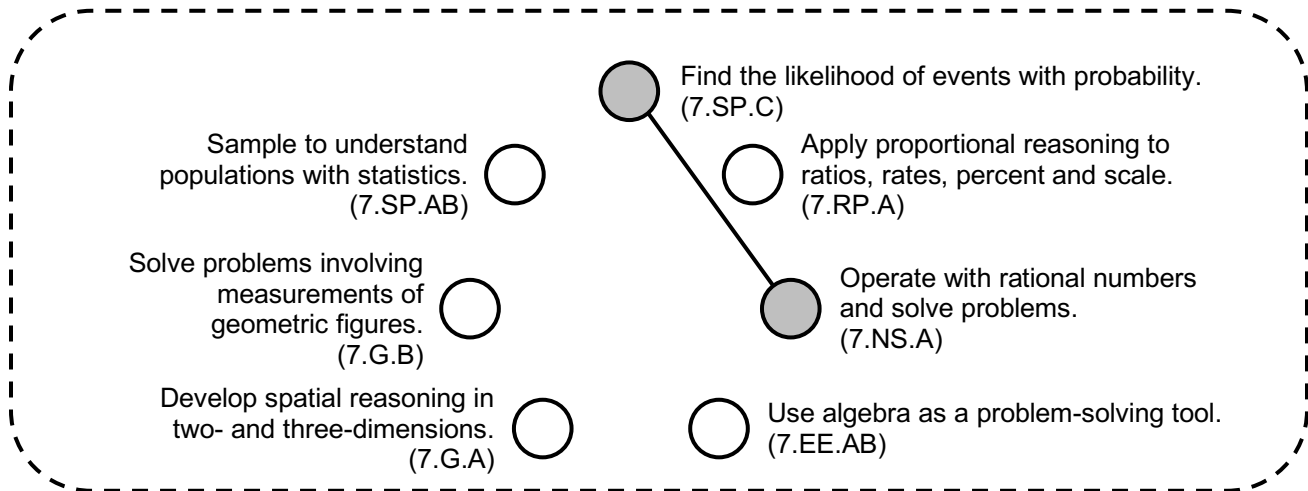## GRADE 7 – UNIT 1: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 1 and their connections to each other.
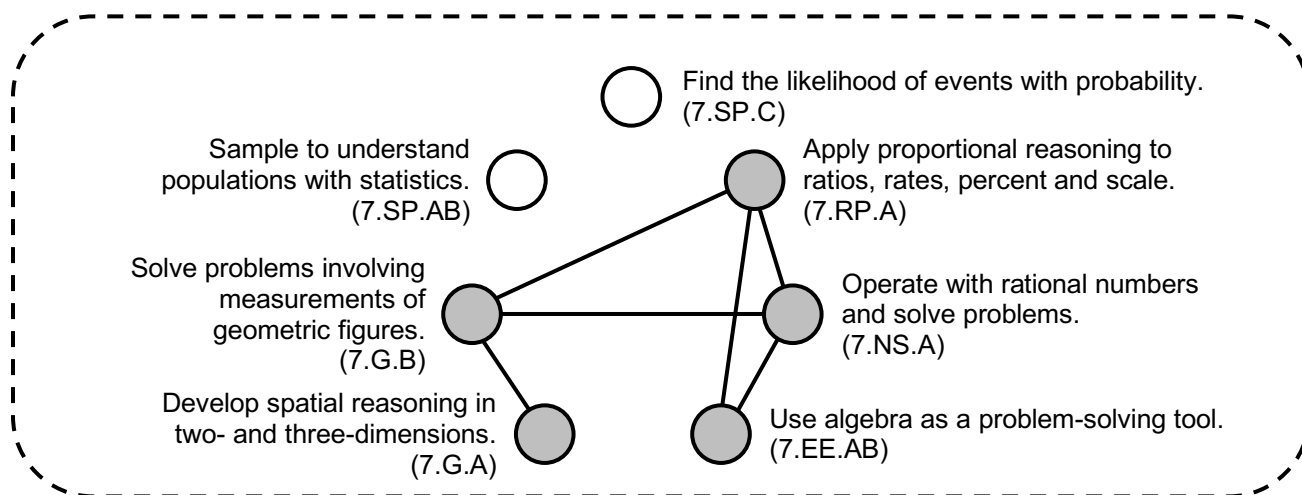
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Analyze patterns and relationships (5.OA.B)	• Use probability ideas to analyze samples of populations and draw inferences (7.SP.AC, HS)
• Understand the place value system (5.NBT.A)	
• Compute fluently with multi-digit numbers (5.NBT.B, 6.NS.B)	• Know that there are numbers that are not rational, and approximate them by rational numbers (8.NS.A, HS)
• Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)	• Explore and apply concepts of conditional probability and rules of probability (HS)
• Operations with fractions, decimals, percents (4.NF.B, 5.NBT.B, 5.NF.AB, 6.RP.A 6.NS.AB)	• Use probability to make decisions (HS)

