Homework

1. Suppose you brought Egyptian Ice instead of the ice cream cones in Station 1. The Egyptian Ice, you guessed it, is in the shape of a pyramid. The dimensions of container are 6 cm by 6 cm base, with a height of 7 cm. The chest is 12 inches x 22 inches x 11 inches and the ice package is shaped like a rectangular prism 18 cm x 18 cm x 20 cm. Use 1 inch = 2.54 cm. How many Egyptian Ice containers can you fit in the cooler? Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

2. Suppose the bridge in Station 3 was built straight across the stream instead of a semicircle. How much money will it cost you to build this bridge? Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

3. Suppose the safety requirements for the ladder in Station 4 was changed from 50 to 70 . Calculate the possible lengths of the ladder and the distance from the base of the tree. Use mathematics to explain how you determined your answer. Use words, symbols or both in your explanation.

Answers:

1. The ice chest is given in inches, so the students need to covert to centimeters (2.54 cm = 1 inch).

   The volume of the ice chest is $(12)(22)(11)(2.54^3) = 47588\ cm^3$

   Subtract the volume of the ice (18) (18) (20) = $6480\ cm^3$

   Divide by the volume of the Egyptian Ice $\frac{1}{3}(36)(7) = 84$

   The answer is 489 containers of Egyptian Ice.

2. First you must change feet to inches, so 19 feet is 228 inches, then divide the distance across the stream, 228, by the width and gap of the board, 5.5 inches. You have to buy 42 boards at $3.47 a board. The cost for the boards will be $145.74. The 2 frames which cost 37 cents a linear foot, so the cost of the frames will be $2 \cdot 19 \cdot 0.37$ = $14.06. The grand total of the project is $159.80.

3. In this problem you can have many different answers depending on how high up the tree you want to put the lookout stand and the length of the ladder. A few answers are:

Length of the ladder	Height of the lookout stand
20 feet	18.79 feet
25	23.49
31.92	30

   Sin 70 = height of the lookout stand divided by the length of the ladder.