

## Pythagoras & Trigonometry Worksheet for KS3-5

These resources are based on real-life challenges faced daily by HM Coastguard. Each problem has been assigned a coastguard rank according to its challenge level to enable easy differentiation.



Maritime Operations Officer



Senior Maritime Operations Officer



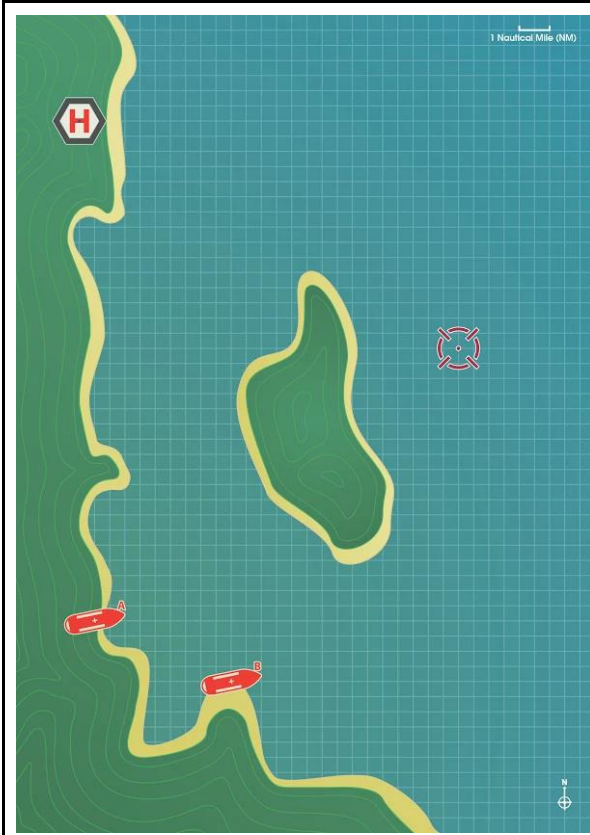
Commander



Chief Coastguard

The four levels vary in terms of scaffolding and challenge, but are all based on the same scenario.

## Pythagoras & Trigonometry Worksheet for KS3-5



1)



a) Mark on a suitable route for both boat A and B to reach the target area.



b) Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.



c) Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.



d) At 40 NM (nautical miles) per hour, how long will each leg take the crew. Put all of the information into a detailed set of instructions to give to the crew.



2)



a) Mark on a suitable route for both boat A and B to reach the target area.



b) Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.

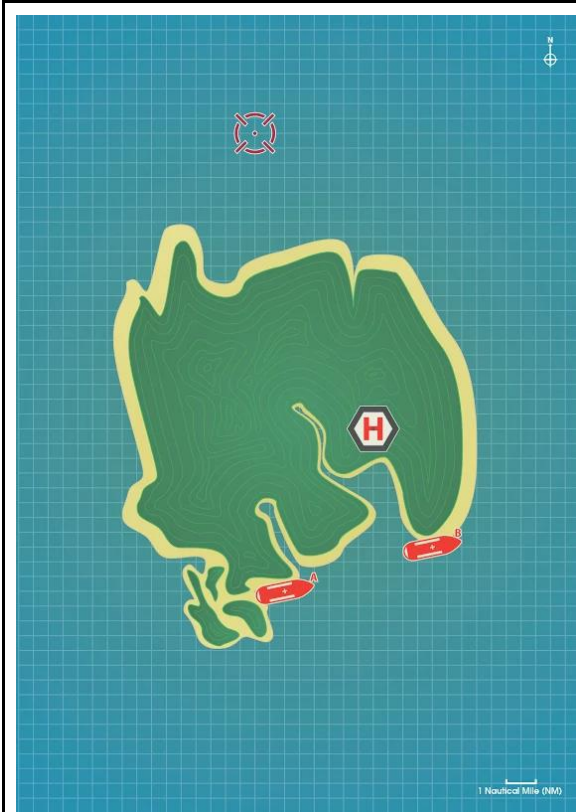


c) Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.



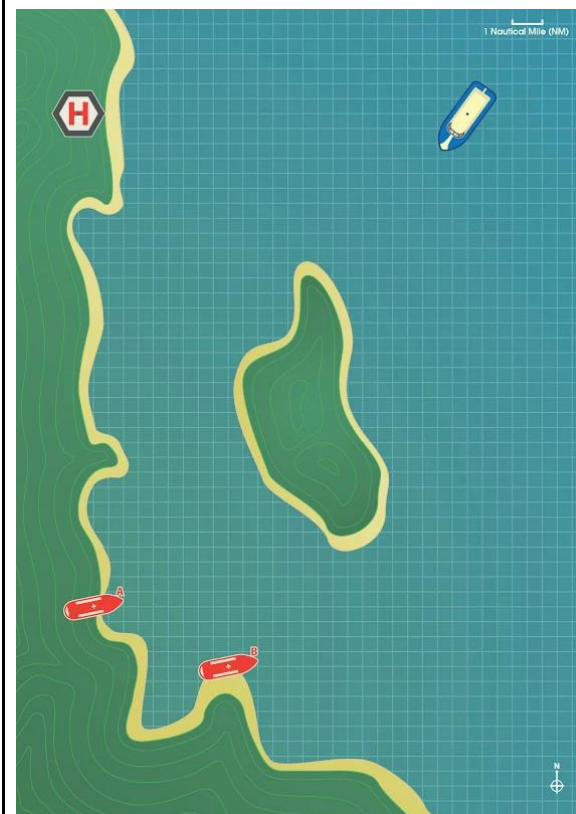
d) At 40 NM (nautical miles) per hour, how long will each leg take the crew. Put all of the information into a detailed set of instructions to give to the crew.

