

# SpringBoard

## Unit Activity **Correlations** to **Common Core State Standards**

### Geometry

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## **Geometry**

### **Congruence**

#### **Experiment with transformations in the plane**

**1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.**

Unit 1, Activity 1-1: Geometric Figures  
Unit 1, Activity 1-1: Geometric Figures  
Unit 1, Activity 1-5: Segment and Angle Measurement  
Unit 1, Activity 1-6: Parallel and Perpendicular Lines  
Unit 1, EA 1-2: Angles and Parallel Lines  
Unit 1, Unit Practice

Unit 2, Activity, 2-1: Interior Angles of Polygons  
Unit 2, Activity, 2-2: Exterior Angles of Polygons  
Unit 2, EA 2-1: Angles and Sides of Polygons  
Unit 4, Activity 4-6: Equation of a Circle and a Sphere  
Unit 4, EA 4-2: Area and Arc Length, Equation of a Circle

**2. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).**

Unit 3, Activity, 3-1: Exploring Similar Figures  
Unit 5, Activity 5-1: Transformations on the Coordinate Plane  
Unit 5, EA 5-1: Transformations

**3. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.**

Unit 5, Activity 5-1: Transformations on the Coordinate Plane  
Unit 5, Unit Practice

**4. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.**

Unit 5, Activity 5-1: Transformations on the Coordinate Plane  
Unit 5, EA 5-1: Transformations  
Unit 5, Activity 5-3: Tessellations

Unit 5, EA 5-2: Tessellations  
Unit 5, Unit Practice

**5. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.**

Unit 5, Activity 5-1: Transformations on the Coordinate Plane  
Unit 5, Activity 5-3: Tessellations  
Unit 5, Unit Practice

## Understand congruence in terms of rigid motions

**6. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.**

Unit 5, Activity 5-1: Transformations on the Coordinate Plane  
Unit 5, EA 5-1: Transformations  
Unit 5, Activity 5-3: Tessellations

Unit 5, EA 5-2: Tessellations  
Unit 5, Unit Practice

**7. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.**

Unit 2, Activity, 2-5: Congruent Triangle Methods  
Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-7: Isosceles Triangles  
Unit 2, EA 2-2: Congruence, Triangles and Proof

Unit 2, Activity, 2-8: Quadrilaterals and Their Properties  
Unit 2, Activity, 2-9: More About Quadrilaterals  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse

**8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.**

Unit 2, Activity, 2-5: Congruent Triangle Methods  
Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-7: Isosceles Triangles  
Unit 2, EA 2-2: Congruence, Triangles and Proof

Unit 2, Activity, 2-8: Quadrilaterals and Their Properties  
Unit 2, Activity, 2-9: More About Quadrilaterals  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse

## Prove geometric theorems

**9. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.**

Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-8: Quadrilaterals and Their Properties  
Unit 2, Activity, 2-9: More About Quadrilaterals  
Unit 2, Unit Practice  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality

Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 4, Activity 4-1: Tangents and Chords  
Unit 4, Activity 4-2: Arcs, Central and Inscribed Angles  
Unit 4, Activity 4-4: Segment Lengths in Circles

**10. Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to  $180^\circ$ ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.**

Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-7: Isosceles Triangles  
Unit 2, Unit Practice  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality

Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 3, Activity, 3-5: Geometric Mean  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse

**11. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.**

Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-8: Quadrilaterals and Their Properties

Unit 2, Activity, 2-9: More About Quadrilaterals  
Unit 2, Unit Practice

### **Make geometric constructions**

**12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.**

Unit 4, Unit Overview  
Unit 4, Activity 4-7: Constructions  
Unit 4, Unit Practice

**13. Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.**

Unit 4, Activity 4-7: Constructions

## **Similarity, Right Triangles, and Trigonometry**

### **Understand similarity in terms of similarity transformations**

**1. Verify experimentally the properties of dilations given by a center and a scale factor:**

a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.

Unit 3, Activity, 3-1: Exploring Similar Figures  
Unit 5, Unit Practice  
Unit 5, Math Standards Review

Unit 6, Activity 6-4: Similar Solids  
Unit 6, Unit Practice  
Unit 6, Math Standards Review

b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.

