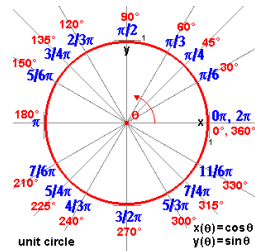
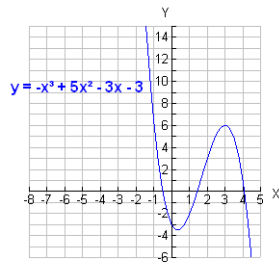


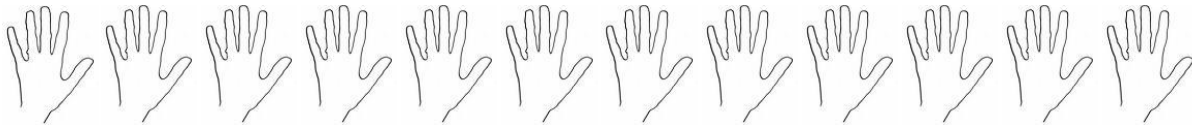


Algebra II & Trigonometry

{Wrap your brain and hands around it!}



Gary Kubina
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Hello Math Friends,

I'm so sorry if you could not get in to my presentation. This worksheet does not provide a lot of details. I design my workshops so that you have to be present and do the activities to understand what they are all about. We moved quickly and introduced the activities to whet your appetite. It's up to you to explore thoroughly and tweak the ideas to make them your own so they are effective (and fun) for your students.

Have a mathtastic day!

Gary K.



Algebra II & Trigonometry

Wrap your brain and hands around it!

ACTIVITIES

The manipulatives needed are listed [in the brackets].

- Preactivities/Table talk/Beach ball toss [Clever Catch Trig. Ball]
- Introduction
- Draw family of functions [dry erase graph mat]
- End behavior of polynomial functions [arms]
- Relations/functions [lids and rope]
- Human number line [cards]
- Matrix multiplication [2 toothpicks]
- Doubling function [paper]
- Word problems (chickens & dogs)
- Quadratic formula song
- Half-life [m & m's, paper plate]
- Be a function/Math aerobics/Be a mathlete [yourself]
- Trig. circle [paper plate]
- Trig. hand jive [hand]
- Make a sin, cos, and tan graph [Ultra-flex ruler]
- Trig. chart [index cards, ruler, tape]
- Trig. ratios/Ambiguous case for Law of Sines [AngLegs]
- Trig. tattoos/inverse functions [patty paper, Miniplot post-it]
- Exponent cheer
- Clean up

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Human Number Line

$\sqrt{-16}$	i	$\frac{1}{0}$	-3^2
$-\sqrt{16}$	$\log_3 \frac{1}{27}$	$\log \frac{1}{100}$	i^2
$\log_5 1$	5^{-3}	2^{-3}	4^{-1}
$\tan 45^\circ$	$\sqrt{2}$	$\sqrt{3}$	$9^{\frac{1}{2}}$
3.14	π	$(-3)^2$	$(2\sqrt{3})^2$

DOUBLING FUNCTION

Take the largest thinnest sheet of paper you can find. Fold it in half. Fold it in half again. After seven or eight folds, you will be unable to fold it by hand, as the sheet will have become as thick as a book. If 20 folds were possible, the stack of paper would dwarf your house. At 40, it would be well on its way to the moon. Seventy folds would take it to the nearest star and on as far again. Light would take eight years to go from top to bottom. After 100 folds, the paper would be more than 10 billion light years across and span the known universe.

This is the essence of exponential growth: Very small amounts rapidly become astronomically large through simple doubling.

Excerpt from The Mathematics Teacher

Originally from The Globe and Mail, July 29, 1995

12 of each length, 2 snap-on protractors

Orange	5	cm
Purple	7.07	cm
Green	8.66	cm
Yellow	10	cm
Blue	12.24	cm
Red	14.14	cm

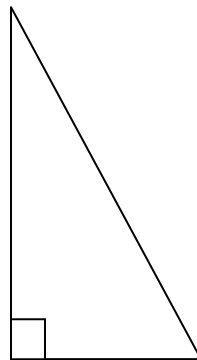
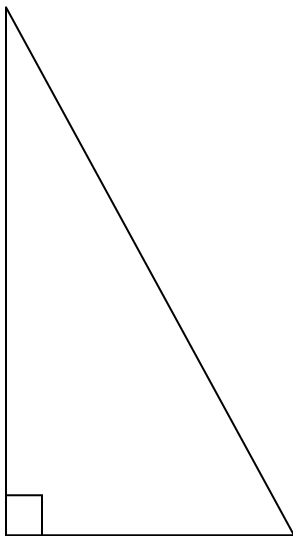
Trig. Ratios

Build two 30-60-90 triangles (red, blue, purple and yellow, green, orange)

Measure angles and sides to verify

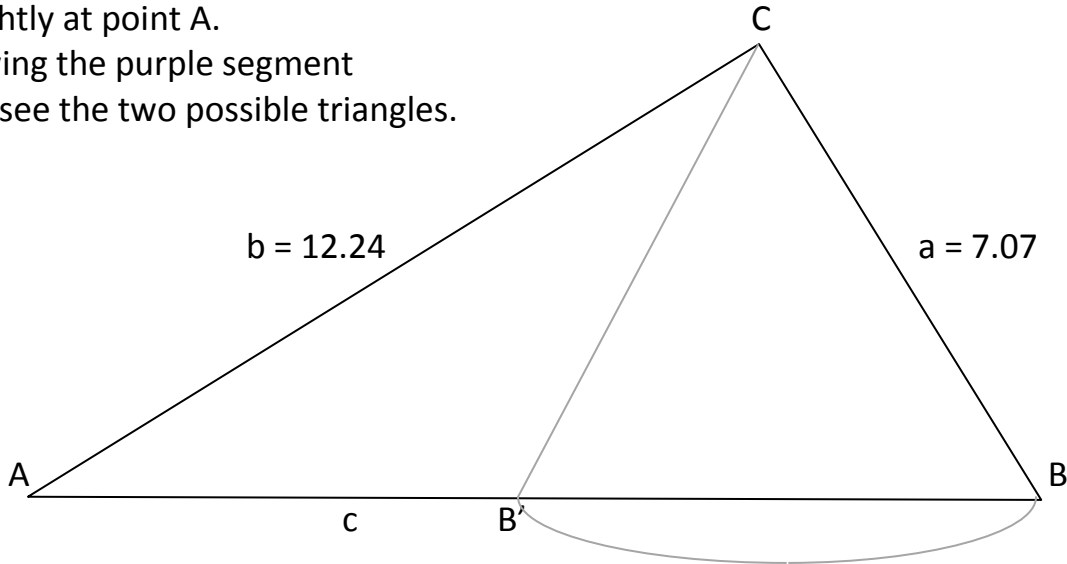
Draw and label angles and sides

Determine trig. ratios (sine, cosine, tangent) for each triangle



Ambiguous case for Law of Sines (Two solution case)

Build a triangle (red, blue, purple)
Hold the blue and red segments
tightly at point A.
Swing the purple segment
to see the two possible triangles.



$$\frac{\sin 30^\circ}{7.07} = \frac{\sin B}{12.24}$$

$$\sin B = \frac{12.24 \sin 30^\circ}{7.07}$$

$$B = 60^\circ \quad (\text{first quadrant answer})$$

Since sine is also positive in the second quadrant

$$B = 180^\circ - 60^\circ = 120^\circ \quad (\text{second quadrant answer})$$

Ambiguous case for Law of Sines (No solution case)

