BIG PICTURE of this UNIT:	- How do I determine the measure of angles in geometric shapes, without direct measurement? - How do I solve for sides or angles in right triangles? - How can I solve problems that require geometric models using right triangles??

Part 1 - Skills Review

1. From the top of a 200 foot lighthouse, the angle of depression to a ship on the ocean is 23°. How far is the ship from the base of the lighthouse?

2. A ladder leans against a building so that the angle between the ground and the ladder is 72°. The foot of the ladder is 1.5 meters from the base of the building. How high does the ladder reach on the building?

3. A 96 foot tree casts a shadow that is 120 feet long. What is the angle of elevation of the sun?

4. After working with ***the central tendency*** of a data set, it is important to understand how the rest of the data set is ***distributed***. We can do this by looking at numbers that divide the data set into quarters – known as the **quartiles.**

   Shown below are the scores 16 students received on a math quiz.

   52, 60, 66, 66, 68, 72, 72, 73, 74, 75, 80, 82, 84, 91, 92, 98

   a. What is the median of this data set?
   b. Find the **range** of the data set (defined as the difference between the largest data value and the smallest data value).
   c. What is the median of the lower half of this data set (known as the **first quartile, Q_1**)?
   d. What is the median of the upper half of this data set (known as the **third quartile**, Q_3)?
   e. What would be an appropriate name, in terms of quartiles, for the median? Explain.

   The first and third quartiles are sometimes known as the lower and upper quartiles, respectively. The quartiles, the median, and the lowest and highest values in a data set comprise what is known as the **five number summary** and can be graphically represented on a **box-and-whisker plot.**

   f. Using the same data set, construct a box-and-whisker plot on the number line given below.
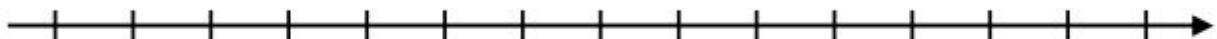
## Part 2 - Ratios Investigation

Let's go back to this triangle ⇒
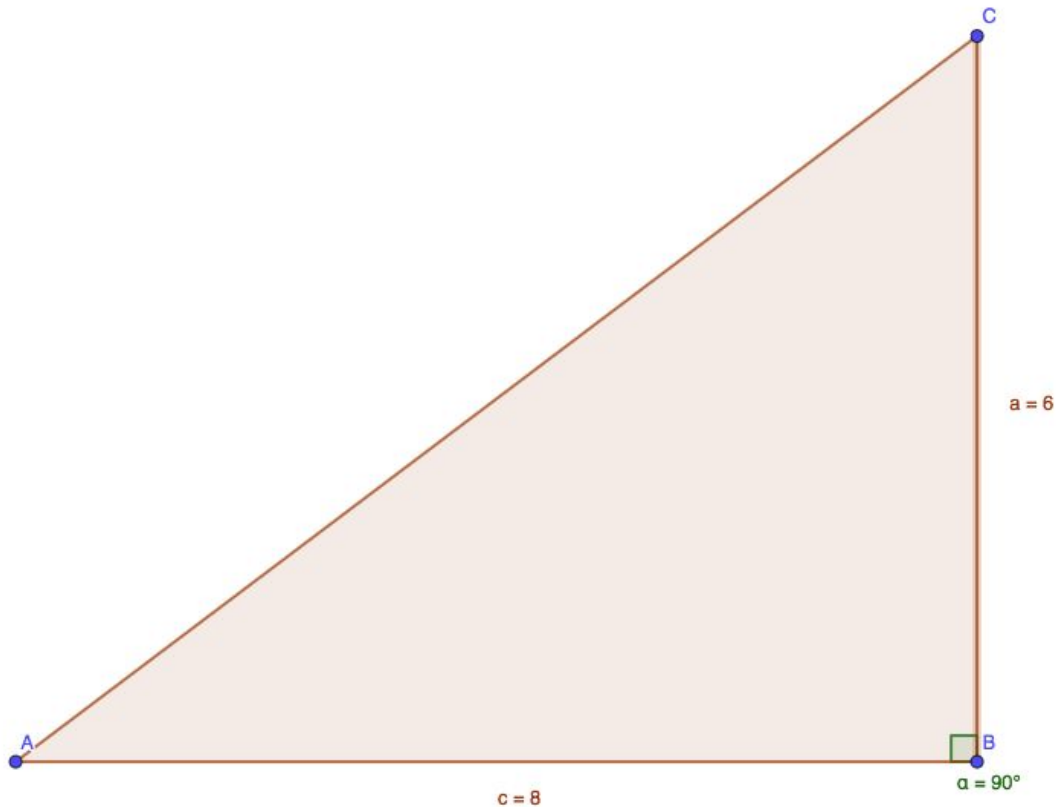
1. In ΔABC, find the length of the third side

2. In ΔABC, state the tangent ratio of angle CAB.

3. Use your calculator and the tan ratio to find the measure of ∠CAB. Record ALL decimal places of the angle.

4. Notice your calculator has other trig functions presented …… **sin** and **cos** ……

5. So, use the **sin** key to find the **_sine ratio_** of the exact angle from Q3 ⇒ what value do you get and how can we make sense of this result?

