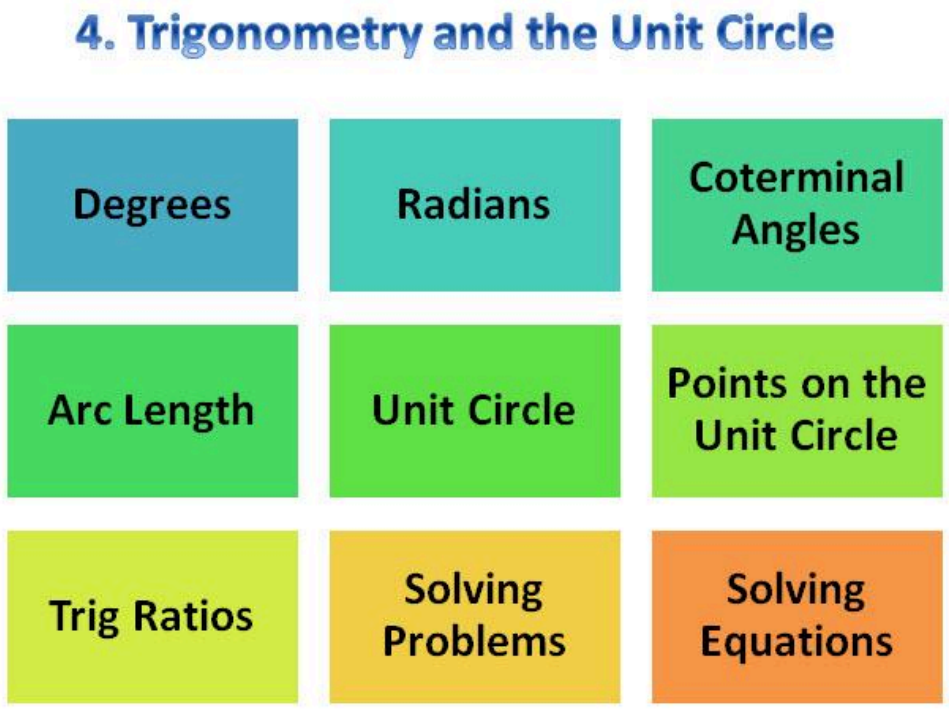
4. Trigonometry and the Unit Circle

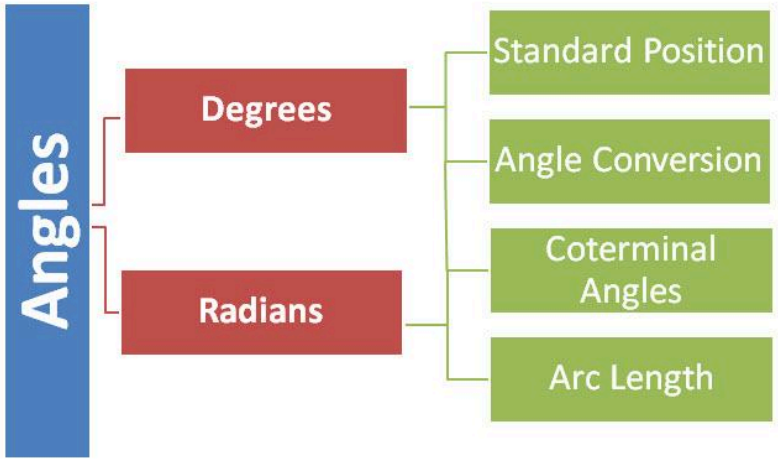


4.1A	Angles and Angle Measure Rotation Angles in Degrees and Radians Coterminal Angles
4.1B	Angles and Angle Measure Conversions between Degrees and Radians Arc Length Formula and Problems
4.2	The Unit Circle
	Quiz
4.3A	Trig Ratios Determine the ratio
4.3B	Trig Ratios Determine the angle
4.4	Introduction to Trigonometric Equations
	4.3 and 4.4 Worksheet Review
	Quiz
	Review
	4. Trigonometry and the Unit Circle Exam

Trig Notes

[Interactive Notes for Trig and the Unit Circle]

4.1 Angles and Angle Measure



Class Notes

The McGraw-Hill Ryerson PreCalculus 12 Text is used as the Main Resource.
Assignments in the Powerpoint Lesson Plans refer to pages and questions in the PreCalculus 12 text.

4.1A Angles and Angle Measure
4.1B Angles and Angle Measure

Digital Resources to Enhance Learning and Differentiate Instruction

Radians.gsp
Radian Measure.tns

Pedagogical Shifts: TRANSFORM, Moving from Traditional to Student-centered

Measuring Radians Activity Lab

This hands-on activity introduces students to the definition of a radian by marking a radius along the circumference of a circle. Students would be able to do this activity at home. It may only take 20 minutes to complete during class. After completing the activity, students should discover how many degrees are in one radian as well as how many radians are in a 360 degree angle.

Formative Assessment

Unit conversions, coterminal angles and arc length.doc

4.2 The Unit Circle

Class Notes

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4.2 The Unit Circle

Digital Resources to Enhance Learning and Differentiate Instruction

Making a Unit Circle

I wanted students to have a unit circle with movable arms to visualize and simulate angles of rotation and angles in standard position. The first step was to have students cut out and glue the three concentric circles to a sheet of construction paper. They punched a hole through the origin, pushed the two pieces of string (I used yarn for a thicker arm) through the hole and secured the string with a knot. When I was teaching angles in standard position in degrees, students labeled the inner circle with special angle measurements. In our discussion of angles in standard position and rotation angles, students moved the strings to simulate the position of the initial arm and rotation of the terminal arm. This worked will for both positive and negative rotation. The picture below is an example of how we used the unit circle to discuss co-terminal angles.

During the lesson to introduce radians, students labelled the middle circle with angles measured in radians. We cut a piece of string for the length of each radius and curved this length of string along each corresponding circumference as an introduction to the definition of radian measure as a ratio. Students were surprised to see that each corresponding radius length always ended up in the same location of the terminal arm, one radian.

At last we were ready to discuss the coordinates for the points of intersection of the terminal arm and the unit circle. We labelled the coordinates on the outer circle. Having two movable arms was an advantage for students when we discussed measures of the shortest angle between two points such as (0, 1) and (1/2, -√3/2).

Concentric Circles Download

Radian Snowan Activity

This is a an activity to help students remember angles in radian measure.

Formative Assessment

Unit Circle Coordinates of Points.doc

4.3 Trigonometric Ratios

Class Notes

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4.3A Trigonometric Ratios
4.3B Trig Ratios (Angles)

Pedagogical Shifts: TRANSFORM, Moving from Traditional to Student-centered.

4.3 Trig Ratio Row Game

Students were grouped in pairs. One student answers question from column A, the partner answers the question from column B. The questions are different, however, the answers will be the same. If the answers do not match, students must work together to discover the error and determine a correct answer. If you try this activity, stand back and listen to the mathematical conversations between students as they work together. Many students use correct vocabulary as they explain their processes.

Formative Assessment

exact value of trig ratios.doc

4.4 Introduction to Trigonometric Equations

Class Notes

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4.4 Introduction to Trigonometric Equations

Documents

4.3 and 4.4 Worksheet Review

Formative Assessment

solving trig equations.doc

4. Trig and the Unit Circle Review

4. Trigonometry and the Unit Circle Review
4. Trig Review 2
4. Trig Review 3