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3)

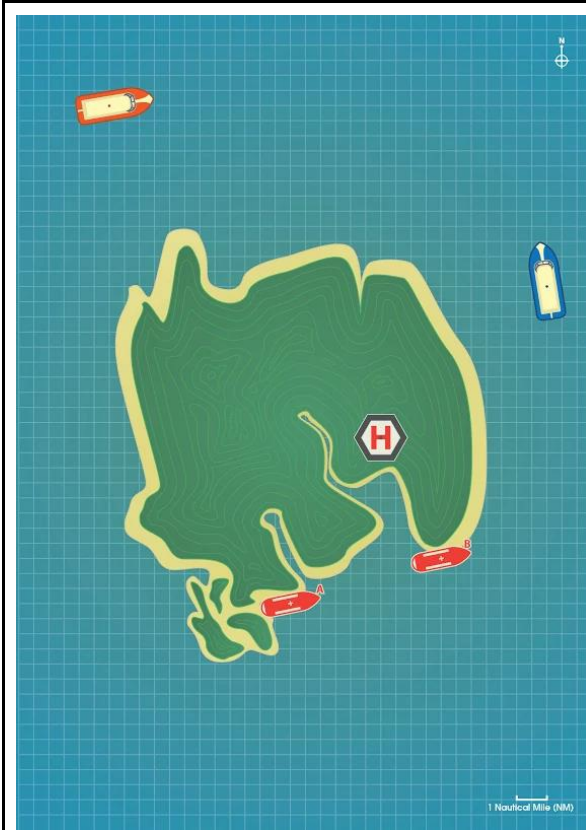
- Mark on a suitable route for both boat A and B to reach the target area.
- Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.
- Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.
- At 40 NM (nautical miles) per hour, how long will each leg take the crew. Put all of the information into a detailed set of instructions to give to the crew.







4) The coastguard has received a distress call from a boat due East from the helicopter station.

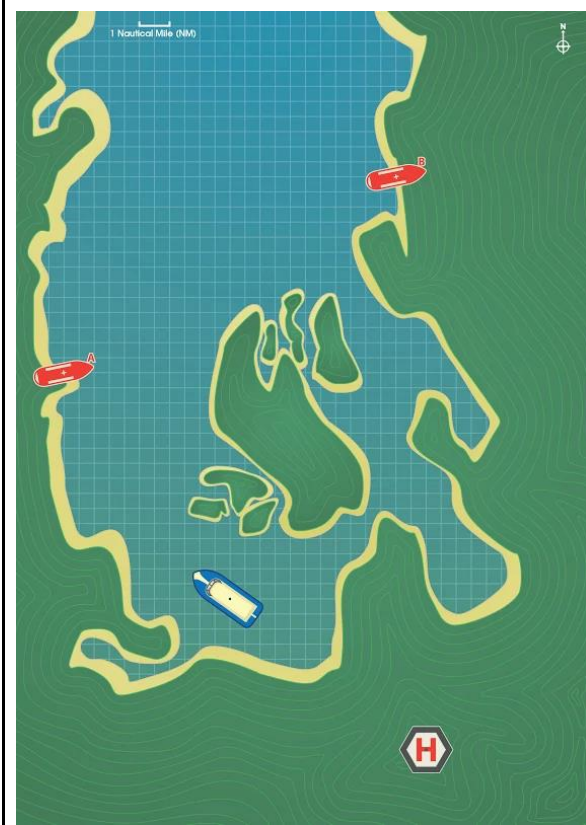
- Mark on a suitable route for both boat A and B to reach the target boat in distress.
- Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.
- Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.
- At 40 NM (nautical miles) per hour, how long will each leg take the crew. Put all of the information into a detailed set of instructions to give to the crew.

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5) The coastguard has received two distress calls from boats at sea. Fortunately, there are two crews available to go.

-  a) Mark on a suitable route for both boat A and B to reach the target boats in distress.
-  b) Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.
-  c) Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.
-  d) At 40 NM (nautical miles) per hour, how long will each leg take the crew. Put all of the information into a detailed set of instructions to give to the crew.



6) The coastguard has received a distress call from a boat caught on a sandbank.

-  a) Mark on a suitable route for both boat A and B to reach the target boat in distress.
-  b) Use Pythagoras' theorem to find the distances for each leg of the boats' journeys.
-  c) Use trigonometry to find out the bearing needed to travel for each leg of the boats' journeys.
-  d) Boat B is a new style boat and can travel at 56NM per hour. Boat A is an old style and can reach 22NM per hour. Which boat will get to the scene first?