Understand similarity in terms of similarity transformations (G.SRT.1-3)
Standard G.SRT.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. b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.
Concepts and Skills to Master
• Recognize the impact of different centers and scale factors on the image of a figure. • Recognize the length of the resulting image is proportional to the length of the original segment based on the scale factor. • Recognize that corresponding sides of the image and pre-image in a dilation will be parallel.

Related Standards: Current Course	Related Standards: Future Courses
II.G.C.1, II.G.C.5, II.G.CO.9, II.G.CO.10, II.G.SRT.2, II.G.SRT.3, II.G.SRT.4, II.G.SRT.5, II.G.SRT.6, II.G.SRT.7, II.G.SRT.8, II.G.GPE.4, II.G.GPE.6, II.F.BF.3	III.F.BF.3, III.F.TF, III.M.GM.3, P.N.VM.5

Support for Teachers

Critical Background Knowledge
• Understand the concept of a ratio (6.RP.1) and represent proportional relationships (7.RP.2) • Describe the effect of dilations on two-dimensional figures using coordinates (8.G.3) • Know precise definitions of angle, circle, perpendicular line, parallel line and line segment (I.G.CO.1)
Academic Vocabulary
dilation, center of dilation, scale factor, similarity
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5620#71532

Understand similarity in terms of similarity transformations (G.SRT.1-3)
Standard G.SRT.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.
Concepts and Skills to Master
• Decide whether two figures are similar using properties of transformations. • Understand that in similar triangles corresponding sides are proportional and corresponding angles are congruent. • Recognize that a sequence of a dilation and one or more rigid motions results in an image that is similar to the pre-image.

Related Standards: Current Course	Related Standards: Future Courses
II.G.C.1, II.G.C.5, II.G.CO.9, II.G.CO.10, II.G.SRT.1, II.G.SRT.3, II.G.SRT.4, II.G.SRT.5, II.G.SRT.6, II.G.SRT.7, II.G.SRT.8, II.G.GPE.4, II.G.GPE.6	III.F.TF, III.G.MG.3, P.N.VM.5

Support for Teachers

Critical Background Knowledge
• Understand the concept of a ratio (6.RP.1) and represent proportional relationships (7.RP.2) • Describe the effect of dilations on two-dimensional figures using coordinates (8.G.3, 8.G.4). • Know precise definitions of angle, circle, perpendicular line, parallel line and line segment (I.G.CO.1) • Know that corresponding pairs of sides and angles are congruent incongruent figures using rigid transformations (I.G.CO.7)
Academic Vocabulary
similarity, corresponding parts, $\cong$, $\sim$
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5620#71535

Understand similarity in terms of similarity transformations (G.SRT.1-3)
Standard G.SRT.3: Use the properties of similarity transformations to establish the *AA* criterion for two triangles to be similar.
Concepts and Skills to Master
• Use similarity transformations to show that the AA similarity criterion establishes similarity for triangles.

Related Standards: Current Course	Related Standards: Future Courses
II.G.C.1, II.G.C.5, II.G.CO.9, II.G.CO.10, II.G.SRT.1, II.G.SRT.2, II.G.SRT.4, II.G.SRT.5, II.G.SRT.6, II.G.SRT.7, II.G.SRT.8, II.G.GPE.4, II.G.GPE.6	III.F.TF, III.G.MG.3, P.N.VM.5

Support for Teachers

Critical Background Knowledge
• The sum of the measures of the angles in a triangle is 180 degrees (8.G.5) • Explain criteria for triangle congruence (I.G.CO.8)
Academic Vocabulary
similarity, transformation, *AA*
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5620#71536

Prove theorems involving similarity (G.SRT.4-5)	
Standard G.SRT.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.)	
Concepts and Skills to Master	
• 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.) • Use similarity transformations to make and prove conjectures about situations involving similar triangles.	
Related Standards: Current Course	Related Standards: Future Courses
II.G.C.1, II.G.C.5, II.G.CO.9, II.G.CO.10, II.G.SRT.1, II.G.SRT.2, II.G.SRT.3, II.G.SRT.5, II.G.SRT.6, II.G.SRT.7, II.G.SRT.8, II.G.GPE.4, II.G.GPE.6	III.G.MG.3

Support for Teachers

Critical Background Knowledge
• Understand that a figure is similar to another if it can be obtained from the first by a sequence of transformations (8.G.4) • Establish facts about angles created when parallel lines are cut by a transversal (8.G.5) • Explore and explain proofs of the Pythagorean Theorem (8.G.6)
Academic Vocabulary
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5620#71542

