

# The water cooler

**This task is about the surface of water on a moving train.**

Nicola is riding in the Auckland to Wellington express train. She notices that the surface of the water in the water cooler at the back of the carriage is not parallel with the floor. She thinks of several reasons for this. Here are her ideas.

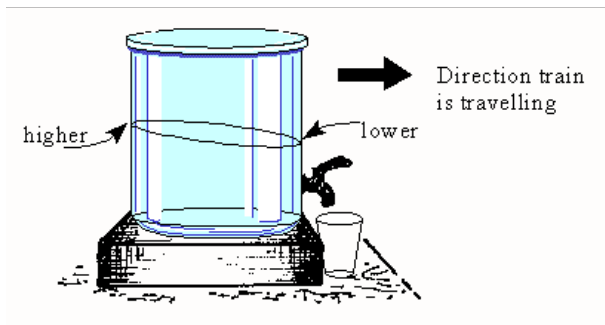
- . The train is going uphill.
- . The train is moving at a constant speed.
- . The train is travelling around a curve in the tracks.
- . The train is accelerating at a constant rate.

Which of Nicola's ideas could not be an explanation for what she saw?

a) \_\_\_\_\_

As the train left Taihape and picked up speed, she looked at the cooler from one side. The water surface was tilted as shown in the diagram. Which of Nicola's ideas would most likely explain this? \_\_\_\_\_

b)



If the water surface was tilted towards one side of the carriage, which of her ideas would best explain what she saw? \_\_\_\_\_

d) Draw what the water in the cooler would look like if the train braked suddenly.

