

NAME:

-----**BLUEWATER HISTORY! Circle True or False:**

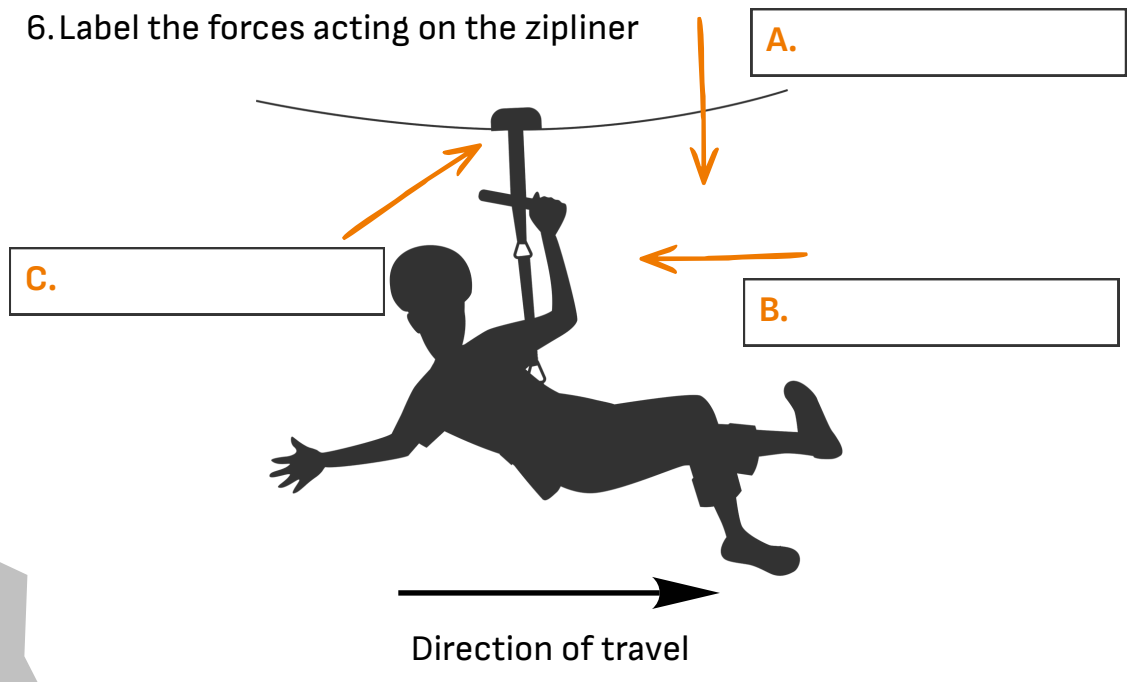
1. Bluewater has always been a shopping centre. True / False
2. The area where Bluewater is now used to be a chalk quarry. True / False
3. The lakes at Bluewater were created after the quarry was filled with water. True / False
4. Bluewater first opened in the 1980s. True / False

FORCES AND MOTION:

5. Fill in the gaps below –

- a. Gravity is a force that pulls objects towards the _____ of the Earth.
- b. Air resistance acts in the opposite direction to an object's _____.
- c. Friction is a force that occurs when two surfaces move _____ each other and slows motion down.
- d. At Hangloose Adventure, a person on a zip wire speeds up because of the force of _____, but slows down because of _____.
- e. On a giant swing, air resistance and _____ act on the rider and can affect how smoothly they move through the air.

6. Label the forces acting on the zipliner



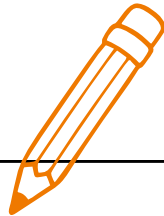
DESIGN A NEW HANGLOOSE ACTIVITY!

7. Hangloose wants a new attraction that gives a thrilling experience but also ensures riders slow down safely. Design a solution and explain the forces involved.

Draw your new activity in the space below.

Label where these forces are acting:

- Gravity
- Friction
- Air resistance



THINK ABOUT...