GRADE 7 – UNIT 2: Big Ideas and Connections

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MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 2 and their connections to each other.
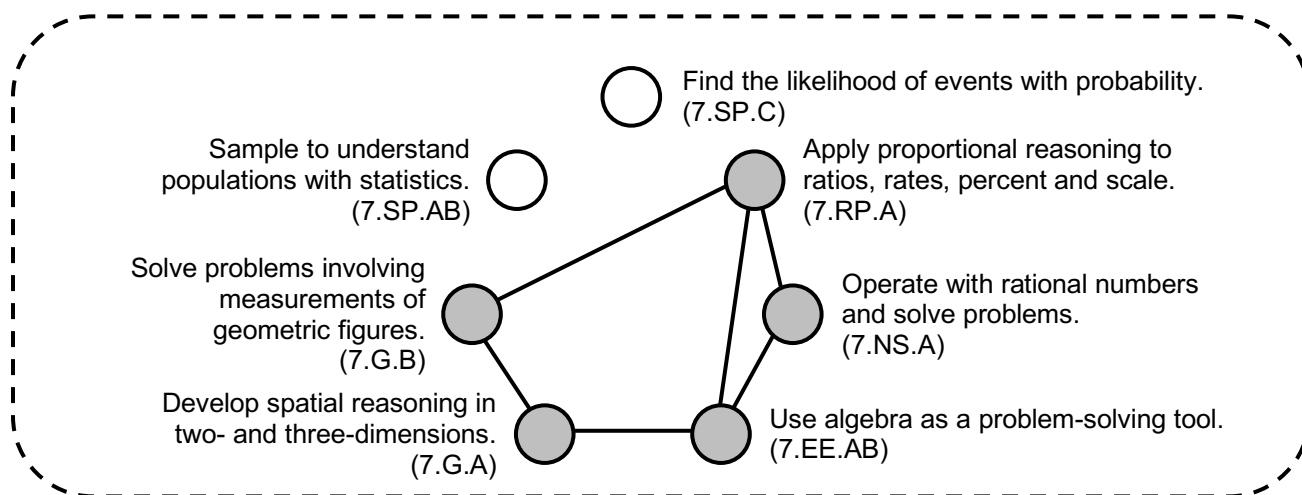
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures (3.MD.D)	• Solve problems using equations (7.EE.B, 8.EE.C)
• Understand concepts of angle and angle measures (4.MD.C)	• Solve real-life and mathematical problems involving angle measure, area, surface area, and volume (7.G.B, HS)
• Convert like measurement units within a given measurement system (5.MD.A)	• Understand congruence and similarity (8.G.A, HS)
• Computational fluency with decimals and fractions (6.NS.AB)	• Understand the connections between proportional relationships, lines, and linear equations (8.EE.B, HS)
• Understand ratio concepts and use ratio reasoning to solve problems (6.RP.A)	• Compound interest (HS)
• Percent of a quantity (6.RP.A)	
• Solve real-world and mathematical problems involving area (6.G.A)	

