

## Geometry Unit 6 Performance Task

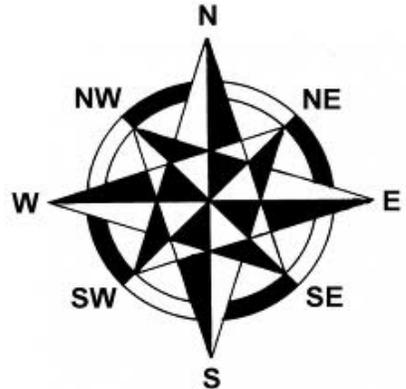
### CONTEXT:

You are accompanying a particular pirate captain on his adventure to find the fountain of youth. You have been employed as his guide on this adventure. Your life depends on your precision and accuracy to guide him in the right direction, give him good advice to meet his objectives and return home safely.



### TASK #1

- 1) You arrive on your ship, Queen Anne's Revenge, at the island that has been storied to house the fountain of youth. Your map shows that where your ship landed to the fountain of youth is 12 miles East. In order to access the fountain you need cups from the Ponce de Leon's ship which is 15 miles NW of the fountain of youth. If you travelled 9 miles North of your ship would you arrive at the Ponce de Leon's ship?



Draw the diagram and use the converse of the pythagorean theorem to support your findings.

- 2.) Your map shows that the fountain of youth is 13 miles NE of the White Cap Bay, where legend suggests that mermaids dwell. You need a tear from one of these mermaids to access the fountain of youth. If you travel 5 miles South of your ship, Queen Anne's Revenge, will you arrive at the White Cap Bay? (Hint: use information from above)

Draw the diagram and use the converse of the pythagorean theorem to support your findings.

- 3.) After realizing that the cups you need are not at the Ponce de Leon's ship, you decide to go from the White Cap Bay to the Spaniard Camp, where the cup thieves are camped out. The map shows the camp to be 9 miles South of the Fountain of youth. So if you travel 14 miles East from the White Cap Bay will you arrive at the Spaniard Camp. (Hint: use information from above)



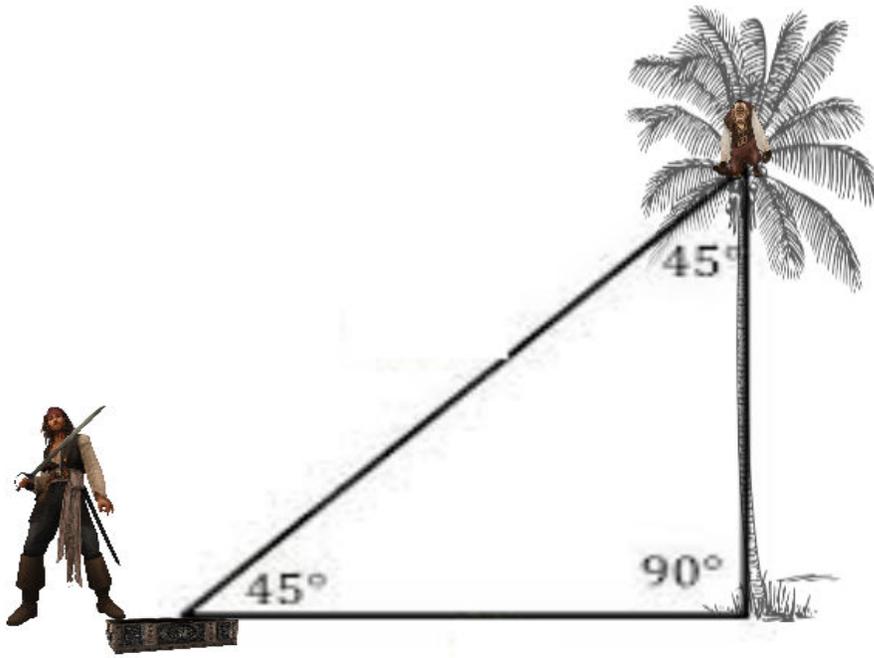
Draw the diagram and use the converse of the pythagorean theorem to support your findings.

Below you will draw a diagram of the island including your ship, Queen Anne's Revenge, Ponce de Leon's Ship, White Cap Bay, Spaniard's Camp and the fountain of youth. Include in your diagram the distances and directions between these locations.