Prove theorems involving similarity (G.SRT.5)	
Standard G.SRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	
Concepts and Skills to Master	
• Find lengths of measures of sides and angles of congruent and similar triangles. • Solve problems in context involving sides or angles of congruent or similar triangles. • Prove conjectures about congruence or similarity in geometric figures using congruence and similarity criteria.	
Related Standards: Current Course	Related Standards: Future Courses
II.G.C.1, II.G.C.5, II.G.CO.9, II.G.CO.10, II.G.SRT.1, II.G.SRT.2, II.G.SRT.3, II.G.SRT.4, II.G.SRT.6, II.G.SRT.7, II.G.SRT.8, II.G.GPE.4, II.G.GPE.6	III.G.MG.3, III.F.TF, P.F.TF

Support for Teachers

Critical Background Knowledge
• Understand that a figure is congruent to another if the second can be obtained from the first by a sequence of rigid transformations (8.G.2) and use definition of congruence (I.G.CO.7) • Understand that a figure is similar to another if it can be obtained from the first by a sequence of transformations which may include a dilation (8.G.4) • Establish facts about angles created when parallel lines are cut by a transversal (8.G.5) • Explore and explain proofs of the Pythagorean Theorem (8.G.6)
Academic Vocabulary
corresponding angles, corresponding sides
Resources
Curriculum Resources: https://www.uen.org/core/core.do?courseNum=5620#71543

Define trigonometric ratios and solve problems involving right triangles (Standards G.SRT.6–8)	
Standard G.SRT.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.	
Concepts and Skills to Master	
● Understand that the ratio of two sides in one triangle is equal to the ratio of the corresponding two sides of all other similar triangles. ● Define sine, cosine, and tangent as the ratio of sides in a right triangle. ● Understand the foundation of trigonometry in similarity using the AA similarity criterion. ● Know the definitions of trigonometric ratios using right triangles. ● Are able to find missing sides and angles of a right triangle, given other sides and angles.	
Related Standards: Current Course	Related Standards: Future Courses
G.SRT.5, F.TF.1, F.TF.3	

Support for Teachers

Critical Background Knowledge
● Understand that corresponding angles of similar triangles are congruent and ratios of corresponding sides are equal.
Academic Vocabulary
similar triangles, ratio, right triangle
Resources
Curriculum Resources: http://schools.utah.gov/curr/mathsec/Core/HighSchoolCurriculum.aspx

Define trigonometric ratios and solve problems involving right triangles (Standards G.SRT.6–8)	
Standard G.SRT.7: Explain and use the relationship between the sine and cosine of complementary angles.	
Concepts and Skills to Master	
• Demonstrate the relationship between sine and cosine in the acute angles of a right triangle. • Explain the relationship between the sine and cosine in complementary angles. • Observe that the sine of an angle is equal to the cosine of its complementary angle. • Show that this relationship holds using the definition of sine and cosine.	
Related Standards: Current Course	Related Standards: Future Courses
G.SRT.5, 7.G.5	

Support for Teachers

Critical Background Knowledge
• Understand that the acute angles of a right triangle are complementary. • Know the right triangle definitions of sine and cosine. (II.5.G.SRT.6)
Academic Vocabulary
Complementary angles, sine, cosine.
Resources
Curriculum Resources: http://schools.utah.gov/curr/mathsec/Core/HighSchoolCurriculum.aspx

Define trigonometric ratios and solve problems involving right triangles (Standards G.SRT.6–8)	
Standard G.SRT.8: Explain and use the relationship between the sine and cosine of complementary angles.	
Concepts and Skills to Master	
• Use the Pythagorean Theorem and trigonometric ratios to find missing measures in triangles in contextual situations. • Represent applied problems using right triangles. • Identify relevant trigonometric ratios, and apply them to solve problems.	
Related Standards: Current Course	Related Standards: Future Courses
G.SRT.5, F.TF.3, 8.G.7	

Support for Teachers

Critical Background Knowledge
• Apply the Pythagorean Theorem in real-world and mathematical problems in two and three dimensions (8.G.7). • Apply right triangle trigonometric ratios to solve right triangles (II.5.G.SRT.6).
Academic Vocabulary
Pythagorean Theorem, sine, cosine, tangent, angle of elevation, angle of depression
Resources
Curriculum Resources: http://schools.utah.gov/curr/mathsec/Core/HighSchoolCurriculum.aspx