6. So, use the **cos** key to find the **_cosine ratio_** of the exact angle from Q3 ⇒ what value do you get and how can we make sense of this result?

Part 3 - Working with the Sine, Cosine and Tangent Ratios

Working with the Ratios

1) tan Z

2) cos C

3) sin C
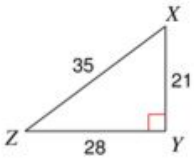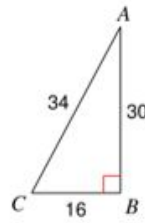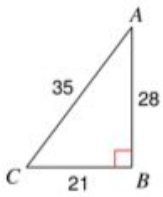
4) tan X
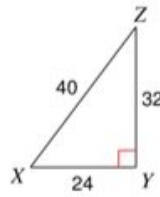
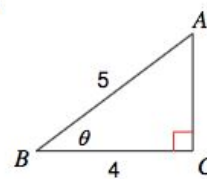Find the measure of each angle indicated. Round to the nearest tenth.
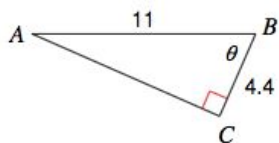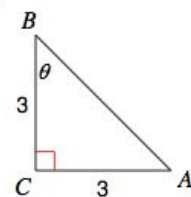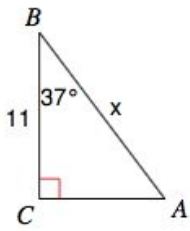
1)
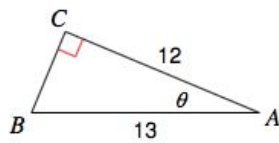
2)
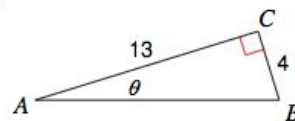
3)
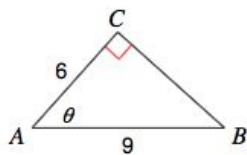
4)
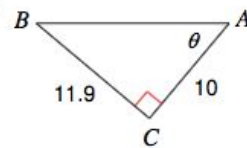
5)
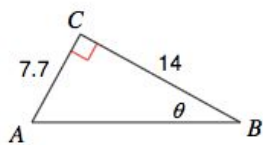
6)

7)

8)

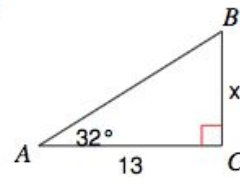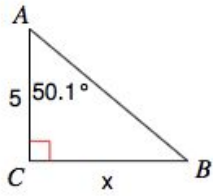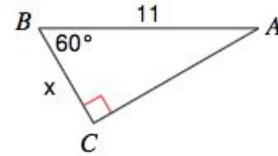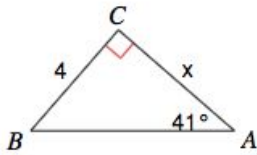Find the measure of each side indicated. Round to the nearest tenth.

9)

B

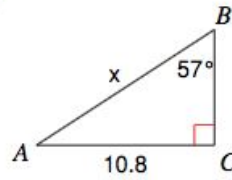37° x
11

C   A

10)

B

x

32°
A   C
    13

11)

A

5 50.1°

C   x   B

12)

B   11   A
  60°

x

C

13)

C

4   x

B   41°   A

14)

B

x   57°

A   10.8   C

15)

A

10.3
x

37°
C   B

16)

A

47° 3
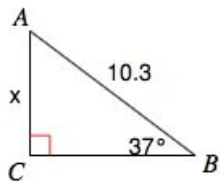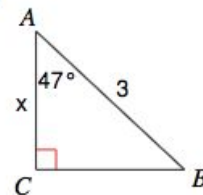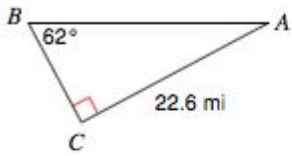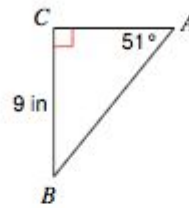x

C   B
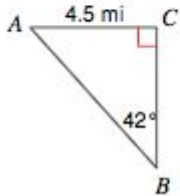
Solve each triangle. Round answers to the nearest tenth.

17)
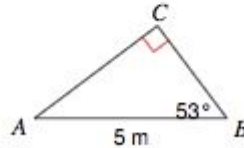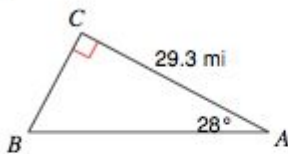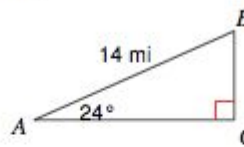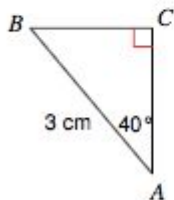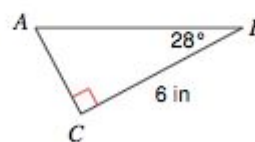

18)

19)

20)

21)

22)

23)

24)

For those of you who feel you are "getting it" and you want something more challenging, go to this link and then start on Page 2

http://mrsantowski.tripod.com/2017IntegratedMath2/ProblemSets/IM2_PS_3.2.pdf