| Set | Set Topic | Common Core (KCAS) | ACT Quality Core Standards | Learning Targets | Formative/summative assessment/Activities | Notes |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Points, lines, and planes | G.CO.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. | C.1.a  D.1.a |  |  |  |
| 2 | Segments | G.CO.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. | B.1.h  G.1.b |  |  |  |
| 3 | Angles | G.CO.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. | C.1.a  D.1.a  GRE 502 |  |  |  |
| LAB 1 | Construction: Congruent segments and angles |  |  |  |  |  |
| 4 | Postulates and theorems about points, lines, and planes. | G.CO.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. | C.1.a  D.1.a  D.1.b |  |  |  |
| 5 | More theorems about lines and planes | G.CO.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. | D.1.d  G.1.b |  |  |  |
| LAB 2 | Construction: perpendicular line through a point on a line |  |  |  |  |  |
| 6 | Identifying pairs of angles | G.CO.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 equidistant from the segment’s endpoints. | D.1.b  D.1.d |  |  |  |
| LAB 3 | Construction: perpendicular bisectors and angle bisectors | G.CO.12 | D.1.d  D.1.e |  |  |  |
| 7 | Using inductive reasoning |  | C.1.c  G.1.b |  |  |  |
| 8 | Using formulas in geometry | G.PE.7  Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | F.1.a  F.1.b |  |  |  |
| 9 | Finding length: distance formula | G.CO.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.  G.PE.7  Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | A.1.b  B.1.e  G.1.b |  |  |  |
| 10 | Using conditional statements | S.CP.3  Understand the conditional probability of A given B as P(A 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.  S.CP.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.  S.CP.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. | A.1.a  B.1.a  C.1.e |  |  |  |
| Investigation 1 |  |  | D.1.c |  |  |  |
| 11 | Finding midpoints | G.PE.6  Find the point on a directed line segment between two given points that partitions the segment in a given ration. | A.1.c  A.1.e  B.1.c  G.1.b |  |  |  |
| 12 | Proving lines parallel | G.CO.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. | C.1.d |  |  |  |
| LAB 4 | Construction: Parallel line through a point |  |  |  |  |  |
| 13 | Introduction to triangles | G.CO.10  Prove theorems about triangles. Theorems include measures of interior angles of a triangle sum to 180o; 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. | D.2.a  D.2.c |  |  |  |
| 14 | Disproving conjectures with counterexamples |  | C.1.c |  |  |  |
| 15 | Introduction to polygons | G.MG.2  Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTU’s per cubic foot). | D.2.g  D.2.h |  |  |  |
| 16 | Finding slope and equations of lines |  | A.1.d  A.1.e  G.1.a |  |  |  |
| 17 | More conditional statements |  | C.1.a  C.1.b  C.1.c |  |  |  |
| 18 | Triangle theorems | G.CO.10  Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180o, 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. | D.2.c |  |  |  |
| 19 | Introduction to quadrilaterals | G.CO.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.  G.CO.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. | D.2.g |  |  |  |
| 20 | Interpreting truth tables | S.CP.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”).  S.CP.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.  S.CP.4  Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in you school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results. | C.1.b |  |  |  |
| 21 | Laws of detachment and syllogism | S.CP.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”).  S.CP.4  Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in you school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results. | C.1.b  A.1.F |  |  |  |
| 22 | Finding areas of quadrilaterals |  | D.2.g  F.1.a |  |  |  |
| 23 | Introduction to circles | G.C.1  Prove that circles are similar.  G.C.3  Construct the inscribed and circumscribed circles of a triangle and prove properties of angles for a quadrilateral inscribed in a circle.  G.MD.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.  G.MG.1 Circle Model  Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). | D.3.a |  |  | Properties of 40-60-90  Draw Conclusions  45-45-90  Solve connections involving visualization  Distances in a circle  MEA 502  PPF 702 |