Where are people speeding up or slowing down?
What is pulling people downwards?
What is stopping or slowing movement?
Are any ropes, cables, or surfaces involved?

Explain the forces involved in your design and how they make it work effectively:



ENERGY!

8. At Hangloose, a person on a zip wire has the most kinetic energy when they are:

- a) At the highest point before moving ☐
- b) Moving fastest along the wire ☐
- c) Standing still at the start ☐

9. Explain how a rider's kinetic energy changes during a zip wire ride at Hangloose.

10. A rider on a giant swing at Hangloose has the most potential energy when they are:

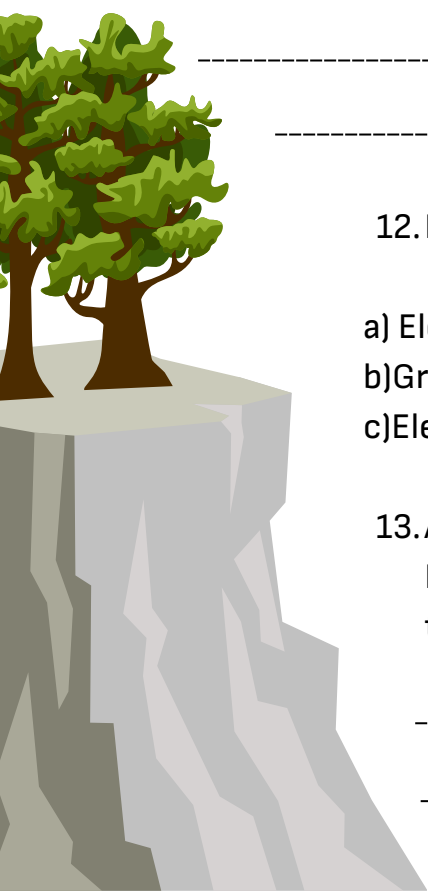
- a) At the highest point before being released ☐
- b) Moving fastest at the bottom of the swing ☐
- c) Slowing down at the end ☐

11. Explain what gravitational potential energy is and how it changes as someone moves on a ride like a giant swing.

12. During a Hangloose zip wire ride, energy is mainly transferred from:

- a) Electrical energy to sound energy ☐
- b) Gravitational potential energy to kinetic energy ☐
- c) Electrical energy to sound energy ☐

13. At an Aqua Park, a person slides down an inflatable slide into the water. Describe how energy is transferred from the start of the slide to when they reach the water.



WORKING SCIENTIFICALLY

Scenario: Creating England's longest zipline

Riders experience different speeds depending on factors such as their weight and wind conditions.

HYPOTHESIS:

VARIABLES:

Independent Variable:

Dependant Variable:

Control Variables:

RESULTS: *See below some results from some Hangloose trials*

TRIAL 1:

Rider	Weight (kg)	Time to complete zipline
Alex	45 kg	2 min 08 sec
Holly	55 kg	2 min 02 sec
Charlie	65 kg	1 min 56 sec
Dana	75 kg	1 min 50 sec

TRIAL 2:

Rider	Weight (kg)	Time to complete zipline
Alex	45 kg	2 min 15 sec
Holly	55 kg	2 min 02 sec
Charlie	65 kg	2 min 03 sec
Dana	75 kg	1 min 50 sec

WORKING SCIENTIFICALLY

Scenario: Creating England's longest zipline

Riders experience different speeds depending on factors such as their weight and wind conditions.

RESULTS:

In this section answer:

- What pattern do you notice between rider weight and completion time?
- Why might trail 1 and 2 have different results?
- Do the results fit your hypothesis?

EVALUATION:

In this section answer:

- How reliable do you think your results are? Why?
- Was your method good at testing the effect of rider weight on speed? Why?
- What could you improve about the investigation to make it more accurate?

WORKING SCIENTIFICALLY

Scenario: Creating England's longest zipline

Riders experience different speeds depending on factors such as their weight and wind conditions.

GRAPH *Plot the results from Graph 1 below and highlight any trends. Label your Axis.*