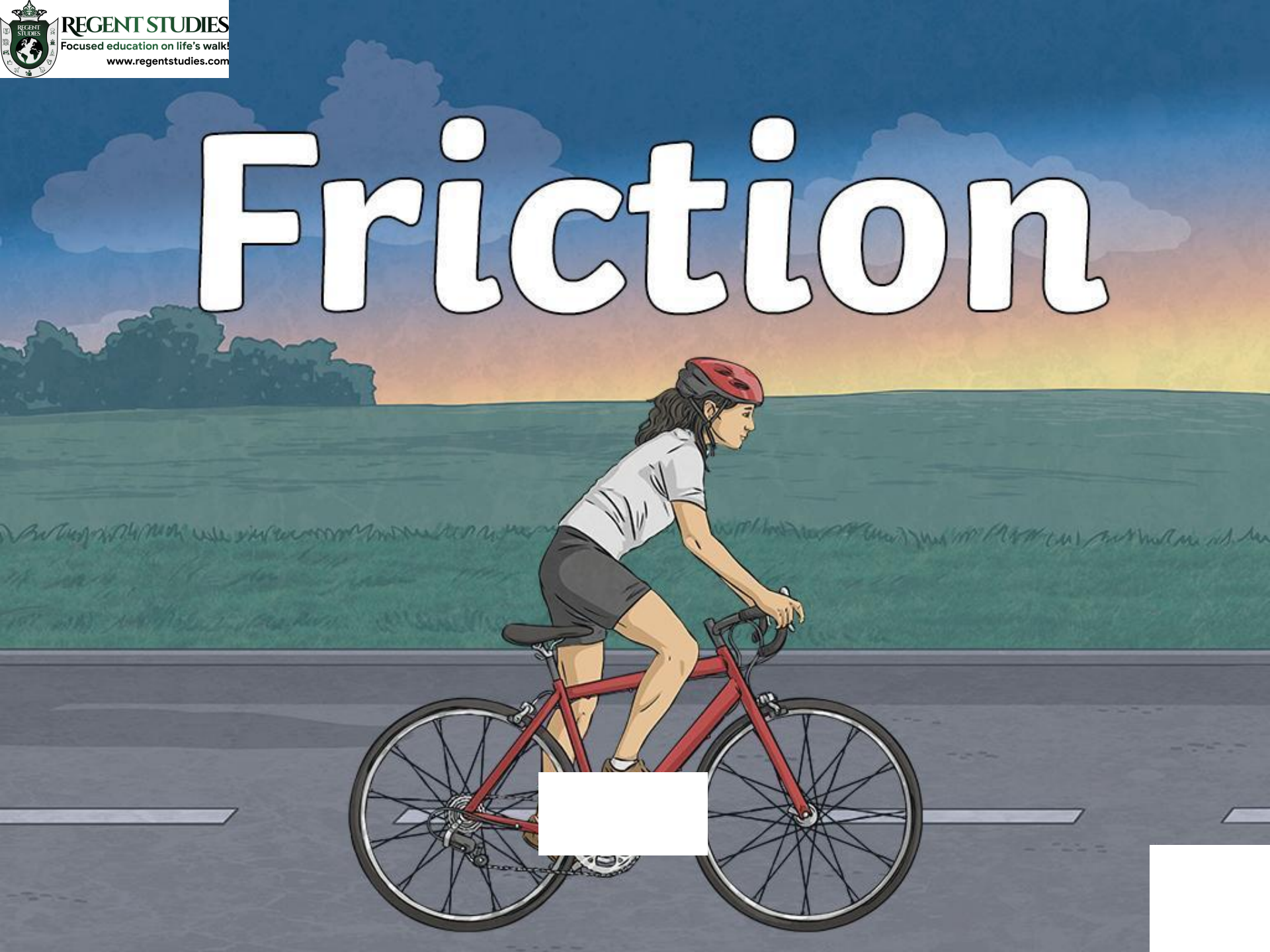
Science

Forces

Friction



Aim

- To investigate the effects of friction.

Success Criteria

- I can explain the effects of friction on a moving vehicle.
- I can investigate the effects of friction created by different materials.
- I can recognise and control variables in an investigation.

What Is Friction?

statements about friction. Can you decide whic se?
ur ideas with your partner bef r th the
ass

Friction is a force.

Friction is stronger than gravity.

