# Geometry Homework #15

1) Rebecca likes to wear dresses. She keeps track of the number of days per week that she wears a dress for eight straight weeks. The data look like this:

| *Week #* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* |
|---|---|---|---|---|---|---|---|---|
| *Days wearing a dress* | 6 | 6 | 2 | 4 | 6 | 1 | 6 | 1 |

What are the mean, median, mode, range, variance, and standard deviation for Rebecca's data?

2) Find the sum of the geometric series $3+12+48+192+...+196,608$ without actually adding up all of the numbers.

3) If Andrew's grades on each of his last six tests were 98, 53, 81, 98, 63, and 87, find the mean, median, and mode.

4) After a long, stressful school year, you decide to take a nice, relaxing vacation and go tent camping in Alaska for the summer. It would have been a nice, relaxing vacation if it weren't for the mosquitos. Mosquitos are horrible in Alaska in the summer. They are so bad that you spend every night counting the number of mosquitos inside your tent. You count them every night for ten nights. At that point, you pack up and head home because you haven't slept a wink. The mosquito data you collected for the ten days, in number of mosquitos per night, are 104, 92, 146, 112, 87, 92, 155, 132, 99, and 141. Which mosquito counts, if any, are beyond one standard deviation from the mean?

5) Find a formula to calculate any term for the geometric sequence $-2,\ -6,\ -18,\ -54,\ -162...$

6) Convert $\frac{3\pi}{4}$ radians into degrees.

7) Find: $\sin 300^{o}$

8) Solve: $\cos\frac{5\pi}{3}=\frac{4x}{7}$

9) Convert $270^{o}$ into radians.

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10) Find: $\cos\frac{2\pi}{3}$

11) Andrew wants to determine the height of a certain tree, but it is too difficult to climb and measure the height directly. However, Andrew is clever and knows enough mathematics to solve this problem without climbing the tree. He walks exactly 80 feet away from the base of the tree and looks up to the very top of the tree. If Andrew is exactly 6 feet tall and the angle of elevation of his head, as he looks at the top of the tree, is exactly $60^o$, determine the height of the tree (approximate your answer to one decimal place).

12) Convert $315^o$ into radians.

13) Find: $\tan 225^o$

14) Solve: $\sin\frac{\pi}{3}=\frac{5x}{3}$

15) Convert $\frac{7\pi}{15}$ radians to degrees.

16) Find: $\tan 240^o$

17) Convert $78^o$ to radians.

18) Find: $\sin\frac{5\pi}{3}$

19) Chloe and Abigail want to know how wide a certain river is, but it's too dangerous to try to swim across and measure the distance directly. They devise a clever mathematical plan to calculate the distance. They walk to the edge of the water and line themselves up directly with a large tree on the bank of the other side of the river. Abigail then walks 150 feet away from Chloe, down the bank of the river, and looks directly at Chloe. Abigail then turns her head so that she is looking directly at that same large tree on the other side of the river. If the angle that her head turns is exactly $30^o$, determine the width of the river (approximate your answer to one decimal place).

20) Solve: $\tan\frac{3\pi}{4}=\frac{-8x}{5}$