

6.7 Some Special Ratios

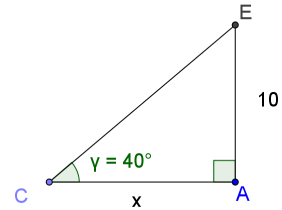
Goal: Understand how trigonometry was developed and use trigonometry to determine triangle side lengths and angles.

1. Click and drag point C to a different location. Notice that the side lengths all change, but the ratio $\frac{c}{e}$ is invariant. Why does this occur?
2. Fill in the table below by adjusting the slider to the specified degree value as stated in the first column.

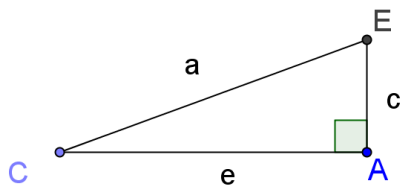
Value of Angle	Segment a	Segment c	Segment e	Ratio of c to e
5°				
10°				
15°				
20°				
25°				
30°				
35°				
40°				
45°				
50°				

3. Compare your table to at least three different groups. Compare and contrast the tables. How is your table different than the other groups? How are they the same? Why are they the same in certain columns?
4. What should occur every time you compare the leg across from 30° angle to the leg adjacent or next to the 30° angle in any right triangle?

5. Marty was working with a triangle that had a 40° angle in it. The opposite side from the 40° angle had a length of 10. Write an equation that shows how Marty could figure out the missing side length. Use the table above to help. Then write one or two complete sentences describing what you did.



6. Doc Brown was working with a triangle that had the following dimensions as seen below. Write an equation that shows how Doc Brown could figure out the missing angle value. Use the table to help. Then write one or two complete sentences describing what you did.



Segment a =4.41

Segment c=1.51

Segment e =4.14

Bonus: For 5 extra credit points, build your own sketch similar to the one on Geogebra that Mr. Deal supplied to you. On your sketch determine the ratio of side c to side a.

To earn the extra credit, you must create the sketch from scratch in person for Mr. Deal, or email your completed sketch to Mr. Deal accompanied by a detailed step-by-step process on how you constructed the sketch.

The sketch must be turned in to Mr. Deal by Friday.