| 24 | Algebraic proofs |  | A.1.a  B.1.b  C.1.e |  |  |  |
| 25 | Triangle congruence: SSS | G.CO.8  Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. | C.1.f  E.1.b |  |  |  |
| 26 | Central angles and arc measure | G.C.1  Prove that all circles are similar. | F.1.d  F.1.e. |  |  | Properties of 40-60-90  Draw Conclusions  45-45-90 |
| 27 | Two-column proofs |  | C.1.e |  |  |  |
| 28 | Triangle congruence : SAS | G.CO.8  Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow the definition of congruence in terms of rigid motions. | C.1.g |  |  |  |
| 29 | Using the Pythagorean Theorem | G.CO.8  Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow the definition of congruence in terms of rigid motions. | D.2.e  D.2.f |  |  |  |
| 30 | Triangle Congruence: ASA and AAS | G.CO.8  Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow the definition of congruence in terms of rigid motions. | C.1.f. |  |  |  |
| INV 3 | Exploring angles of polygons | G.C.3  G.CO.10 |  |  |  |  |
| 31 | Flowchart and paragraph proofs |  | C.1.e |  |  |  |
| 32 | Altitudes and medians of triangles | G.CO.10 | D.2.b  D.2.d |  |  |  |
| 33 | Converse of the Pythagorean Theorem | 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. | D.2.c |  |  |  |
| 34 | Properties of Parallelograms | G.CO.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. | D.2.g |  |  |  |
| 35 | Finding arc lengths and areas of sectors | G.C.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. | D.3.c  F.1.d  F.1.e |  |  | 30-60-90  45-45-90  Draw conclusions  Use trig functions to solve problems |
| 36 | Right triangle congruence theorems | G.MG.1  Use geometric shapes, their measures and other properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).\* | C.1.f |  |  |  |
| 37 | Writing equations of parallel and perpendicular lines. | G.CO.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.  G.PE.5 | A.1.c  A.1.d  D.1.f |  |  |  |
| 38 | Perpendicular and angle bisectors of triangles | G.CO.10 | D.1.d |  |  |  |
| LAB 6 | Construction: Circle through three noncollinear points |  |  |  |  |  |
| 39 | Inequalities in a triangle |  | D.2.c |  |  |  |
| 40 | Finding perimeters and areas of composite figures | G.PE.7  Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | F.1.b |  |  |  |
| 41 | Ratios , proportions, and similarity | G.PE.6  G.SRT.1b  G.SRT.2  G.SRT.5 | C.1.h |  |  |  |
| 42 | Finding distance from a point to a line | G.PE.6 | G.1.b |  |  |  |
| 43 | Chords, secants, and tangents | G.C.2 | D.3.c |  |  | Use relationships among angles and arcs. |
| 44 | Applying similarity | G.SRT.2  G.SRT.5  G.CO.7 | E.1.c |  |  |  |
| 45 | Introduction to coordinate proofs |  | G.1.c |  |  |  |
| 46 | Triangle similarity: AA, SSS, SAS | G.SRT.2  G.SRT.3  G.SRT.5 | C.1.h |  |  |  |
| 47 | Circles and inscribed angles | G.C.1  G.C.2  G.CO.13 | D.3.c  D.3.d |  |  | Properties of 40-60-90  Draw Conclusions  45-45-90  Constructions |
| 48 | Indirect proofs | G.SRT.5 | C.1.e |  |  |  |
| 49 | Introduction to solids |  | D.4.a |  |  |  |
| 50 | Geometric mean | G.SRT.1b | E.1.g |  |  |  |
| INV 5 | Nets | G.MD.4 |  |  |  |  |
| 51 | Properties of isosceles and equilateral triangles | G.CO.10 | D.2.a  D.2.j |  |  |  |
| 52 | Properties of rectangles, rhombuses, and squares | G.CO.11 | D.2.g |  |  |  |
| 53 | 45-45-90 right triangles | G.SRT.4 | H.1.a |  |  |  |
| 54 | Representing solids | G.MD.4  G.MG.1 Geometry Model | F.2.b |  |  |  |
| 55 | Triangle midsegment theorem | G.SRT.4 | D.2.b |  |  |  |
| 56 | 30-60-90 right triangles | G.SRT.4 | H.1.a |  |  |  |
| 57 | Finding perimeter and area with coordinates |  | F.1.b  G.1.c |  |  |  |
| 58 | Tangents and circles | G.C.2 | D.3.c |  |  | Use relationships among angles and arcs. |
| LAB 8 | Construction: Tangent to a circle |  | D.3.c |  |  |  |
| 59 | Finding surface areas and volumes of prisms | G.MD.1  G.MD.3  G.MG.1 Geometry Model | F.2.a  B.1.b  B.1.e  B.1.g |  |  |  |
| INV 6 |  |  | F.1.c |  |  |  |
| 60 | Proportionality theorems | G.SRT.4 | E.1.d |  |  |  |