Friction slows moving objects down.

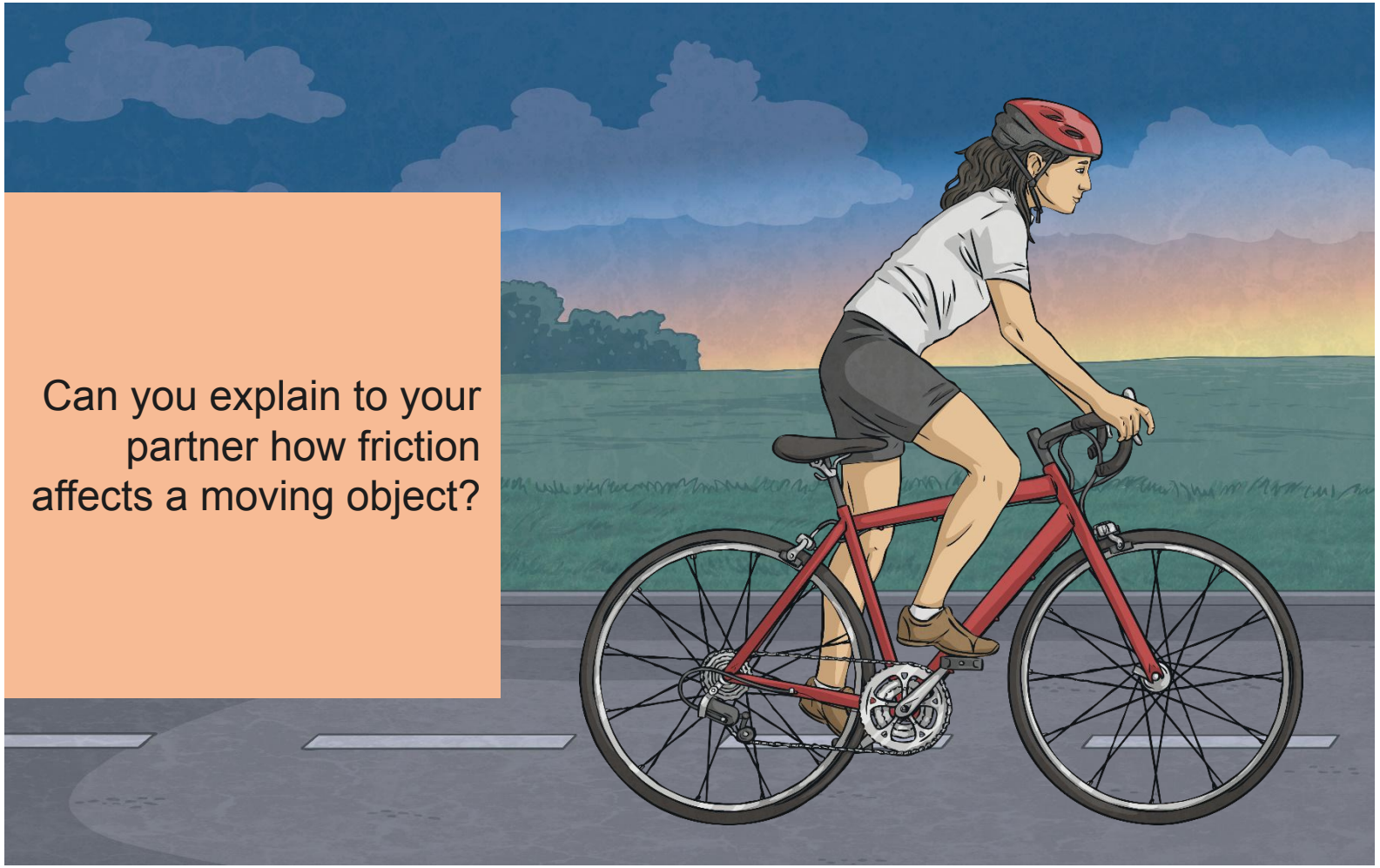
All surfaces create friction on an object moving over them.

Friction is always a useful force.

Friction produces heat.

