Math Grade 7 Unit 3

Canterbury Public Schools

Subject	Math
Grade Level	7
Unit Title	Measuring Circles
Unit Goals	Generalize: About categories for sorting circles About the relationship between circumference and diameter About circumference and rotation About relationship between a radius and area of a circle Justify: Reasoning about circumference and perimeter Estimates of the area of a circle Reasoning about areas of curved figures Interpret: Situations involving circles, Floor plans and maps, Situations involving circumference and area, To critique reasoning about circles and circle measurements Explain reasoning including about different approximations about pi Describe features of graphs and deconstructed circles
Pacing (# of weeks)	4 weeks
Standards	7.G.A,7.G.A.1,7.G.b, 7.G.d.4, 7.G.B.6, 7.RP.A.2, 7.RP.A.2.a, 7.RP.A.2.C, 7.RP.A.3, 7.EE.B.3, **Unit 3: Circles and Geometric Measurement** **Focus:** Application of proportional relationships to the study of circles **Primary Standards:** ● **7.RP.A.2** – Recognize and represent proportional relationships ● **7.G.B.4** – Know and use formulas for circumference and area of circles ● **7.G.B.6** – Solve real-world problems involving area, volume, and surface area

Content/Conceptual Knowledge (know)	How to calculate the area of a circle Students will know: ● The definitions of **radius, diameter, circumference, and area** of a circle. ● That **π is the ratio of circumference to diameter**. ● The formulas: ○ Circumference: C=πdC = \pi dC=πd and C=2πrC = 2\pi rC=2πr ○ Area: A=πr2A = \pi r^2A=πr2 ● How proportional relationships apply to circular measurements. ● Common units used for linear and area measurement. ● That real-world problems often require **estimation, rounding, and interpretation** of results.
Skills (be able to do)	I can: Describe the characteristics that make a shape a circle Identify the diameter, center, radius and circumference of a circle Describe the relationship between circumference of any circle, Explain what pi means, If I know the radius, circumference, diameter of a circle , I can find the other two If I know the diameter of a wheel, I can find the distance the wheel travels in some number of revolutions. Calculate the area of a complicated shape by breaking into shapes whose area I I know how to calculate If I know a circles radius or diameter, I can find an approximation for its area I can explain how the area of a circle and its circumference are related to each other Formula for the area of a circle Calculate the area of more complicated shapes that include fractions of circles Decide whether a situation of a circle has to do with the area of the circumference I can use formulas for circumference and area of a circle to solve problems

Essential Questions	**Essential Questions** ● How are the measurements of a circle related to one another? ● Why is π the same for all circles? ● How does proportional reasoning help us understand and derive formulas for circles? ● How can we model and solve real-world problems involving circles? ● What strategies help ensure accuracy and precision when measuring and calculating with circles? ● How can different representations help explain geometric relationships?
Enduring Understandings	Students will understand that: 1. **Circles are defined by proportional relationships** between radius, diameter, circumference, and area. 2. **Pi (π) represents a constant ratio** between the circumference and diameter of any circle. 3. **Formulas for circumference and area are derived**, not memorized, and are based on proportional reasoning. 4. **Geometric measurement connects to real-world contexts**, allowing students to model, analyze, and solve practical problems involving circular objects. 5. **Multiple representations** (tables, graphs, equations, diagrams) can be used to describe and justify geometric relationships. 6. **Precision in measurement and calculation** is essential when solving geometric problems and communicating mathematical reasoning.
Vocabulary	Relationship Perimeter, radius, diameter, circumference, circle, center, pi, half circle, rotation,

	approximation, approximate estimate, area of a circle, squared, formula, design
Common Learning Experiences	Turn and talk, math talks, critique reasoning, think pair share, games, stronger and clearer, hold the class, card sorts, collect and display, co craft questions, which three go together, information gap cards, take turns
Assessments	Readiness, end of unit, cool downs, check points, quizzes,
Student Resources	Glue, markers, tapes, preprinted cards, ruler, centimeter , pencils , scissors
Teacher Resources	technology