GRADE 7 – UNIT 3: Big Ideas and Connections

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MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 3 and their connections to each other.
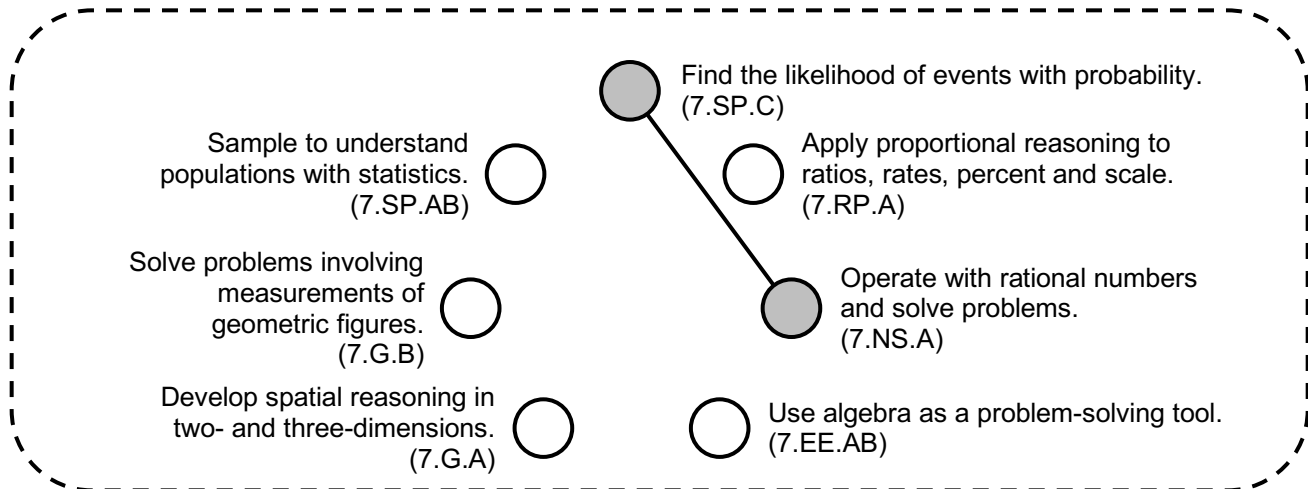

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures (3.MD.D) • Convert like measurement units within a given measurement system (5.MD.A) • Solve real-world and mathematical problems involving area (6.G.A) • Computational fluency with decimals and fractions (6.NS.AB) • Understand ratio concepts and use ratio reasoning to solve problems (6.RP.A) • Percent of a quantity (6.RP.A)	• Solve problems using equations (7.EE.B, 8.EE.C) • Solve real-life and mathematical problems involving angle measure, area, surface area, and volume (7.G.B, HS) • Understand the connections between proportional relationships, lines, and linear equations (8.EE.B, HS) • Use functions to model relationships between quantities (8.F.B, HS) • Understand congruence and similarity (8.G.A, HS) • Represent vector quantities (HS)