| 61 | Determining if a quadrilateral is a parallelogram | G.CO.11 | C.1.i |  |  |  |
| 62 | Finding surface areas and volumes of cylinders | G.MD.1  G.MD.3 | F.2.a  B.1.b  B.1.e  B.1.g |  |  |  |
| 63 | Introduction to vectors | N.VM.1 | B.1.d  B.1.f |  |  |  |
| 64 | Angles interior to circles | G.C.2 | D.3.b |  |  | Use relationships among angles and arcs. |
| 65 | Distinguishing types of parallelograms | G.CO.11 | C.1.i |  |  |  |
| 66 | Finding perimeters and areas of regular polygons | G.MG.2 | F.1.a |  |  |  |
| 67 | Introduction to transformations | G.CO.3  G.CO.4  G.CO.5 | G.1.e |  |  |  |
| 68 | Introduction to trigonometric ratios | G.SRT.7 | H.1.b  H.1.c |  |  |  |
| 69 | Properties of trapezoids and kites |  | D.2.g |  |  |  |
| 70 | Finding surface areas and volumes of pyramids | G.MD.1  G.MD.3 | F.2.a |  |  |  |
| INV 7 | Trigonometric ratios |  |  |  |  |  |
| 71 | Translations | G.CO.2  G.CO.4 | G.1.g |  |  |  |
| 72 | Tangents and circles , part 2 | G.C.4+ | D.3.c |  |  |  |
| 73 | Applying trigonometry: Angles of elevation and depression | G.MG.1  G.SRT.6  G.SRT.8 | H.1.c |  |  |  |
| 74 | Reflections | G.CO.3  G.CO.4  G.CO.5 | E.1.e |  |  |  |
| 75 | Writing the equation of a circle | G.PE.1 | G.1.d |  |  |  |
| 76 | Symmetry | G.CO.5 | E.1.a |  |  |  |
| 77 | Finding surface areas and volumes of cones | G.MD.1  G.MD.3 | F.2.a |  |  |  |
| 78 | Rotations | G.CO.2  G.CO.3  G.CO.5 | G.1.e |  |  |  |
| 79 | Angles exterior to circles | G.C.2 | D.3.c |  |  |  |
| 80 | Finding surface areas and volumes of spheres | G.GMD.3 | F.2.c |  |  |  |
| INV 8 | Patterns |  |  |  |  |  |
| 81 | Graphing and solving linear systems |  | A.1.c |  |  |  |
| 82 | More applications of trigonometry | G.SRT.8  G.MG.3 | H.1.b  H.1.c |  |  |  |
| 83 | Vector addition | N.VM.4 | B.1.b |  |  |  |
| 84 | Dilations | G.MD.4  G.SRT.1a  G.SRT.1b | E.1.f  G.1.e |  |  |  |
| 85 | Cross sections of solids | G.MD.1  G.MD.4 | F.2.b  D.4.b |  |  |  |
| 86 | Determining chord length | G.C.5 | D.3.c |  |  |  |
| 87 | Area ratios of similar figures | G.C.2 | F.1.b |  |  |  |
| 88 | Graphing and solving linear equations | F.IF.7a | A.1.c |  |  |  |
| 89 | Vector decomposition | N.VM.2  N.VM.4 | B.1.d |  |  |  |
| 90 | Composite transformations | G.CO.2  G.CO.6 | G.1.e |  |  |  |
| INV 9 | Tessellations |  |  |  |  |  |
| 91 | Introduction to trigonometric identities |  |  |  |  |  |
| 92 | Quadrilaterals on the coordinate plane |  |  |  |  |  |
| 93 | Representing solids: orthographic views |  |  |  |  |  |
| 94 | Law of sines | G.SRT.10+  G.SRT.11+ | H.1.c |  |  |  |
| 95 | Equations of circles: translating and dilating | G.PE.1 | G.1.d |  |  |  |
| 96 | Effects of changing dimensions on perimeter and area |  |  |  |  |  |
| 97 | Concentric circles | G.C.1 | G.1.d |  |  | Properties of 40-60-90  Draw Conclusions  45-45-90 |
| 98 | Law of cosines | G.SRT.10+  G.SRT.11+ | H.1.c |  |  |  |
| 99 | Volume ratios of similar solids | G.MG.1 Geometry Model |  |  |  |  |
| 100 | Transformation matrices |  |  |  |  |  |
| INV 10 | Fractals | G.CO.9 |  |  |  |  |
| 101 | Determining lengths of segments intersecting circles |  |  |  |  |  |
| 102 | Dilations in the coordinate plane |  |  |  |  |  |
| 103 | Frustums of cones and pyramids |  |  |  |  |  |
| 104 | Relating arc lengths and chords |  |  |  |  |  |
| 105 | Rotations and reflections in the coordinate plane. |  |  |  |  |  |
| 106 | Circumscribed and inscribed figures | G.CO.13 | NONE |  |  | Constructions |
| 107 | Maximizing area |  |  |  |  |  |
| 108 | Introduction to coordinate space |  |  |  |  |  |
| 109 | Non-Euclidian geometry |  |  |  |  |  |
| 110 | Scale drawings and maps |  |  |  |  |  |
| 111 | Finding distance and midpoint in three dimensions |  |  |  |  |  |
| 112 | Finding areas of circle segments |  |  |  |  |  |
| 113 | Symmetry of solids and polyhedral |  |  |  |  |  |
| 114 | Solving and graphing systems of inequalities |  |  |  |  |  |
| 115 | Finding surface areas and volumes of composite solids |  |  |  |  |  |
| 116 | Secant, cosecant and cotangent |  |  |  |  |  |
| 117 | Determining line of best fit |  |  |  |  |  |
| 118 | Finding areas of polygons using matrices |  |  |  |  |  |
| 119 | Platonic solids |  |  |  |  |  |
| 120 | Topology |  |  |  |  |  |