

Trig graphing

Objective: To find the similarities of Mathematical equations.

Day 1

Objective: To introduce graphing of trig. Functions (sine only).

- 1) On the board review unit circle with trigonometric function (sine only). Make connection with sine related with y-axis. Students need to take notes. Check and give points for notes.
- 2) When completed above part. Hand out a unit circle and a coordinate plain graph with angles given on the x-axis (0 to 360 and 0 to 2 Pi) and y-axis (maximum 1 and minimum -1). Have the students draw a 30-degree and Pi over 6 triangles on the unit circle. Transfer the sine information from the unit circle to the coordinate plane. Help the students from 0 degrees to 90 degrees and 0 to Pi /2. Have student finish the rest of the graph. Then have the student connect the dots with a smooth curve on the coordinate plane. Let the students discover +, - of Quadrants Students should work in-groups of two.

- 3) Check out this sight. Need to show students when they are done

<http://www.ies.co.jp/math/java/samples/graphsinx.html>

<http://www.ies.co.jp/math/java/>

Day 2

Objective: To introduce graphing of trig. Functions (cosine and sine only).

- 1) Duplicate day 1, but let students figure out the cosine curve. The teacher needs to inform the students there is a difference in sine and cosine. The student needs to find it. The class can work together. The student needs to hand in the assignment one for each group of two.

Day 3

Objective: Discussion of day one and day two.

- 1) Have the student get in groups of two and take the collection of the two students assignments and write both days assignments on the board. Have students as a whole correct each example on the board. When done have students draw a unit circle and ask questions to reveal the difference between sine and cosine curves on their own paper.

Day 4

Objective: To find out what changes equations (stretch's, shrinks, and translations).

- 1) Lesson from SIMMs Level 4 Volume 3 page297 to 316.

Read through with students Intro, Exploration (pick three students to complete on chalkboard), Discussion on page 298(have students take notes on discussion), and start on activity page 299. Help students with calculator functions let them discover the mathematics.

Day 5

Objective: Same as Day 4

- 1) Finish up activity page 299 and go to discussion 300 Have students answer discussion questions on a piece of paper (works with vertical translations, horizontal translations, and stretch and shrink of equations). 10 minute to complete. Have students get into groups of two and write answers on board. Go over questions as a class.
- 2) Assign pages 302 to 303 due tomorrow as soon as get to class next day have groups of two write answers in the board.

Day 6

Objective: To apply what I have learned.

Research project: pg. 304

See if your physics teacher will setup a oscilloscope to record note of musics. (Try to coordinate with physics teacher to see if the physics teacher is teaching a similar lesson. Help each other out.)

On the questions on page 304 add d. how does the graph on the scope relate to the lesson we have been working with.

Hand in summary at end of class.

Day 7

Objective: To perform transformations to create new equations.

Have student's complete exploration on a calculator. Only help students with calculator functions let them learn the mathematics.

Discussion: Have students get back in their desks for class discussion on what the exploration has accomplished. Have students take notes on discussion.

Assign pg. 305: 2.1 to 2.10

Day 8

Objective: test on unit circle to the curve, translations, stretch and shrinks.

Hand 2 pieces of graph paper.

Hand out a graph of $y = \tan x$ (Do not tell the students what the graph represents.)

Have students graph transition from unit circle to a curve

Have students graph vertical stretch of 3 and $1/2$

Have students graph horizontal stretch 3 and $1/2$

Have students graph Shift vertical 3 and -3

Have students graph shift horizontal 3 and -3

Have students write an equation for each graph drawn.

Day 9

Objective: To model data sets.

Go through Activity 3, exploration and discussion with students.

Assign page 310: 3-1 to 3.7 Due at beginning of class.

Day 10

Objective: to finish yesterday's assignment

Have students get in-groups of 4 and compare answers to be discussed as a class.

Hand in assignment after discussion.

Specific Statement(s) from the Standard:

Minnesota State standards

Distinguish functions from other relationships using graphical and symbolic methods. Know the six trigonometric functions defined for an angle in a right triangle. Give the coordinates of a point on the side of an angle in standard position in xy -plane. Convert between degrees and radians.

Product(s): The student will hand in a mystery graph with two different equations for the mystery graph.

Task Description: The teacher has found some mystery graphs in a folder and needs some assistance finding two equations for each one. The students will have to collect one mystery graph from the teacher to find vertical stretch, horizontal stretch, shift vertical, shift horizontal, and each student will submit 2 equations for the mystery graph.

Special Notes:

The student will need a good understanding of graphing calculators.

PERFORMANCE PACKAGE TASK 1
(Title of Package)

FEEDBACK CHECKLIST FOR TASK 1

The purpose of the checklist is to provide feedback to the student about his/her work relative to the content standard. Have the standard available for reference.

Y=Yes

N=Needs Improvement

<u>Student</u>		<u>Teacher</u>
_____	The student accurately found the vertical stretch	_____
_____	The student accurately found the horizontal stretch	_____
_____	The student accurately found the vertical shift	_____
_____	The student accurately found the horizontal shift	_____
_____	The student accurately constructed 2 equations	_____
_____	The student accurately describes equations using Mathematical terms	_____
_____	The report was complete and well written.	_____