GRADE 7 – UNIT 4: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 4 and their connections to each other.
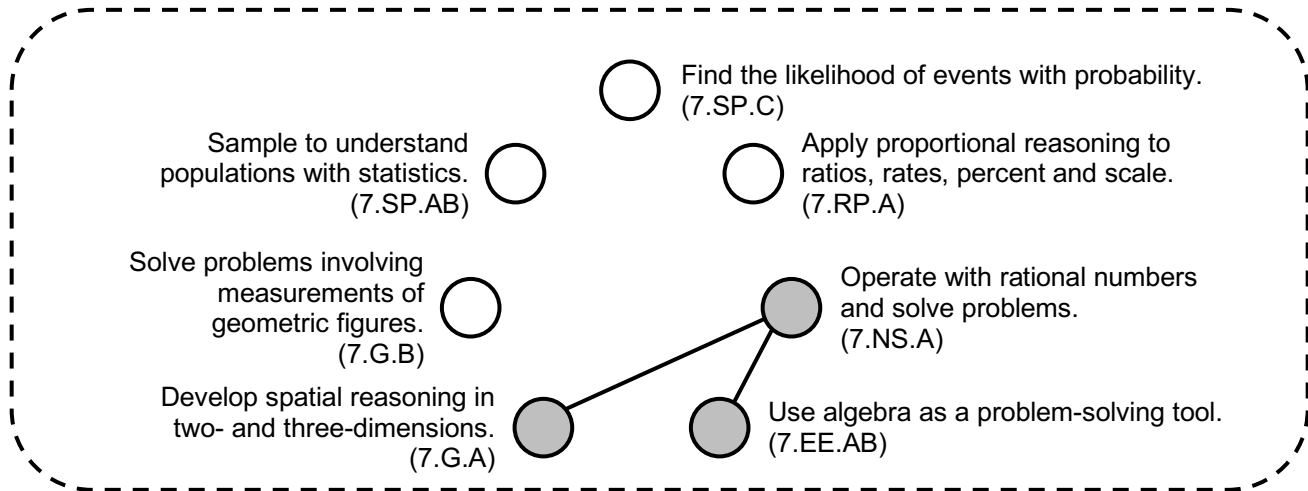
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Perform operations with whole numbers, fractions, and decimals (3.OA.ABCD, 3.NBT.A, 3.NF.A, 4.OA.A, 4.NBT.B, 4.NF.ABC, 5.NBT.B, 5.NF.AB, 6.NS.AB) • Apply and extend previous understandings of numbers to the system of rational numbers (6.NS.C)	• Solve problems using numerical and algebraic expressions and equations (7.EE.B) • Analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.C, HS) • Define, evaluate, and compare functions (8.F.A, HS) • Use functions to model relationships between quantities (8.F.B, HS) • Use rational numbers and graphing in modeling situations (HS)

GRADE 7 – UNIT 5: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 5 and their connections to each other.
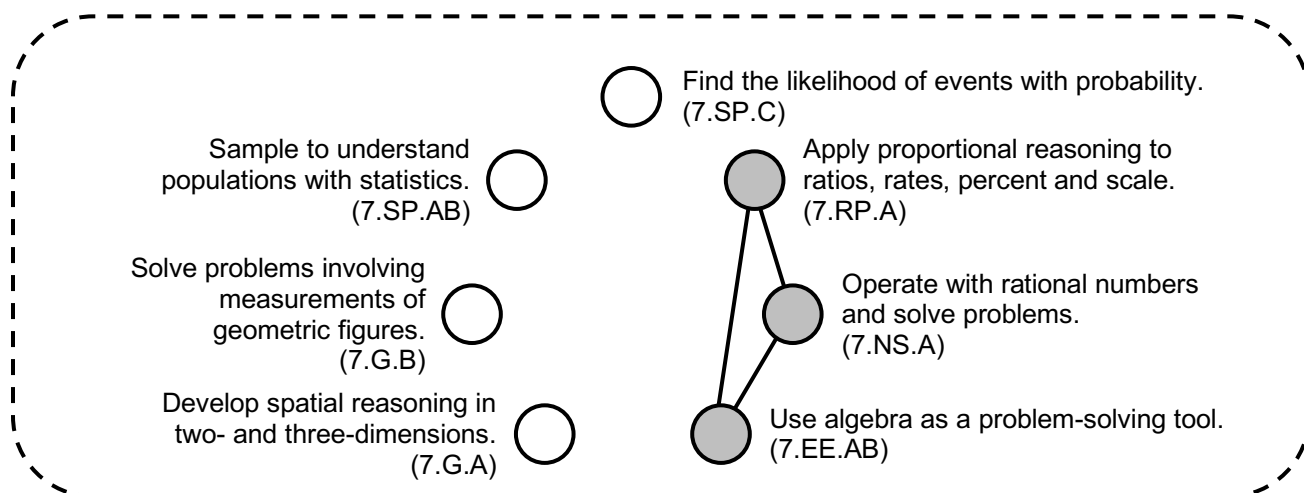
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Perform operations with whole numbers, fractions, and decimals (3.OA.ABCD, 3.NBT.A, 3.NF.A, 4.OA.A, 4.NBT.B, 4.NF.ABC, 5.NBT.B, 5.NF.AB, 6.NS.AB) • Apply and extend previous understandings of numbers to the system of rational numbers (6.NS.C)	• Solve problems using numerical and algebraic expressions and equations (7.EE.B) • Analyze and solve linear equations and pairs of simultaneous linear equations (8.EE.C, HS) • Define, evaluate, and compare functions (8.F.A, HS) • Use functions to model relationships between quantities (8.F.B, HS) • Use rational numbers and graphing in modeling situations (HS)

