Name:

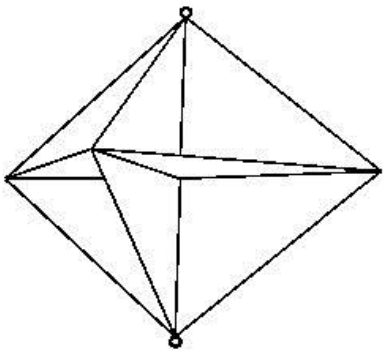
Date: Section:

FAULTY TOWERS

Situation

You are ship wrecked on a deserted island and you find the following materials that might help you build a device for making your whereabouts known

3 sheets of composite material board _____
1 old saw _____
1 meters of seaweed _____
2 meters of rope _____
1 sheet of aluminum _____

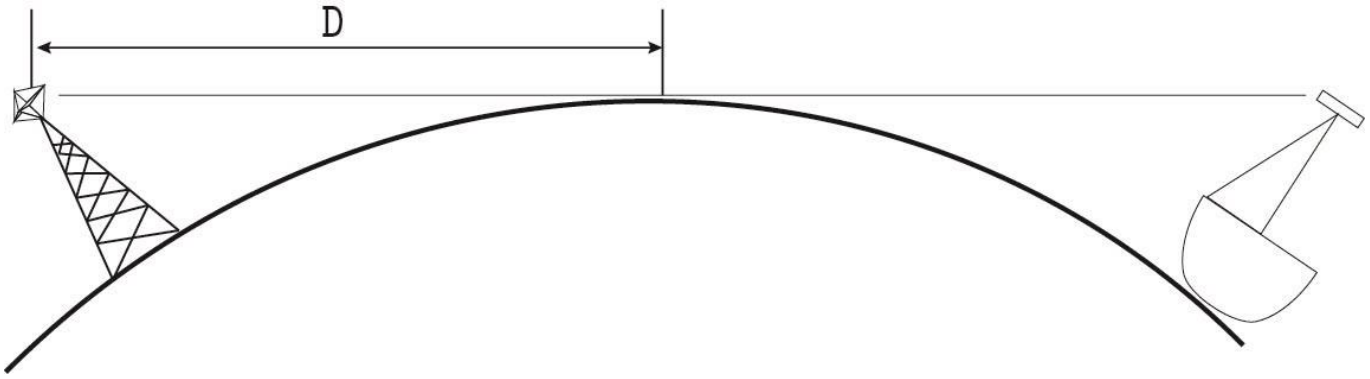


As your position is likely away from the shipping lanes your best hope is a radar beacon, held as high as possible. You know two important facts shown in the diagrams below.

A high return radar shape has 90 degree surfaces.

1. $1.17 * \sqrt{H \ \ ft.} \ = \ D \ nm$ Where the H is the height in feet and the D is the distance in nautical miles to the horizon

Problem: If you made your tower 89 centimeters high and assume the ship's radar is the same height off of the water, what would be the maximum distance/range of the beacon? Show all calculations, circle final answer.



Problem/Challenge:

To design a radar beacon to be seen from all directions mounted on top of a tower designed to be as high as possible. The tower must be stable, look like it will work, have excellent joints, and hold the radar beacon securely.

