



Geometry

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Competencies and Objectives	Page References
CONTENT STRAND: Number and Operations	
1. Compute and determine the reasonableness of a result in mathematical and real-world situations with and without technology.	
a. Apply problem-solving skills to solve and verify the solutions for unknown measures in similar polygons. (DOK 2)	SE: 388-396, 397-403, 405-414, 415-422
b. Given exact irrational solutions, determine the best rational estimation. (DOK 2)	SE: 440-446, 448-454, 456-462, 464-470
c. Solve real-world or application problems that involve square roots and the Pythagorean Theorem. (DOK 3)	SE: 440-446, 448-454, 456-462, 479-485
CONTENT STRAND: Algebra	
2. Understand relations, functions, and patterns. Analyze change using various geometric properties.	
a. Represent data from geometric and real-world contexts with expressions, formulas, tables, charts, graphs, relations, and functions. (DOK 2)	SE: Throughout the text, including 49-57, 111-117, 156-163, 165-170, 440-446, 563-569, 570-577, 638-647, 649-656, 686-691, 693-697, 699-705, 706-710, 711-717, 728-735, 737-742, 743-748
b. Recognize and write the equation of a circle in standard form $(x - h)^2 + (y - k)^2 = r^2$ and identify the center and radius. (DOK 2)	SE: 614-619
c. Use slope to analyze and write equations for parallel and perpendicular lines. (DOK 2)	SE: 156-163, 165-170, 172-179, 181-187
d. Apply the Midpoint and Distance Formulas to solve application problems involving the coordinate plane. (DOK 2)	SE: 21-29
e. Determine the effects of rigid (translations, rotations, and reflections) and nonrigid (dilations) motions and compositions when performed on objects on the coordinate plane. (DOK 2)	SE: 496, 497-503, 504-509, 510-517, 519-524, 525-532

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CONTENT STRAND: Geometry		
3. Investigate, apply, and prove properties and theorems from postulates and definitions related to angles, lines, circles, polygons, and two- and three-dimensional figures. Explore applications of patterns and transformational geometry.		
a. Use inductive reasoning to make conjectures and deductive reasoning to make valid conclusions. (DOK 3)		SE: 78-82, 83-90, 91-97, 99-104, 105-109
b. Develop and evaluate mathematical arguments and proofs to include paragraph, two-column, and flow chart forms. (DOK 3)		SE: 105-109, 111-117, 118-123, 124-131, 210-216, 251-255, 363-368
c. Identify, classify, and apply angle relationships formed by parallel lines cut by transversals. (DOK 2)		SE: 142-147, 148, 149-154
d. Use the properties of altitudes, medians, angle bisectors, and perpendicular bisectors of triangles to solve problems. (DOK 2)		SE: 266-268, 269-278
e. Classify triangles and apply postulates and theorems to test for triangle inequality, congruence, and similarity. (DOK 2)		SE: 202-208, 217-223, 225-232, 234-241, 242-243, 244-250, 251-255, 280-287, 295, 296-301, 302-309
f. Determine and justify if a given shape could be tessellated. (DOK 2)		SE: 519-524
g. Describe and draw cross-sections of prisms, cylinders, pyramids, and cones. (DOK 1)		SE: 680-685
h. Graph a vector and determine the magnitude and direction of a given vector. (DOK 2)		534-541, 542
i. Given the pre-image or image, find figures obtained by applying reflections, translations, rotations, and dilations; describe and justify the method used. (DOK 2)		SE: 496, 497-503, 504-509, 510-517, 519-524, 525-532
CONTENT STRAND: Measurement		
4. Select and apply various strategies, tools, and formulas to calculate length, surface area, volume, and angle measurements.		
a. Use the properties of circles using arc, angle, and segment relationships to find missing measures. (DOK 2)		SE: 554-561, 563-569, 570-577, 578-586
b. Solve real-world applications and mathematical problems to find missing measurements in right triangles by applying special right triangle relationships, geometric means, or trigonometric functions. (DOK 2)		SE: 432-438, 439, 440-446, 447, 448-454, 455, 456-462, 464-470, 471-477, 478, 479-485
c. Solve real-world and mathematical problems involving the lateral area, surface area and volume of three-dimensional figures, including prisms, cylinders, cones, pyramids, and spheres. (DOK 2)		SE: 680-685, 686-691, 693-697, 699-705, 706-710, 711-717, 728-735, 736, 737-742, 743-748, 750-757
d. Explain and use the properties of 45-45-90 and 30-60-90 triangles. (DOK 2)		SE: 447, 448-454
e. Apply the relationships of sine, cosine, and tangent to problems involving right triangles. (DOK 2)		SE: 455, 456-462, 464-470, 471-477, 478, 479-485

Competencies and Objectives	Page References
CONTENT STRAND: Data Analysis & Probability	
5. Represent, analyze, and make inferences based on data with and without the use of technology.	
a. Apply multiple strategies and representations, including area models, to solve probability problems. (DOK 2)	SE: 665-671