GRADE 7 – UNIT 6: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 6 and their connections to each other.
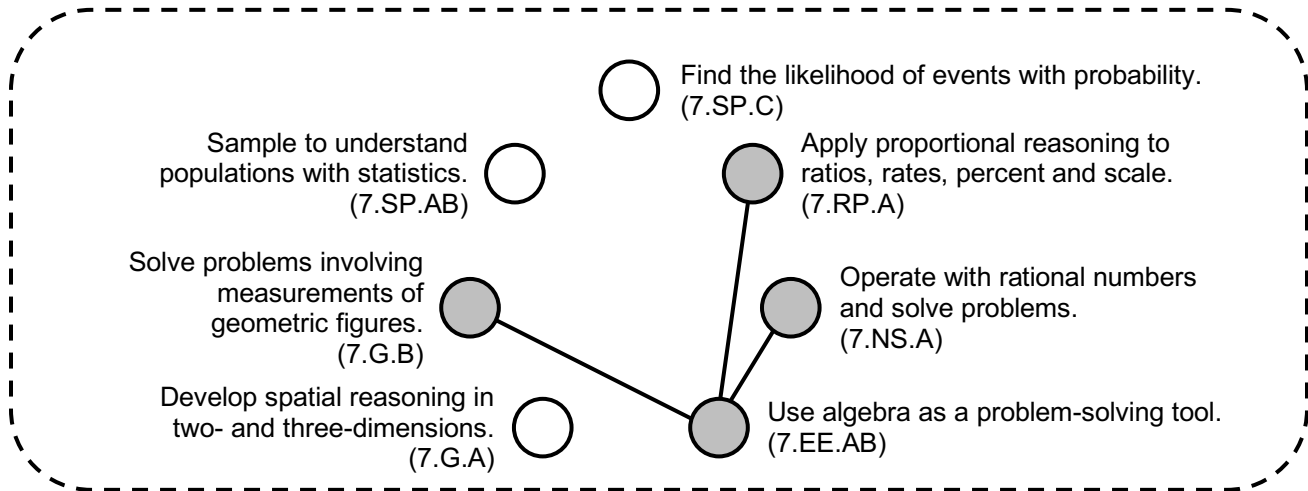
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Perform operations with whole numbers, fractions, and decimals (5.NF.AB, 6.NS.AB)	• Analyze and solve linear equations in one or more variables (8.EE.C, HS)
• Apply and extend previous understanding of numbers to rational numbers (6.NS.C)	• Use algebra skills to explore the world of functions (8.F.A, HS)
• Write and interpret numerical and algebraic expressions (5.OA.A, 6.EE.B)	• Use expressions and equations to create mathematical models (8.F.B, HS)
• Solve one-step equations and inequalities using non-negative numbers (6.EE.B)	
• Explore input-output relationships (6.EE.C)	