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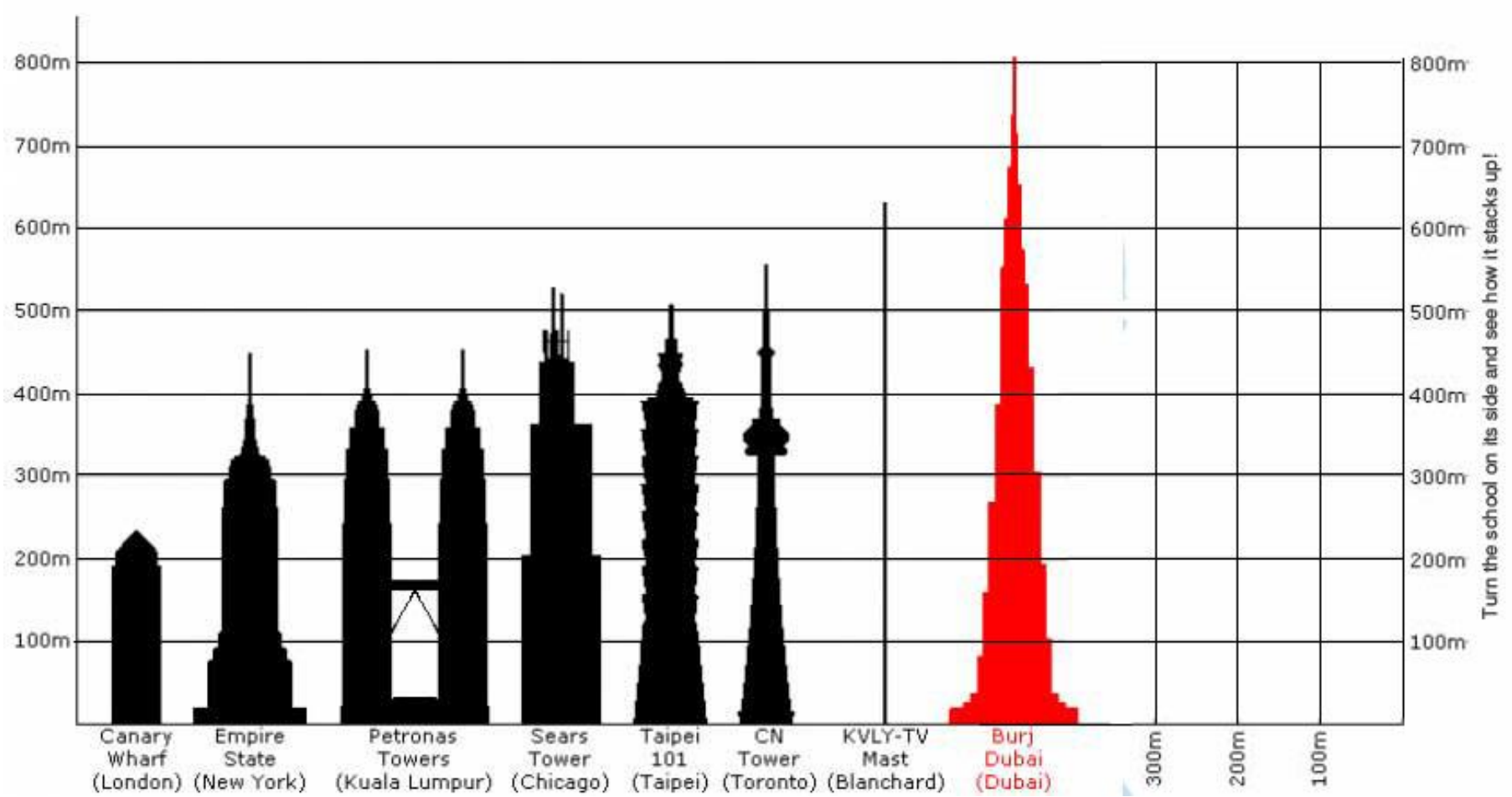
Tower Comparison Exercise

Below is a chart of common towers. Measure the school property and see how it compares to our CN Tower and the Burj Tower. Sketch in approximately how long and wide our school is in the space below:



Tip: See how far your stride is by walking on the floor for 20 tiles (1'square each) then divide by the number of steps into (1' * 20) to get your stride distance. Use the stride distance to walk the school length and width.

Name:

Date: Section:

Ideas:

_____

_____

_____

_____

Choose and Construct:

_____

_____

_____

Evaluation:

Height 1 point/centimeter _____

Stability

1 weeping willow 2 rock & rolls 3 teeters 4 sways 5 hurricane proof _____

Ingenuity of joinery

1 tape all over 2 will it hold 3 it works! 4 no tape? 5 super lock _____

Aesthetics (Does it look like it will work?)

1 lover of sea & sand 2 is it sculptural? 3 possible 4 works well 5 excellent structural use of materials _____

Radar reflector

1 stealth 2 floating drum 3 what's that? 4 check it out 5 747 ! _____

Team work

1 what partner? 2 what's his name? 3 some work done? 4 a lot done! 5 hardcore! _____

Total up your points and put in hand-in bin for marks ------→

Total Points _____

Bonus: If a ship has a 3 meter high radar, figure out how far your beacon range will be?