Jewel of Muscat

Activity Sheet: Advanced Science & Technology

1. Making a Kamal

You will need:

- A stiff piece of rectangular card about 10 cms x 5 cms.
- Length of string, about 60 cms.
- A nail or thin sharp object.

Construction

- Put a small hole through the centre of the rectangular card with the sharp object.
- Thread one end of the cord through the central hole in the card and knot it so it cannot slip out.
- Tie a knot at the other end of the cord to keep it from fraying.

2. How to Test Your Kamal

In the classroom, rule an 'horizon' on a large sheet of paper and mark a star (Polaris) about 40cms above it. Stand about 5 metres away and follow the instructions below to find your latitude:

- Hold the string of the kamal loosely in your teeth and position it so your star is at the top of the card and the horizon is at the bottom. You can hold your card either way up.
- When you have the star on the top of your kamal and the horizon on the bottom, hold your kamal steady and pull the string tight.
- Make a knot in the string where it meets your teeth. You now have a measurement for your latitude.

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3. Use Your Kamal at Night

If you live in the Northern hemisphere you can use your kamal with Polaris (the North Star).

- Find a clear space so you can see the horizon and Polaris, preferably looking out over water.
- Hold the string of the kamal loosely in your teeth and position the kamal so Polaris is at the top of the card and the horizon is at the bottom. You can hold your card either way up.
- When you have Polaris on the top of your kamal and the horizon on the bottom, hold your kamal steady and pull the string tight.
- Make a knot in the string where it meets your teeth.
- You now have a measurement for your latitude. Note:
- If you live in high latitudes (a long way from the equator) you may have to make a bigger kamal because Polaris will be high in the sky.
- If you live in the Southern Hemisphere you can practise by choosing a star near the horizon. Your measurement wont give you your latitude because Polaris is the only star that doesn't change its position in the sky.

4. Research Activity

1. Through Internet or library research find out about the GPS (Global Positioning System) and explain how it operates.
2. Compare a GPS with the kamal as a navigation tool, in a Tug of War competition:
    - Divide into two teams and collect Post-It stickers and markers.
    - On the whiteboard draw a long horizontal line across the middle (this is the rope). Mark the middle with a text box and write 'GPS versus Kamal'.
    - One team will write as many pros for using a kamal, one on each sticker, and run to the whiteboard to stick the pro onto their rope. And vice versa with the other team. You have exactly 5 minutes.
3. Discuss the pros and cons of each instrument. Agree on a final decision, which instrument would you like to use?
4. Does the kamal have any advantages over the modern GPS system in position finding?