## TASK #2

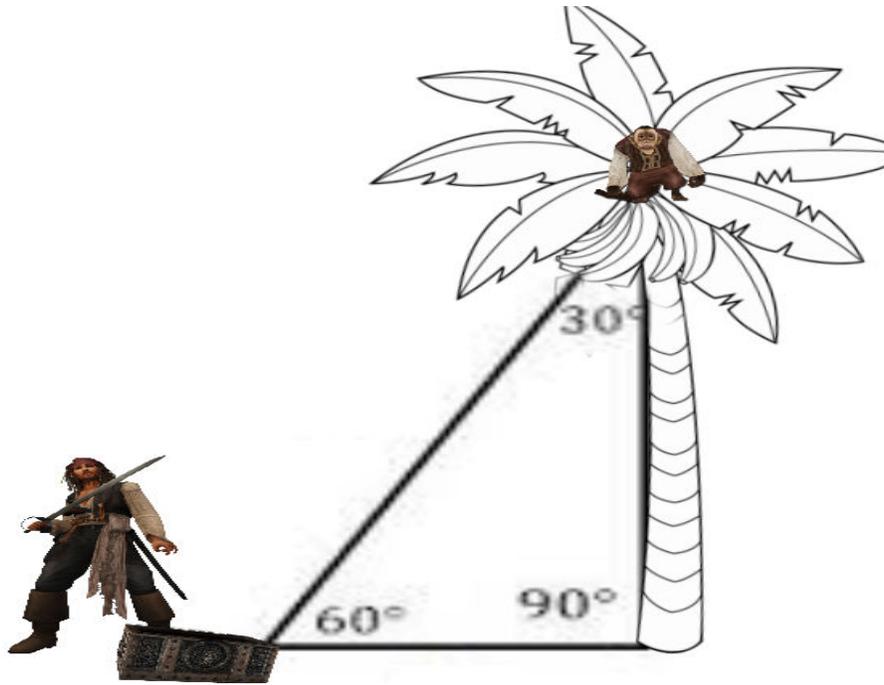
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To gather food on the island your captain thought ahead and brought his monkey to climb trees and throw down fruit. The diagram below shows how the monkey will throw coconuts from the tree top to the captain's treasure chest.



The monkey will always throw a coconut at a 45 degree angle from the tree. Depending on the height of the tree the distance the treasure chest needs to be from the bottom of the tree will vary, as will the distance of the monkey's throw. See the groupings below, find a pattern, and write the general rule.

Tree Height: 25 ft	Tree Height: 30 ft	Tree Height: 40 ft	Tree Height: 50 ft
Monkey Throw: $25\sqrt{2}$ ft	Monkey Throw: $30\sqrt{2}$ ft	Monkey Throw: $40\sqrt{2}$ ft	Monkey Throw: $50\sqrt{2}$ ft
Chest to Trunk: 25 ft	Chest to Trunk: 30 ft	Chest to Trunk: 40 ft	Chest to Trunk: 50 ft

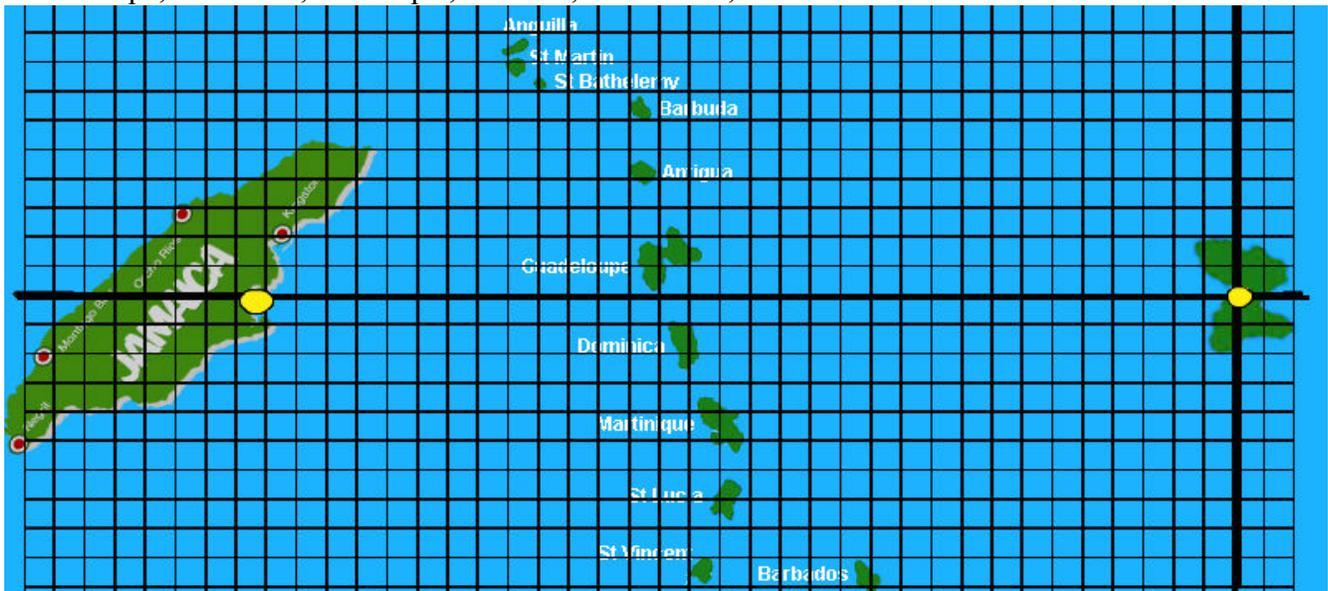


The monkey will always throw a banana at a 30 degree angle from the tree. Depending on the height of the tree the distance the treasure chest needs to be from the bottom of the tree will vary, as will the distance of the monkey's throw. See the groupings below, find a pattern, and write the general rule.

