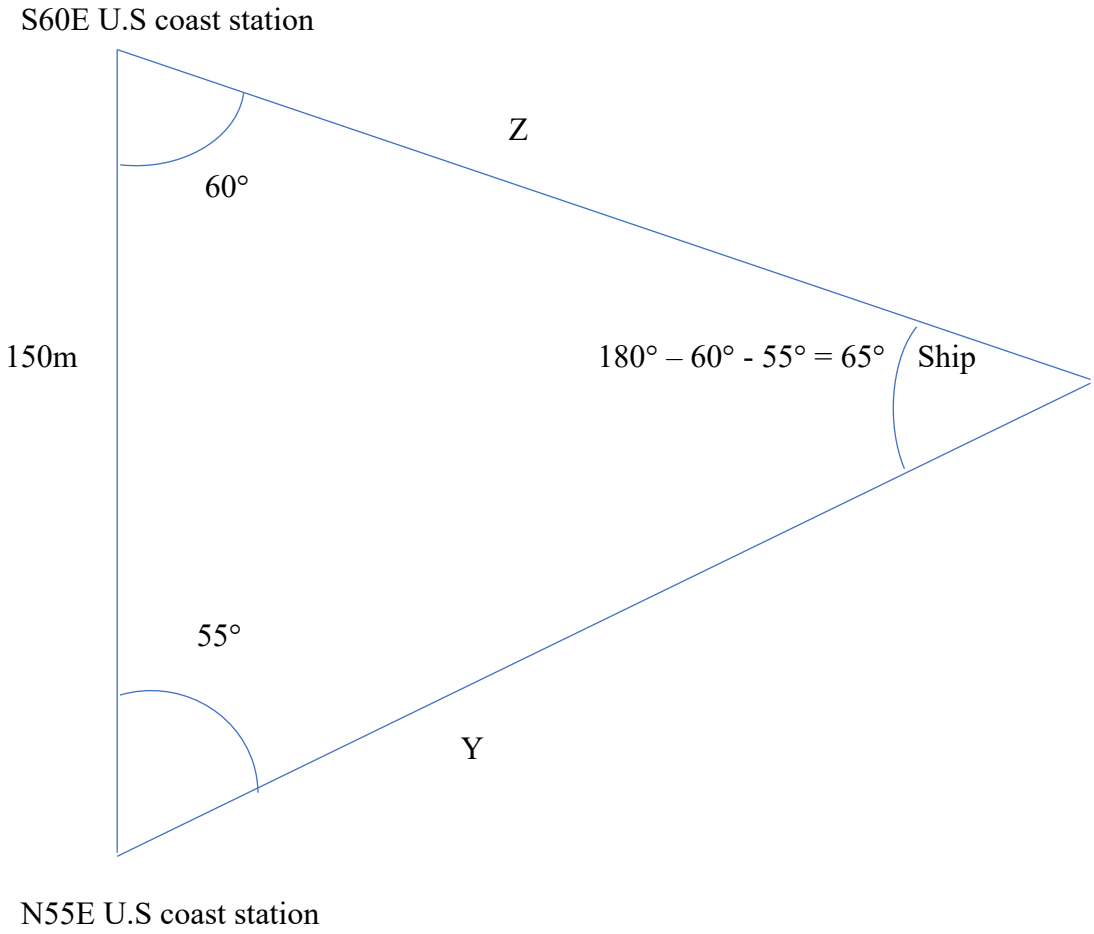
Independent Quantive Reasoning

Rayshad Lindsay

In this problem two of the Coast Guard station at 150 miles away from each other. From a far out reach, there's a ship was found in the middle of the sea and call in SOS signal to a nearby Coast Guard station. The ship has found two Coast Guard station locating in different direction; one Coast Guard station is located at 55° northeast and another one at 60° southeast to the ship. Each of the coast line has a helicopter that up to 200 miles per hour. In this situation is to find which of the two Coast Guard helicopter that is closer to the ship and how long the helicopter reach to the ship.



In this model, the ship is connected between two lines leads one of the Coast Guard station with 55° northeast and another with 60° degree southeast. Also, the distance between two Coast Guard station is 150 miles apart from each. The reason this model here is correct because the angle direction from the ship to one the station heading east with the Coast Guard station are 150 meters across to each other yet unknown about the distance between two direction. Adding the inner angles of 55° and 60° degree minus the 180° radians equally to 65° of the ship in both directions of the Coast Guard station.

$$\frac{\text{Sin } 65}{150} = \frac{\text{Sin } 55}{Z} \qquad \frac{\text{Sin } 65}{150} = \frac{\text{Sin } 60}{Y}$$

$$Z \text{ Sin } (65) = 150 \text{ Sin } (55) \qquad Y \text{ Sin } (65) = 150 \text{ Sin } (60)$$

$$Z = \frac{150 \text{ Sin } (55)}{\text{Sin } (65)} \qquad Y = \frac{150 \text{ Sin } (60)}{\text{Sin } (65)}$$

$$Z = 135.58 \text{ miles} \qquad Y = 143.33 \text{ miles}$$

$$\frac{135.58}{200} = \frac{200\ t}{200}$$

$$t = 0.68 \text{ h x } 60 \text{ min} = 40.67 \text{minutes}$$

In solving this problem is to use the Law of Sine for both distances the two angles from the ship to the station of 60° and the 150 miles distance between the two Coast Guard stations then use the cross for the sine and the side distance. Next cross multiplies the two fractions then divide by the sine angle of the ship and it leads to the distance for both direction of the Coast Guard stations. The shortest distance from the ship to the Coast Guard station is the answer is to determine which helicopter is sent out to reach the ship. The shortest distance is from the ship to the Northeast Coast Guard station of 55° degree because shorten is quicker than longer distance means less time usage. Dived the distance of the from the N55E Coast Guard station direction with the helicopter speed of 200 miles per hour and finding the time it takes the helicopter to reach the ship.

The solution to this problem is the Coast Guard who has the less distance is the 60° southwest direction from the Coast Guard station to the ship than the 55°northeast direction of the Coast Guard station thus the 60° southeast direction Coast Guard to be the station that sends the helicopter to the ship. Calculating the time, the time the helicopter to reach to the ship 0.68 hour (40.67 minutes). The reason that is the ship headed giving a SOS signal called between two location within nearby coast. The assumable solution is that if an angle has small than a longer angle means that the 55° northwest coast station is much less distance than the distance of 60° southwest coast station making a reasonable solution of this problem. The solution is the Coast Guard station who sends the helicopter to reach the ship is the Northwest Coast Guard station and it'll takes 0.68 hour (24.83 minutes) to reach the ship.