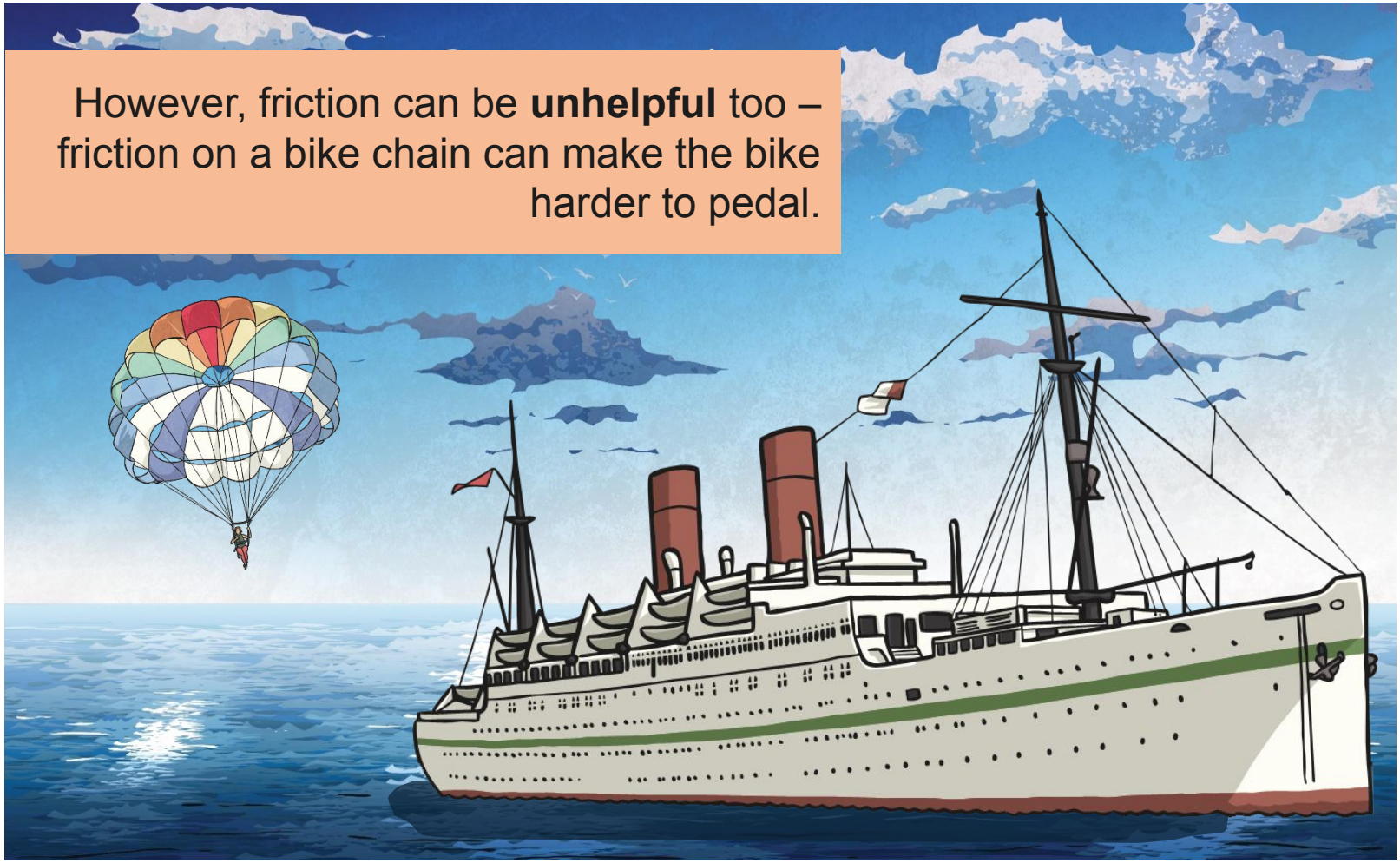
How did you do?

What Is Friction?



