Lines 7: Constructing Bisectors  | **Big Idea: 2-D shapes and 3-D solids can be analyzed and classified in different ways by their attributes.****Investigating geometric attributes and properties of 2-D shapes and 3-D solids*** Identifies and draws parallel, intersecting, and perpendicular lines.
* Performs geometric constructions to gain insight into properties of lines, angles, and polygons (e.g., constructs perpendicular bisectors, 45° angles, angle bisectors, equilateral triangle).
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**Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Shape and Space: Transformations)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Describe and analyze position and motion of objects and shapes. |
| **Specific Outcomes** 4. Identify and plot points in the four quadrants of a Cartesian plane, using integral ordered pairs.  | **Geometry Unit 1: Transformations on a Cartesian Plane**1: Exploring the Cartesian Plane | **Big Idea: Objects can be located in space and viewed from multiple perspectives.****Locating and mapping objects in space*** Identifies, locates, and plots points, polygon vertices, and lines on a Cartesian plane in all four quadrants. (Limited to integers.)
 |
| 5. Perform and describe transformations (translations, rotations or reflections) of a 2-D shape in all four quadrants of a Cartesian plane (limited to integral number vertices).  | **Geometry Unit 1: Transformations on a Cartesian Plane**2: Translating 2-D Shapes on a Cartesian Plane 3: Reflecting and Rotating 2-D Shapes on a Cartesian Plane 4: Combining Transformations | **Big Idea: Objects can be located in space and viewed from multiple perspectives.****Locating and mapping objects in space** * Analyzes and predicts the location of 2-D shapes under transformation on a Cartesian plane.
* Analyzes and locates points, lines, and shapes on a Cartesian plane after successive transformations.
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 **Correlation of the Alberta Mathematics Program of Study**  **with Mathology Grade 7 (Statistics and Probability: Data Analysis)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Collect, display and analyze data to solve problems. |
| **Specific Outcomes**1. Demonstrate an understanding of central tendency and range by: • determining the measures of central tendency (mean, median, mode) and range • determining the most appropriate measures of central tendency to report findings. | **Data Management Unit 1: Data Management**1: Exploring Measures of Data2: Determining Mean and Mode3: Determining Median and Range4: Comparing Measures of Central Tendency  | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Creating graphical displays of collected data** * Creates charts and graphs with appropriate titles and labels to represent data collected.
* Represents data graphically using many -to-one correspondence with appropriate scales and intervals.

**Reading and interpreting data displays and analyzing variability*** Reads and interprets data displays using many-to-one correspondence.
* Visualizes and determines the mean of a data set.
* Visualizes and determines the median value as a middle measure representing a whole data set.
* Understands and describes the differences between the central tendency values (i.e., mode, median, mean) and explores which measure is most appropriate for the data collected.

**Using the language and tools of chance to describe and predict events*** Describes data using frequency counts (e.g., 5 people chose peppermint) and modal value (e.g., dogs are the most common pets).
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| 2. Determine the effect on the mean, median and mode when an outlier is included in a data set.  | **Data Management Unit 1: Data Management**5: Exploring the Impact of Outliers on Mean, Median, and Mode | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Reading and interpreting data displays and analyzing variability*** Explains the effect of removing or changing values (including outliers) on measures of central tendency.
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| 3. Construct, label and interpret circle graphs to solve problems.  | **Data Management Unit 1: Data Management**6: Exploring Circle Graphs7: Constructing Circle Graphs | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Creating graphical displays of collected data*** Creates graphical representations to illustrate parts of a whole (e.g., circle graph)

**Drawing conclusions by making inferences and justifying decisions based on data collected** * Draw conclusions based on data presented.
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 **Correlation of the Alberta Mathematics Program of Study**
**with Mathology Grade 7 (Statistics and Probability: Chance and Uncertainty)**

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| **Curriculum Outcomes** | **Grade 7 Mathology.ca** | **Pearson Canada Grades 4–9 Mathematics Learning Progression** |
| **General Outcome**Use experimental or theoretical probabilities to represent and solve problems involving uncertainty. |
| **Specific Outcomes**4. Express probabilities as ratios, fractions and percents.  | **Data Management Unit 2: Probability**8: Writing Experimental Probabilities | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Using the language and tools of chance to describe and predict events*** Determines the relative frequency of each outcome in an experiment involving two independent events by performing multiple trials.
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| 5. Identify the sample space (where the combined sample space has 36 or fewer elements) for a probability experiment involving two independent events.  | **Data Management Unit 2: Probability**9: Identifying and Representing Sample Spaces | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Using the language and tools of chance to describe and predict events*** Determines and represents theoretical probability of outcomes for two independent events (e.g., rolling a die and tossing a coin) using graphical tools (e.g., tree diagram, lists, matrix).
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| 6. Conduct a probability experiment to compare the theoretical probability (determined using a tree diagram, table or other graphic organizer) and experimental probability of two independent events.  | **Data Management Unit 2: Probability**10: Exploring Theoretical and Experimental Probability | **Big Idea: Formulating questions, collecting data, and consolidating data in visual and graphic displays help us understand, predict, and interpret situations that involve uncertainty, variability, and randomness.****Using the language and tools of chance to describe and predict events*** Determines and represents theoretical probability of outcomes for two independent events (e.g., rolling a die and tossing a coin) using graphical tools (e.g., tree diagram, lists, matrix).
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