Unit 3, Activity, 3-1: Exploring Similar Figures  
Unit 5, Unit Practice  
Unit 5, Math Standards Review

Unit 6, Activity 6-4: Similar Solids  
Unit 6, Unit Practice  
Unit 6, Math Standards Review

**2. Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.**

Unit 3, Activity, 3-1: Exploring Similar Figures  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality

Unit 3, EA 3-1: Similarity in Polygons  
Unit 3, Unit Practice  
Unit 6, Activity 6-4: Similar Solids

**3. Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.**

Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality

Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 3, EA 3-1: Similarity in Polygons

## SB Geometry to Common Core

Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 3, Unit Practice

Unit 4, Activity 4-4: Segment Lengths in Circles  
Unit 6, Activity 6-1: Nets and Views of Solid Figures

### Prove theorems involving similarity

**4. Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.**

Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-7: Isosceles Triangles  
Unit 2, Unit Practice  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality

Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 3, Activity, 3-5: Geometric Mean  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse

**5. Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.**

Unit 2, Activity, 2-6: Flow Charts and Paragraph Proofs  
Unit 2, Activity, 2-7: Isosceles Triangles  
Unit 2, Unit Practice  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-3: Triangle Proportionality  
Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 3, EA 3-1: Similarity in Polygons

Unit 3, Activity, 3-5: Geometric Mean  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse  
Unit 3, Activity, 3-7: Special Right Triangles  
Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 3, EA 3-3: Special Right Triangles and Trigonometry  
Unit 3, Unit Practice

### Define trigonometric ratios and solve problems involving right triangles

**6. Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.**

Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse  
Unit 3, EA 3-2: The Pythagorean Theorem and Geometric Mean

Unit 3, Activity, 3-7: Special Right Triangles  
Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 3, EA 3-3: Special Right Triangles and Trigonometry  
Unit 3, Unit Practice

**7. Explain and use the relationship between the sine and cosine of complementary angles.**

Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 3, Unit Practice  
Unit 1, Activity 1-9: Distance and Midpoint

**8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.**

Unit 1, Activity 1-9: Distance and Midpoint  
Unit 2, Activity, 2-5: Congruent Triangle Methods  
Unit 3, Unit Overview  
Unit 3, Activity, 3-2: Similarity  
Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence  
Unit 3, EA 3-1: Similarity in Polygons  
Unit 3, Activity, 3-5: Geometric Mean  
Unit 3, Activity, 3-6: The Pythagorean Theorem and Its Converse

Unit 3, EA 3-2: The Pythagorean Theorem and Geometric Mean  
Unit 3, Activity, 3-7: Special Right Triangles  
Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 3, EA 3-3: Special Right Triangles and Trigonometry  
Unit 3, Unit Practice  
Unit 3, Unit Reflection  
Unit 3, Math Standards Review  
Unit 4, EA 4-1: Angles and Segments Associated with Circles  
Unit 4, Activity 4-5: Measures of Arcs and Sectors

## SB Geometry to Common Core

Unit 5, Activity 5-4: Derive and Use Area Formulas  
Unit 5, EA 5-2: Tessellations

Unit 5, Activity 5-6: Vectors  
Unit 6, Activity 6-1: Nets and Views of Solid Figures

### Apply trigonometry to general triangles

**9. Derive the formula  $A = \frac{1}{2} ab \sin(C)$  for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.**

Unit 4, Activity 4-4: Area of Triangles

**10. Prove the Laws of Sines and Cosines and use them to solve problems.**

Unit 4, Activity 4-5: Law of Cosines  
Unit 4, Activity 4-6: Law of Sines

**11. Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).**

Precalculus, Unit 4, Activity 4-5: Law of Cosines  
Precalculus, Unit 4, Activity 4-6: Law of Sines

## Circles

### Understand and apply theorems about circles

**1. Prove that all circles are similar.**

Unit 3, Activity, 3-2: Similarity

**2. Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.**

Unit 4, Activity 4-1: Tangents and Chords  
Unit 4, Activity 4-2: Arcs, Central and Inscribed Angles  
Unit 4, Activity 4-3: Angles Formed by Chords, Secants, and Tangents

Unit 4, Activity 4-4: Segment Lengths in Circles  
Unit 4, EA 4-1: Angles and Segments Associated with Circles  
Unit 4, Activity 4-5: Measures of Arcs and Sectors  
Unit 4, Unit Practice

**3. Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.**

Unit 2, Unit Overview  
Unit 2, Unit Reflection  
Unit 4, Activity 4-2: Arcs, Central and Inscribed Angles  
Unit 4, Activity 4-3: Angles Formed by Chords, Secants, and Tangents