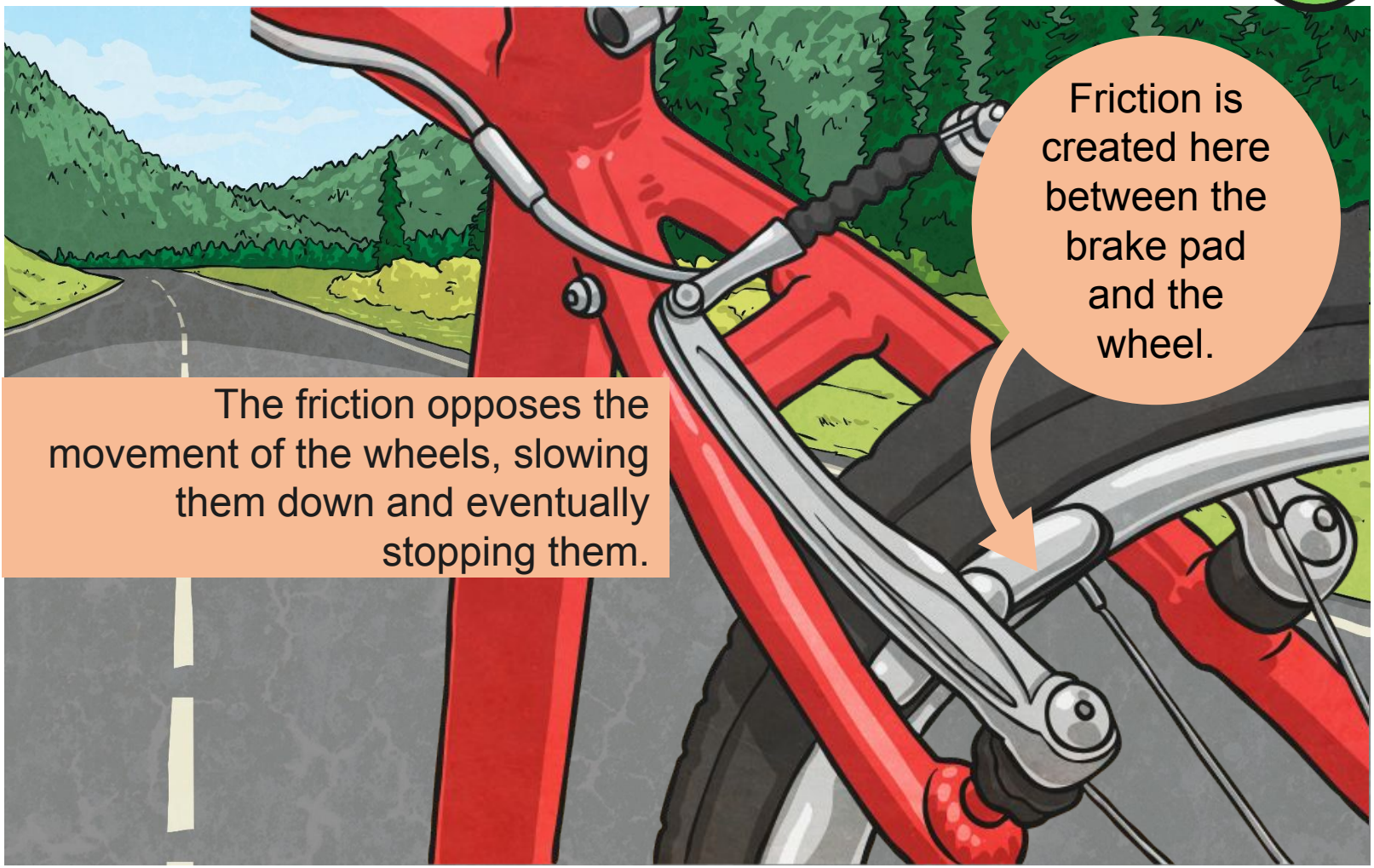
Can you explain to your partner how friction affects a moving object?

What Is Friction?

