

Electric Boat Worksheet – Module 3

Names: _____

RENEWABLE ENERGY

What proportion of our energy is used in transport?

90% of this energy comes from the same source – what is this source?

Suggest an advantage of changing over to electric vehicles.

MATERIALS

Suggest some reasons why polystyrene foam sheet is useful for making a model boat.

FORCES

Which force acts downwards on the boat?

Which force opposes this?	
Which force acts to slow the boat down?	
MATHS	
How do you calculate average speed?	
EXTENSION QUESTIONS	
What causes the boat to move forwards?	
Explain what is meant by a 'streamlined' boat	

Suggested Answers

RENEWABLE ENERGY	
What proportion of our energy is used in transport?	<i>Roughly 25% of our energy is used in transport.</i>
90% of this energy comes from the same source – what is the source?	<i>Burning fossil fuels.</i>
Suggest an advantage of changing over to electric vehicles	<i>Electric vehicles have a battery so they can use it to store electricity, which could come from renewable sources. Another advantage is less air pollution.</i>
MATERIALS	
Suggest some reasons why polystyrene foam sheet is useful for making a model boat	<i>Polystyrene foam sheet is very buoyant (floats well), doesn't absorb water and is also easy to cut and join.</i>
FORCES	
Which force acts downwards on the boat?	<i>Gravity pulls the boat downwards.</i>
What force opposes this?	<i>Upthrust (or the buoyancy) of the water acting on the boat opposes this.</i>
Which force acts to slow the boat down?	<i>Friction, mainly produced by water resistance or 'drag'</i>
MATHS	
How do you calculate average speed?	<i>Divide the distance travelled by the time taken to obtain average speed.</i>
EXTENSION QUESTIONS	
What causes the boat to move forwards?	<i>The fan pushes the air backwards, and the opposing force from the air acting on the fan pushes the boat forwards (propulsion).</i>
Explain what is meant by a 'streamlined' boat.	<i>A streamlined boat has a hull shape designed to feel less resistance from the water as it travels, so it is able to move through the water more easily and quickly.</i>