Unit 4, Activity 4-5: Measures of Arcs and Sectors  
Unit 4, Unit Practice  
Unit 5, Activity 5-4: Derive and Use Area Formulas

**4. Construct a tangent line from a point outside a given circle to the circle.**

Unit 4, Activity 4-1: Tangents and Chords  
Unit 4, Activity 4-7: Constructions

## Find arc lengths and areas of sectors of circles

5. Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

Unit 4, Activity 4-5: Measures of Arcs and Sectors  
Unit 4, Unit Practice

## Expressing Geometric Properties with Equations

Translate between the geometric description and the equation for a conic section

1. Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

Unit 4, EA 4-2: Area and Arc Length, Equation of a Circle  
Unit 4, Activity 4-6: Equation of a Circle and a Sphere  
Unit 6, Activity 6-1: Nets and Views of Solid Figures

2. Derive the equation of a parabola given a focus and directrix.

Algebra 2, Unit 3, Activity 3-5: Graphing Quadratics and Quadratic Inequalities  
Algebra 2, Unit 7, Activity 7-4: Parabolas  
Algebra 2, Unit 7, Activity 7-5: Identifying Conic Sections

Algebra 2, Unit 7, EA 7-1: Conic Sections  
Precalculus, Unit 5, Activity 5-1: Parabola Equations and Graphs

Use coordinates to prove simple geometric theorems algebraically

4. Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point  $(1, \sqrt{3})$  lies on the circle centered at the origin and containing the point  $(0, 2)$ .

Unit 2, Activity, 2-8: Quadrilaterals and Their Properties  
Unit 2, EA 2-3: Quadrilaterals  
Unit 3, Activity, 3-4: Coordinate Proofs of Similarity and Congruence

5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

Unit 1, Unit Overview  
Unit 1, Activity 1-8: Equations of Parallel and Perpendicular Lines  
Unit 1, EA 1-3: Slope, Distance, and Midpoint

Unit 1, Unit Practice  
Unit 2, Activity, 2-4: Points of Concurrency  
Unit 5, Activity 5-1: Transformations on the Coordinate Plane

6. Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Unit 5, Activity 5-6: Vectors

7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.

Unit 1, Activity 1-9: Distance and Midpoint  
Unit 4, Activity 4-6: Equation of a Circle and a Sphere  
Unit 5, EA 5-2: Tessellations