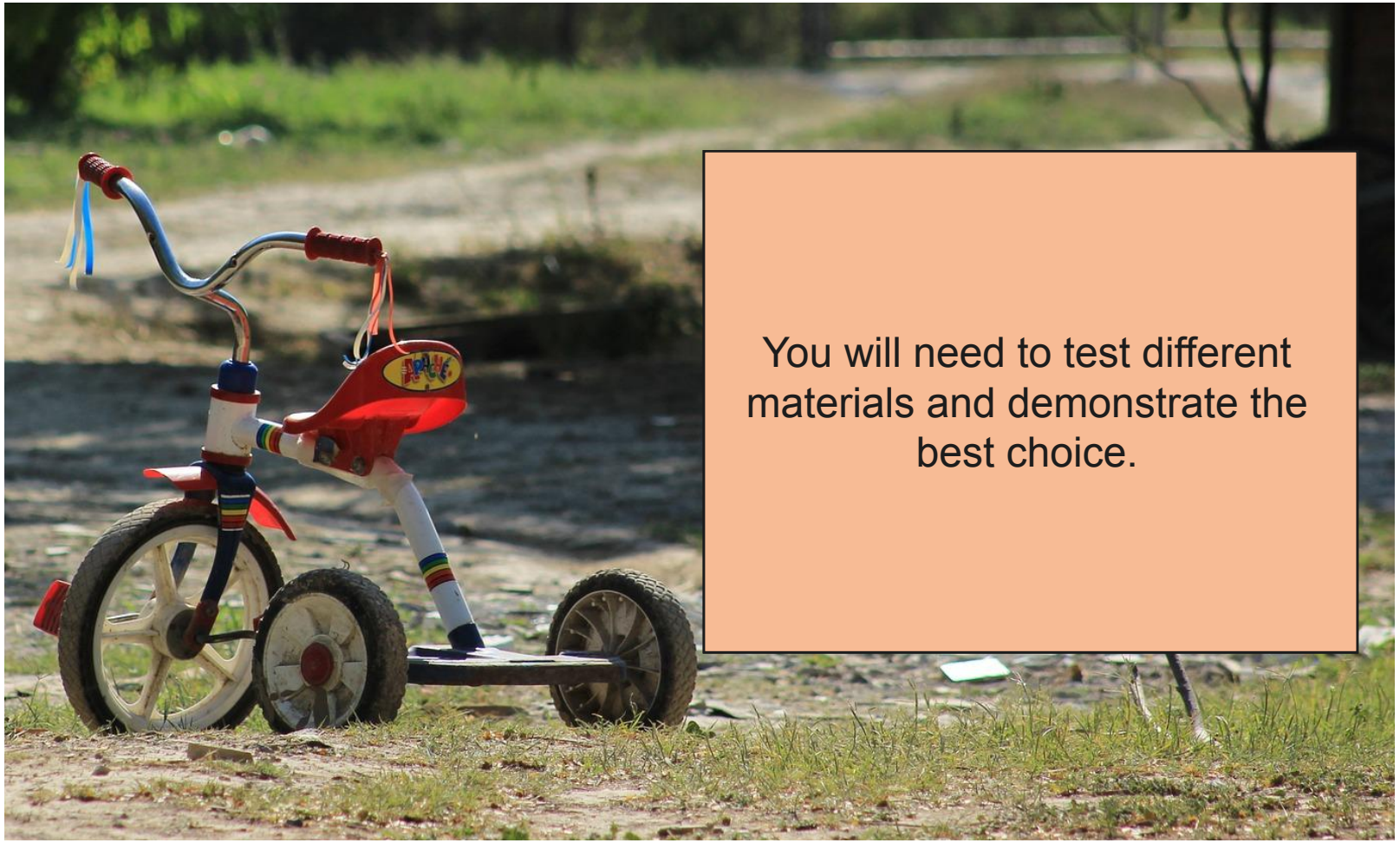


Friction in Action

Whole Class



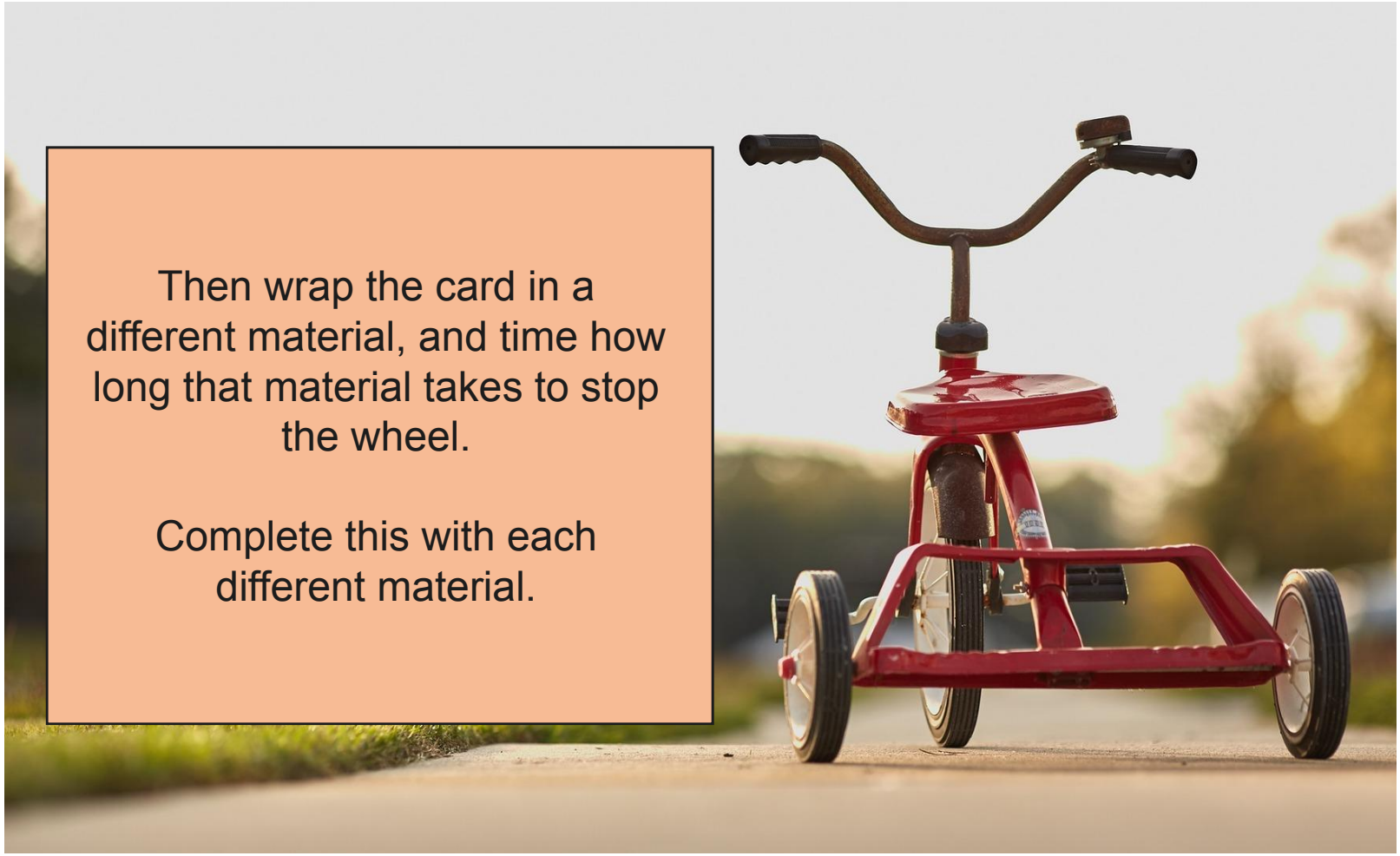
Design a Brake Pad



You will need to test different materials and demonstrate the best choice.

Design a Brake Pad

Whole Class



Then wrap the card in a different material, and time how long that material takes to stop the wheel.