GRADE 7 – UNIT 7: Big Ideas and Connections

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MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 7 and their connections to each other.
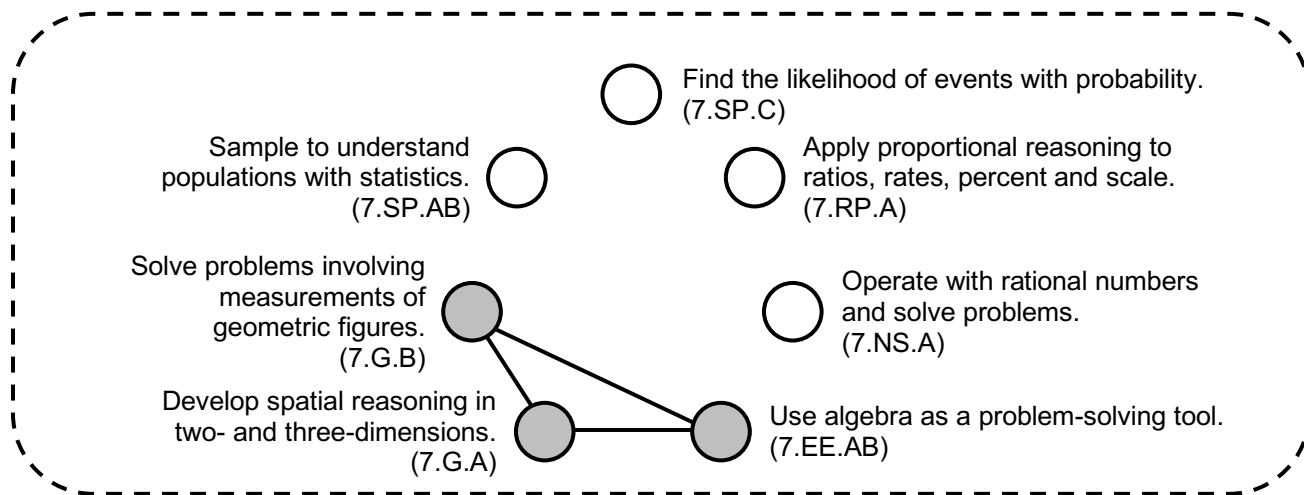
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Perform operations with whole numbers, fractions, and decimals (5.NF.AB, 6.NS.AB)	• Analyze and solve linear equations in one or more variables (8.EE.C, HS)
• Apply and extend previous understanding of numbers to rational numbers (6.NS.C)	• Use algebra skills to explore the world of functions (8.F.A, HS)
• Write and interpret numerical and algebraic expressions (5.OA.A, 6.EE.B)	• Use expressions and equations to create mathematical models (8.F.B, HS)
• Reason about and solve one-variable equations and inequalities (6.EE.B)	
• Explore input-output relationships (6.EE.C)	
• Graph on a number line and in the coordinate plane (5.G.A, 6.NS.C)	
• Understand ratio concepts and use ratio reasoning to solve problems (6.RP.A)	
• Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)	

GRADE 7 – UNIT 8: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Packet 8 and their connections to each other.

Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Understand concepts of angle and measure angles (4.MD.C)	• Find volumes of solids (7.G.B, 8.G.C)
• Draw and identify lines and angles, and classify shapes by properties of their lines and angles. (4.G.A, 5.G.B)	• Explore properties of parallel lines and transversals (8.G.A)
• Identify and work with solid figures (5.MD.C, 6.G.A)	• Understand and apply the Pythagorean Theorem (8. G.B)
• Solve real-life and mathematical problems using numerical and algebraic expressions and equations (7.EE.B)	• Solve geometry problems using equations (8.EE.C, HS)

GRADE 7 – UNIT 9: Big Ideas and Connections

The Center for Mathematics and Teaching is dedicated to igniting and nurturing passion for mathematics in middle school students. We see the classroom as a place of joy and wonder, collaboration and purpose, perseverance and empowerment. We want all students to succeed in mathematics, as they explore its beauty in patterns, concepts, connections, and applications.

MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 9 and their connections to each other.
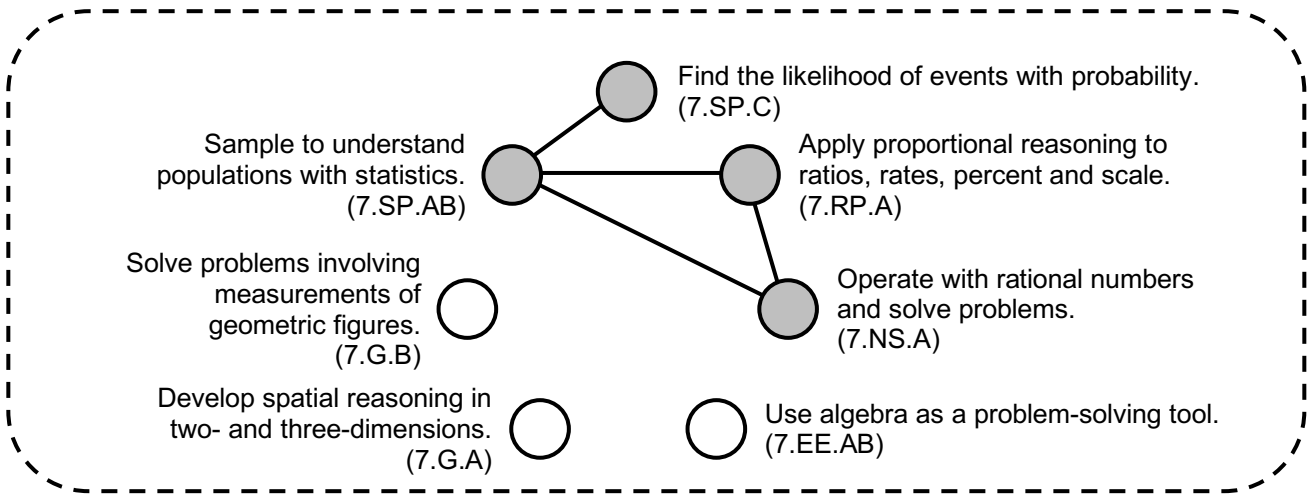
Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Understand concept of area (3.MD.C)	• Extend the number system that includes irrational numbers (8.NS.A, HS)
• Understand concept of angle and measure angles (4.MD.C)	• Understand and apply the Pythagorean Theorem (8.G.B, HS)
• Understand concept of volume (5.MD.C)	• Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres (8.G.C)
• Explore patterns, expressions, and graphs in the coordinate plane (5.OA.AB, 5.G.A)	
• Use proportional reasoning to solve problems (6.RP.A, 7.RP.A)	• Use coordinate geometry (8.G.A, HS)
• Solve real-world and mathematical problems involving area, surface area, and volume (7.G.B)	• Model more complex problems using geometric formulas (HS)
	• Study geometry as a system of definitions, postulates, and theorems (HS)
• Solve real-life and mathematical problems using numerical and algebraic expressions and equations (7.EE.B)	• Study and use analytic geometry (HS)

GRADE 7 – UNIT 10: Big Ideas and Connections

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MathLinks: Grade 7 is organized around seven big ideas. This graphic provides a snapshot of the ideas in Unit 10 and their connections to each other.

Find the likelihood of events with probability. (7.SP.C)

Sample to understand populations with statistics. (7.SP.AB)

Apply proportional reasoning to ratios, rates, percent and scale. (7.RP.A)

Solve problems involving measurements of geometric figures. (7.G.B)

Operate with rational numbers and solve problems. (7.NS.A)

Develop spatial reasoning in two- and three-dimensions. (7.G.A)

Use algebra as a problem-solving tool. (7.EE.AB)

These ideas build on past work and prepare students for the future. Some of these include:

Prior Work	What's Ahead
• Represent and interpret data, especially line plots (Grades 4, 5)	• Investigate bivariate data (Grade 8)
• Add, subtract, multiply and divide whole numbers and decimals to hundredths (Grade 5)	• Interpret categorical and quantitative data (HS)
• Compute and analyze one-variable statistics (Grade 6)	• Make inferences and justify conclusions about statistical experiments, surveys, and observational studies (HS)
	• Use statistics as a tool when mathematical modeling (HS)