# Challenging Trigonometry Problems

- You can use your partner, textbook, notes , HW and calculator.
- You are NOT allowed to use your cellphones.
- You are NOT allowed to communicate to any other GROUP at any time.
- On the test, you will be expected to leave your answers in Pi/Radical form when possible; however, when submitting your answers in this set of challenging problems, <u>round your answers to the nearest whole number</u>. (*No decimals)

<mark>All answers will be submitted using this link:</mark>
<u>CLICK HERE TO SUBMIT YOUR ANSWERS</u>

1) Find the area trapped between a regular pentagon and a circumscribed circle with radius=40.

2) Find five of the trapped areas between a regular 18-gon and an inscribed circle. The circumference of the circle is equal to C=60Pi

3) A regular hexagon is inscribed within a circle. The apothem is equal to 36. Find one of the trapped regions between the 2 shapes.

4) Pilot Olaf sees the airport off in the distance with an angle of depression of 65 degrees. If the plane has a height of 10,000ft. What is the ground distance to the airport?

5) Tiger woods is at the 12th tee and 400 ft above sea level on a cliff. The ground distance from the bottom of the cliff to the 12th hole is 1000ft. What is distance from the 12th tee directly to the 12th hole?

6) This pic is not drawn to scale. The gap between the 2 bridge pieces is 100 feet. When closed, the bridge has a total distance of 1000 feet. Find the angle of elevation of the 2 bridge parts.
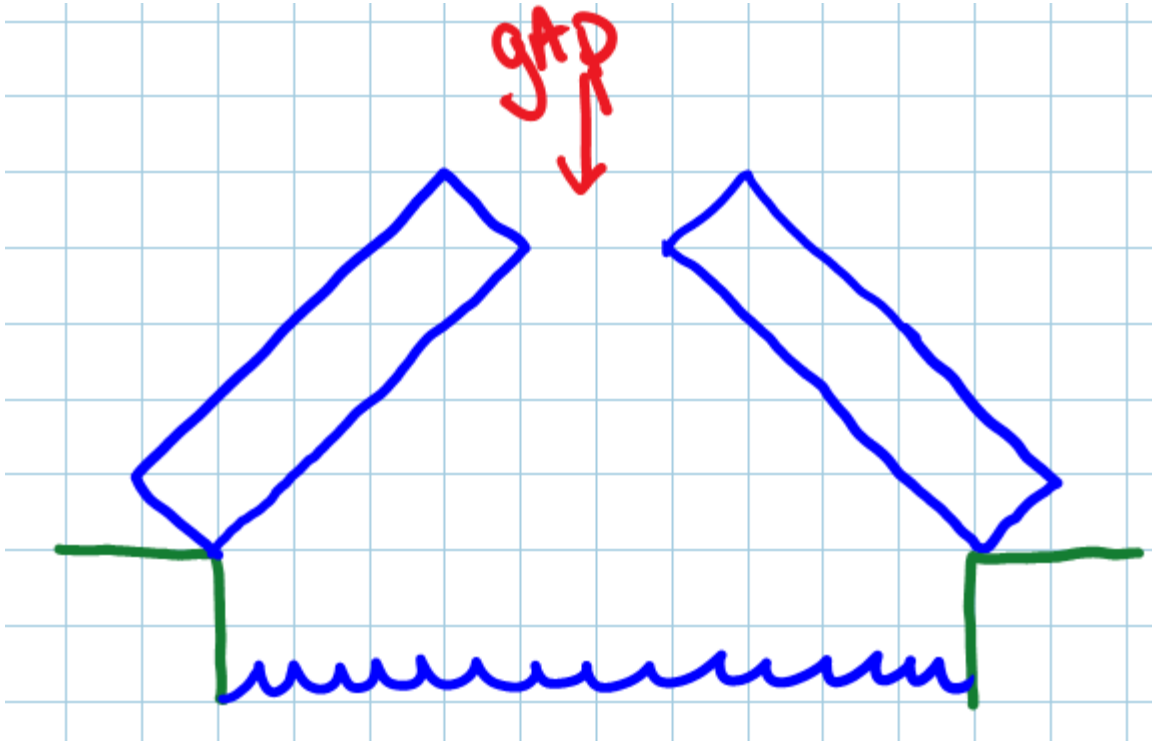
7) Vector u=<30,-40>, find the magnitude of vector u?

8) Vector u=<30,-40>, find Theta of this vector.

9) If your boat is pointing due north with a speed of 20 knots in still water and you are told there is a strong wind heading due west with a wind speed of 8 knots per hour, how fast is your boat actually moving? (Hint, it will be more than 20 knots per hour)

10) A ship leaves the Long Beach Port heading due west for 10 hours at 28 knots an hour. The ship changes course with a new heading of S20W for 14 hours at the same speed. The ship then decides to head back to the Long Beach Port at a speed of 30 knots an hour. How many knots is it back home to the LB Port?

Bonus: Referring to question #10, how long would be take to get back home?

See the link at the top of the page to submit your answers. Remember to round ALL of your answers to the **nearest whole number.**