Complete this with each different material.

Reliable Results

Can you think of any variables in this investigation that may be tricky to keep the same every time?

Reliable Results

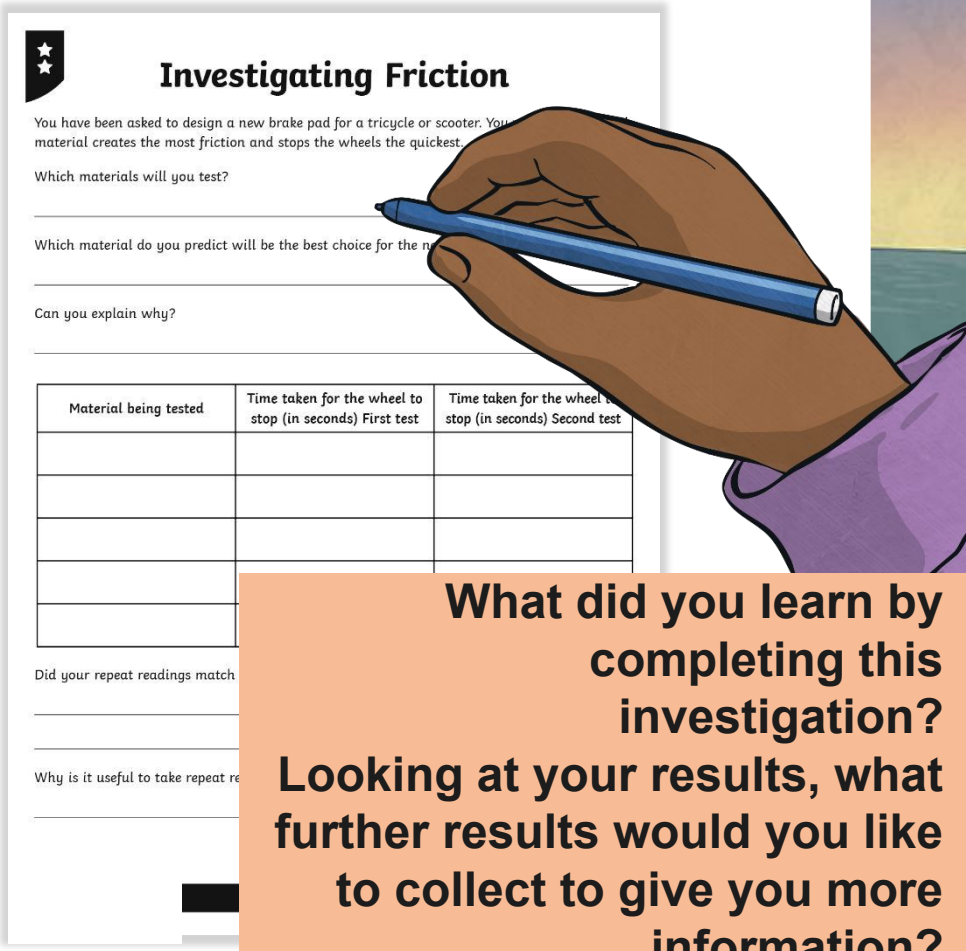
Why might you take repeat readings when carrying out this investigation?

