Trigonometry Project

Using your clinometer, you’ve already measured these angles. Now we put them to work!

Part 1 – The Deal Bldg.

You’ll need to locate a point where you can see 3 corners of the Deal Building. Measure the distance in meters from your location to the nearest corner of the building. Use your clinometer to find the angle of elevation to the top of the building at the near corner. Calculate the height of the building. Assume that the other 2 visible corners of the building are the same height, find the angles of elevation to each one, then calculator our distance from each of the other corners of the building.

Distance to nearest corner = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle of elevation to nearest corner = \_\_\_\_\_\_\_\_\_\_\_\_\_

Height of clinometer from ground = \_\_\_\_\_\_\_\_\_\_\_\_\_

Height of building above your clinometer = \_\_\_\_\_\_\_\_\_\_\_\_\_

Total height of building = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle to corner b = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle to corner c = \_\_\_\_\_\_\_\_\_\_\_\_\_

Horizontal distance to corner b = \_\_\_\_\_\_\_\_\_\_\_\_\_

Horizontal distance to corner c = \_\_\_\_\_\_\_\_\_\_\_\_\_

Label all of this on a diagram!

Part 2 – The Cell Tower

This problem is similar to the “mountain” problem that we did the day before the test. You’ll be finding the height of the cell tower on campus. Use your clinometer to find the angle of depression to the bottom of the tower from 2 different locations along the 15yrd line. You’ll need to know the distance between the 2 points you choose. Here are some distances between points you can use.

Sideline to Sideline = 160feet

The hash marks divide the field in the 3 congruent sections.

Near Point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Angle of elevation to top = \_\_\_\_\_\_\_\_\_\_\_\_\_

Far Point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Angle of elevation to top = \_\_\_\_\_\_\_\_\_\_\_\_\_

Distance between points = \_\_\_\_\_\_\_\_\_\_\_\_\_

Distance between near mark and tower = \_\_\_\_\_\_\_\_\_\_\_\_\_ (you’ll calculate this first)

Total height of tower = \_\_\_\_\_\_\_\_\_\_\_\_\_ (including your height!!)

Now that you have the height of the tower, calculate its distance from the green ‘x’! \_\_\_\_\_\_\_\_\_\_\_\_\_

Part 3 – Light Pole

You’ll be finding the height of one of the light poles by the football field. The light pole closest to the school (SE Corner of field) is 135ft horizontally from where the 15yrd line hits the near sideline. The light pole is 27feet from a point at the top of the concrete bleachers just in front of the pole. Standing at a point on the 15yrd line, you’ll find 2 angle measurements. You’ll then have enough information to find the height of the bleachers, and the height of the light pole above the field. Use that to find the height of the pole above the ground where it stands.

Horizontal distance from your point to the pole = \_\_\_\_\_\_\_\_\_\_\_\_\_

Horizontal distance from your point to the top of the stands = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle to top of light pole = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle to top of bleachers = \_\_\_\_\_\_\_\_\_\_\_\_\_

Height of light pole from field = \_\_\_\_\_\_\_\_\_\_\_\_\_ (don’t forget to include clinometer height)

Height of bleachers from field = \_\_\_\_\_\_\_\_\_\_\_\_\_ (don’t forget to include clinometer height)

Height of light pole above ground = \_\_\_\_\_\_\_\_\_\_\_\_\_

Part 4 – Kennesaw/Acworth

A point in the center of Kennesaw is 1091ft above sea level.

A point in the center of Acworth is 908ft above sea level.

The sidewalk in from of NCHS is 1008ft above sea level.

The distance from Kennesaw to NCHS is 2.18 miles

The distance from NCHS to Acworth is 2.48 miles

Find the angle of elevation between Acworth and NCHS, then the angle from NCHS to Kennesaw.

Angle between Acworth and NCHS = \_\_\_\_\_\_\_\_\_\_\_\_\_

Angle between NCHS and Kennesaw = \_\_\_\_\_\_\_\_\_\_\_\_\_

**Presentation Piece:**

As partners, you’ll need to decide on two of the 4 problems above and make scale drawings or models. Should you make a drawing, it should be on paper or poster board, but it can be no larger than half a sheet of poster board!

Each of you will have to complete this part of the project on your own. You can’t both do the same problem!

As for grading, your grades will be combined for all of the figuring and work that you’ve done on the other sheet, but your models/drawings will be graded separately.

**What you need to turn in as partners:**

1 sheet with all blanks filled in

Any scratch work

2 drawings/models (one from each of you)

**Rubric**

**Measurements and math**

Accurate work (up to 60 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

All lengths/distances in feet

All angles in degrees

Scratch work included (10 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Model/Drawing**

Accuracy (up to 15 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Scale clearly stated (5 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Example *1cm : 10feet*

Neatness (up to 5 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Wow Factor (up to 5 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Total (100 pts)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Same problem as partner (-10 pts) \_\_\_\_\_\_\_\_\_\_\_\_\_\_