Tree Height: $15\sqrt{3}$ ft	Tree Height: $20\sqrt{3}$ ft	Tree Height: $30\sqrt{3}$ ft	Tree Height: $40\sqrt{3}$ ft
Monkey Throw: 30 ft	Monkey Throw: 40 ft	Monkey Throw: 60 ft	Monkey Throw: 80 ft
Chest to Trunk: 15 ft	Chest to Trunk: 20 ft	Chest to Trunk: 30 ft	Chest to Trunk: 40 ft

### TASK #3

The islands from top to bottom are named Anguilla, St Martin, St. Barthelemy, Barbuda, Antigua, Guadeloupe, Dominica, Martinique, St. Luca, St. Vincent, Barbados.

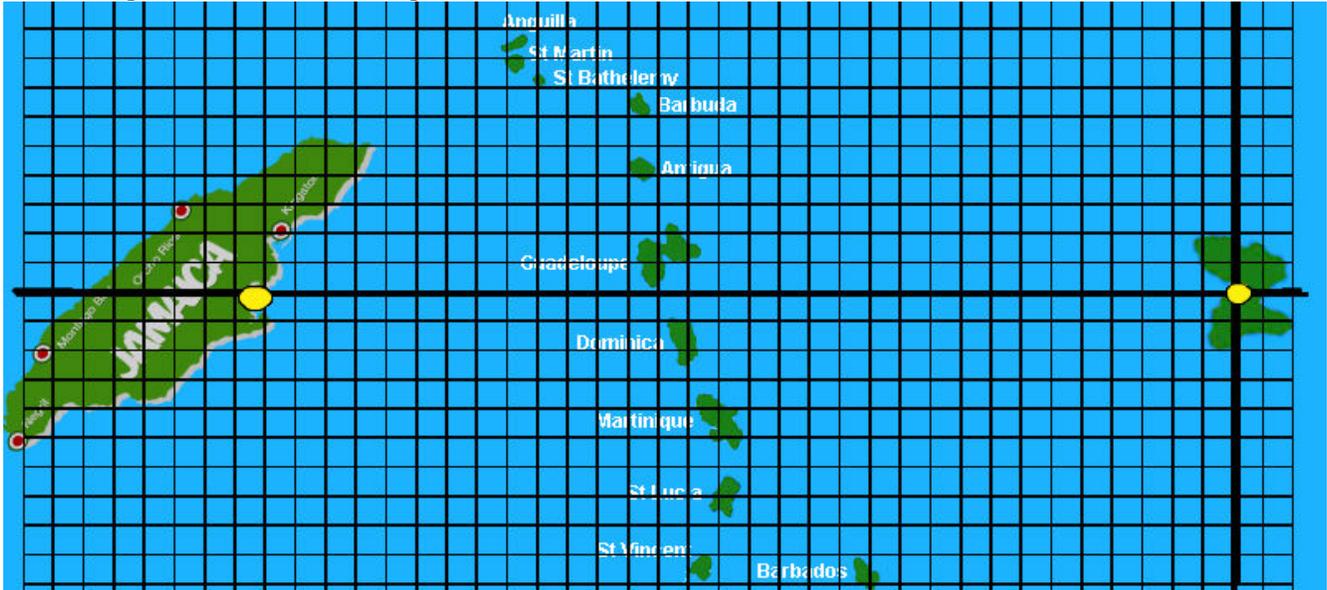


You are traveling from the island of the fountain of youth (located at the origin) and attempting to navigate to Jamaica. You see that you would have to travel directly West in order to reach your destination. As the navigator you plan to find evaluate some scenarios beforehand in case you go off course. Using trigonometry and the map above (which uses each square as one kilometer) find out which island you arrive at if you have happen to go astray. **SHOW YOUR WORK.**

- 1) Which island will you arrive at if you are off course going 13.18 degrees S of W for 17.46 km?
- 2) Which island will you arrive at if you are off course going 11.94 degrees N of W for 19.42 km?
- 3) Which island will you arrive at if you are off course going 39.8 degrees S of W for 15.62 km?
- 4) Which island will you arrive at if you are off course going 3.31 degrees N of W for 18.03 km?

#### **TASK #4**

The islands from top to bottom are named Anguilla, St Martin, St. Barthelemy, Barbuda, Antigua, Guadeloupe, Dominica, Martinique, St. Luca, St. Vincent, Barbados.



After carefully looking at the plan for the trip you realize it would be much easier to figure out how far you have gone off course by asking the locals which island you have landed on, then figuring out which island you are on by trying to estimate the angle and direction you are off course like you did in the previous task. Find out how far and in which direction you are off course in each of the following.

#### **SHOW YOUR WORK**

- 1) The locals tell you that you are on St Luca. How many kilometers have you travelled and in which degree and direction are you off course?
- 2) The locals tell you that you are on Barbuda. How many kilometers have you travelled and in which degree and direction are you off course?
- 3) The locals tell you that you are on Dominica. How many kilometers have you travelled and in which degree and direction are you off course?
- 4) The locals tell you that you are on St. Vincent. How many kilometers have you travelled and in which degree and direction are you off course?