There is space on your activity sheet to take repeat readings if you have time.

Find the Best Brake Pad

Now that you have tested the different materials, you should know which material is the best choice for the new brake pad. The company want to see a demonstration of the best material in action.

Use your **Investigating Friction Activity Sheet** to write an explanation of your choice, and then take turns to demonstrate to the class how the best brake pad material works.



Investigating Friction

You have been asked to design a new brake pad for a tricycle or scooter. You
material creates the most friction and stops the wheels the quickest.

Which materials will you test?

Which material do you predict will be the best choice for the n

Can you explain why?

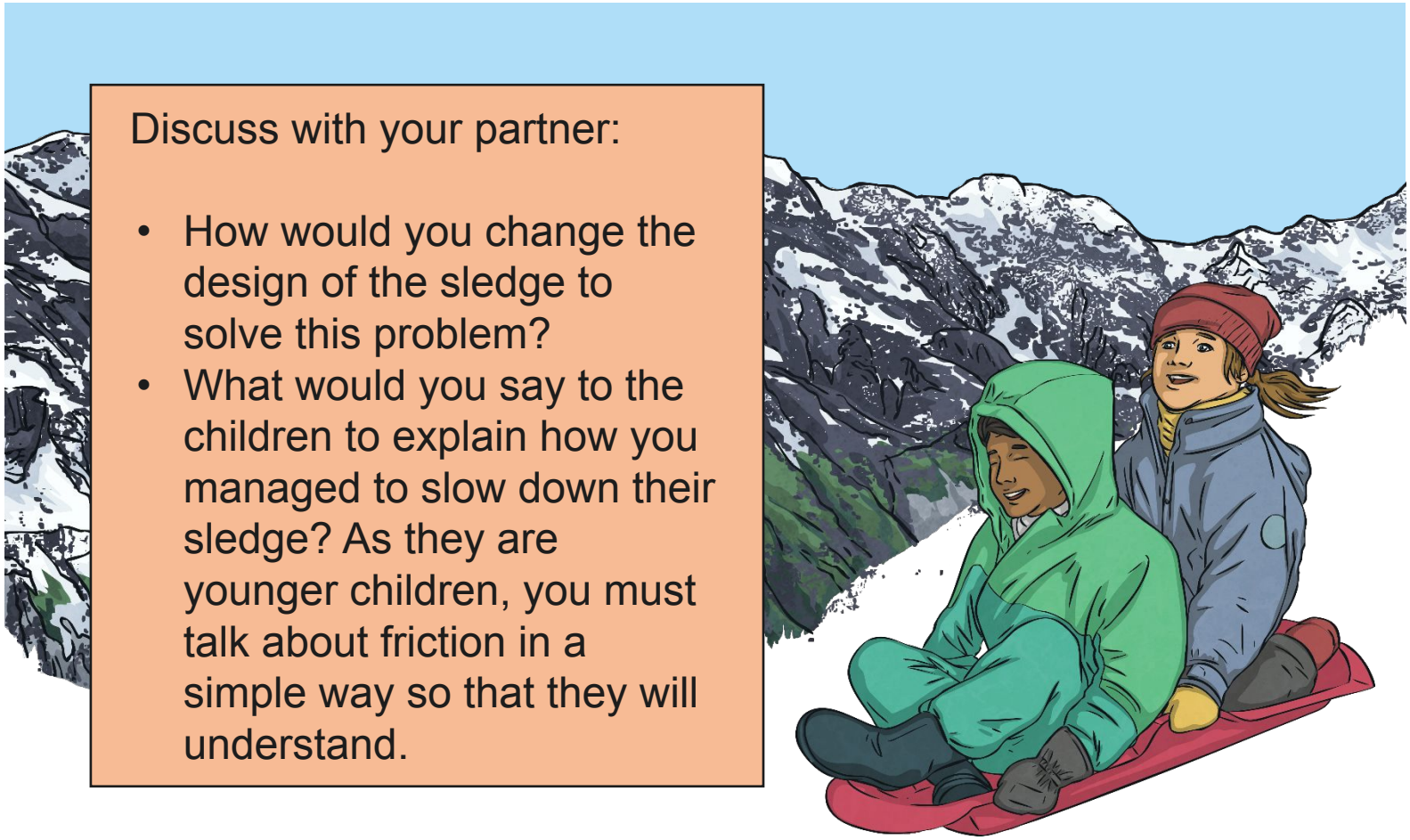
Material being tested	Time taken for the wheel to stop (in seconds) First test	Time taken for the wheel t stop (in seconds) Second test