Unit 5, Activity 5-7: Transformations with Matrices  
Unit 5, Unit Practice



## Geometric Measurement and Dimension

### Explain volume formulas and use them to solve problems

**1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.**

Unit 6, Activity 6-3: Volume

**3. Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.**

Unit 6, Activity 6-3: Volume

Unit 6, Activity 6-4: Similar Solids

Unit 6, EA 6-2: Surface Area and Volume

Unit 6, Unit Practice

Unit 6, Unit Reflection

### Visualize relationships between two-dimensional and three-dimensional objects

**4. Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.**

Unit 1, Activity 1-8: Equations of Parallel and Perpendicular Lines

Unit 6, Unit Overview

Unit 6, Activity 6-1: Nets and Views of Solid Figures

Unit 6, Activity 6-2: Lateral Area and Surface Area

## Modeling with Geometry

### Apply geometric concepts in modeling situations

**1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).**

Unit 1, Activity 1-6: Parallel and Perpendicular Lines

Unit 1, Activity 1-8: Equations of Parallel and Perpendicular Lines

Unit 1, EA 1-3: Slope, Distance, and Midpoint

Unit 2, Activity, 2-3: Triangle Inequalities

Unit 2, Activity, 2-4: Points of Concurrency

Unit 3, Activity, 3-1: Exploring Similar Figures

Unit 3, Activity, 3-7: Special Right Triangles

Unit 4, Activity 4-2: Arcs, Central and Inscribed Angles

Unit 4, Activity 4-3: Angles Formed by Chords, Secants, and Tangents

Unit 4, Activity 4-4: Segment Lengths in Circles

Unit 5, Activity 5-1: Transformations on the Coordinate Plane

Unit 5, Activity 5-2: Origin-Centered Dilations

Unit 5, EA 5-1: Transformations

Unit 5, Activity 5-3: Tessellations

Unit 5, Activity 5-4: Derive and Use Area Formulas

Unit 5, Activity 5-5: Non-Euclidean Geometry

Unit 6, Activity 6-1: Nets and Views of Solid Figures

Unit 6, Activity 6-2: Lateral Area and Surface Area

Unit 6, Activity 6-3: Volume

Unit 6, Activity 6-4: Similar Solids

**2. Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).**

Algebra 1, Unit 2, Activity 2-5: Direct and Inverse Variation

Algebra 1, Unit 4, Activity 4-1: Exponent Rules

Algebra 2, Unit 5, Activity 5-5: Inverse Variation and Rational Functions

Precalculus, Unit 2, Activity 2-3: Complex Polynomial Roots and Inequalities

Precalculus, Unit 2, Activity 2-5: Rational Functions

Precalculus, Unit 2, Activity 2-9: Effects of Transformations

**3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).**

Unit 2, Activity, 2-3: Triangle Inequalities  
Unit 2, Activity, 2-4: Points of Concurrency  
Unit 3, Activity, 3-7: Special Right Triangles  
Unit 3, Activity, 3-8: Basic Trigonometric Relationships  
Unit 4, Activity 4-3: Angles Formed by Chords, Secants, and Tangents  
Unit 4, Activity 4-5: Measures of Arcs and Sectors  
Unit 5, Activity 5-2: Origin-Centered Dilations

Unit 5, Activity 5-3: Tessellations  
Unit 5, Activity 5-4: Derive and Use Area Formulas  
Unit 6, Activity 6-1: Nets and Views of Solid Figures  
Unit 6, Activity 6-2: Lateral Area and Surface Area  
Unit 6, EA 6-1: Three-Dimensional Figures  
Unit 6, Activity 6-3: Volume  
Unit 6, Activity 6-4: Similar Solids

## **Statistics and Probability**

### **Conditional Probability and the Rules of Probability**

#### **Understand independence and conditional probability and use them to interpret data**

**1. Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).**

Unit 3, Activity, 3-2: Similarity  
Unit 7, Activity 7-1: Probability Experiments  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability

Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, Activity 7-4: Geometric Probability  
Unit 7, Activity 7-5: Simulation  
Unit 7, Unit Practice

**2. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.**

Unit 7, Activity 7-1: Probability Experiments  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability  
Unit 7, Activity 7-3: Dependent Compound Events

Unit 7, Activity 7-4: Geometric Probability  
Unit 7, Activity 7-5: Simulation  
Unit 7, Unit Practice

**3. Understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ , and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.**

Unit 7, Activity 7-1: Probability Experiments  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability  
Unit 7, Activity 7-3: Dependent Compound Events

Unit 7, Activity 7-4: Geometric Probability  
Unit 7, Activity 7-5: Simulation  
Unit 7, Unit Practice

**5. Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.**

Unit 7, Unit Overview  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability

Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, EA 7-2: Compound Events, Probability, Simulation  
Unit 7, Unit Practice

## Use the rules of probability to compute probabilities of compound events in a uniform probability model

**6. Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.**

Unit 7, Unit Overview  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability

Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, EA 7-2: Compound Events, Probability, Simulation  
Unit 7, Unit Practice

**7. Apply the Addition Rule,  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.**

Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, Activity 7-4: Geometric Probability

Unit 7, EA 7-2: Compound Events, Probability, Simulation  
Unit 7, Unit Practice

**8. Apply the general Multiplication Rule in a uniform probability model,  $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$ , and interpret the answer in terms of the model.**

Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability  
Unit 7, Activity 7-3: Dependent Compound Events

**9. Use permutations and combinations to compute probabilities of compound events and solve problems.**

Unit 1, Activity 1-4: Truth Tables  
Unit 2, Activity, 2-4: Points of Concurrency

Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, Unit Practice

## Using Probability to Make Decisions

### Use probability to evaluate outcomes of decisions

**6. Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).**

Unit 7, Unit Overview  
Unit 7, Getting Ready  
Unit 7, Activity 7-1: Probability Experiments  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability

Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, Activity 7-4: Geometric Probability  
Unit 7, Activity 7-5: Simulation  
Unit 7, EA 7-2: Compound Events, Probability, Simulation  
Unit 7, Unit Practice

**7. Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).**

Unit 7, Unit Overview  
Unit 7, Getting Ready  
Unit 7, Activity 7-1: Probability Experiments  
Unit 7, Activity 7-2: Dependent and Independent Events  
Unit 7, EA 7-1: Counting and Probability  
Unit 7, Activity 7-3: Dependent Compound Events  
Unit 7, Activity 7-4: Geometric Probability  
Unit 7, Activity 7-5: Simulation  
Unit 7, EA 7-2: Compound Events, Probability, Simulation  
Unit 7, Unit Practice