Did your repeat readings match

Why is it useful to take repeat re

What did you learn by completing this investigation?
Looking at your results, what further results would you like to collect to give you more information?

Solve and Explain



Discuss with your partner:

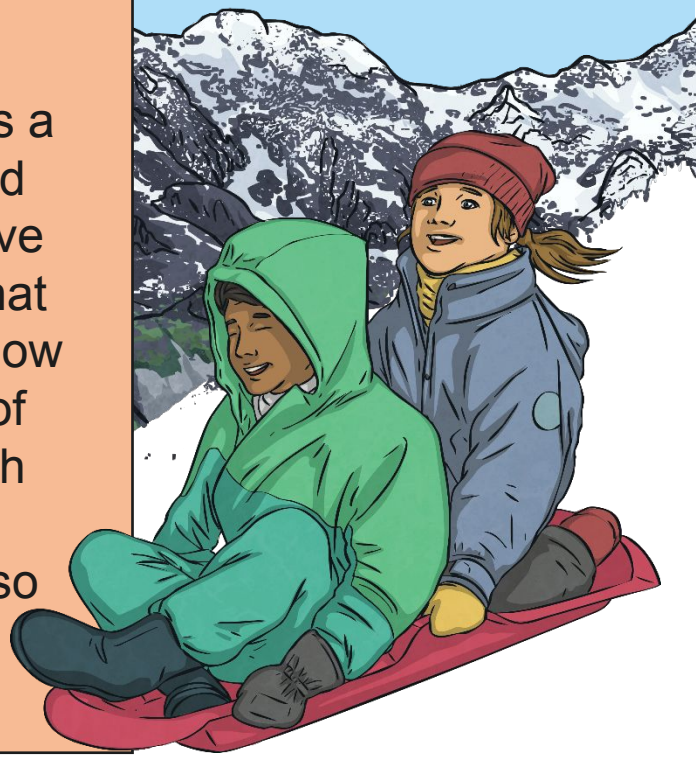
- How would you change the design of the sledge to solve this problem?
- What would you say to the children to explain how you managed to slow down their sledge? As they are younger children, you must talk about friction in a simple way so that they will understand.

Solve and Explain

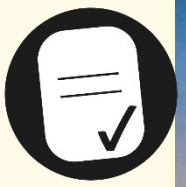
What would you do?

I would use a strong glue to attach a carpet to the bottom of the sledge.

I would tell the children that friction is a force that acts between the snow and the bottom of the sledge as they move across each other. I would explain that the sledge glides quickly over the snow because the smooth plastic bottom of the sledge does not cause very much friction. However, the rough carpet causes more friction with the snow, so the sledge would move more slowly with carpet glued to the bottom.



Aim



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