

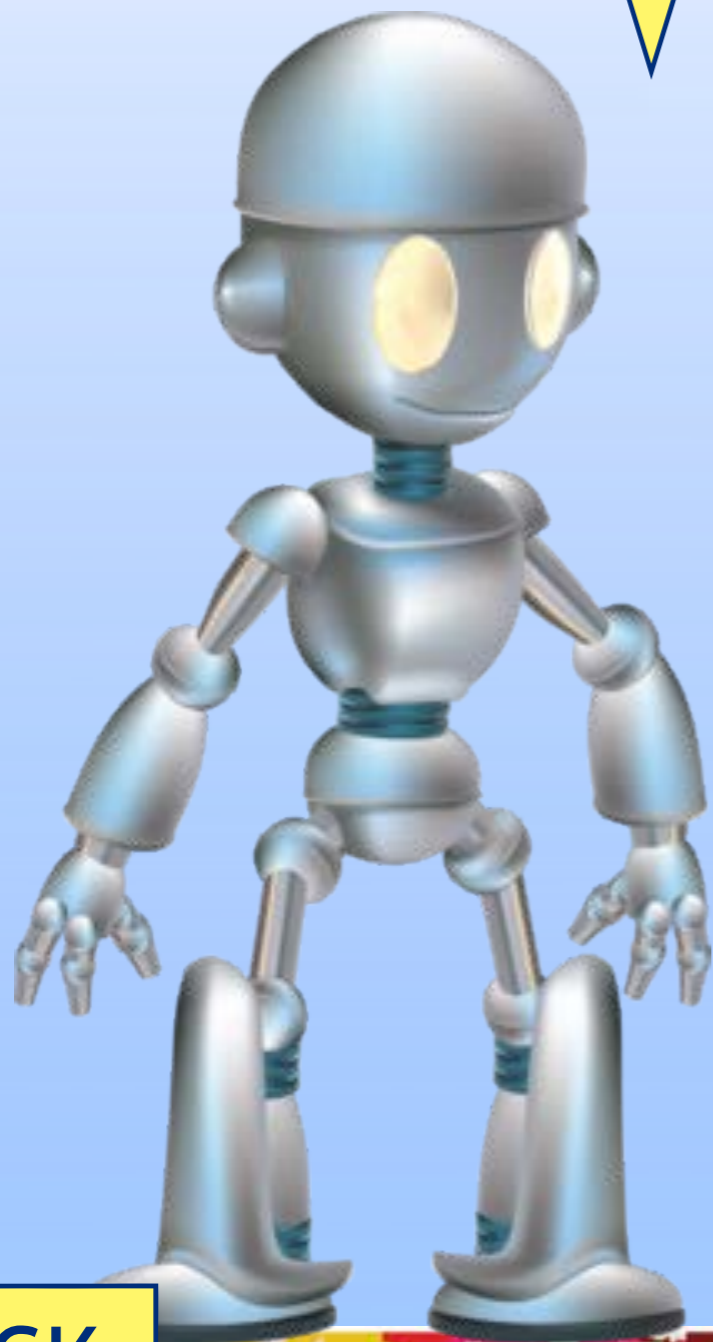
Forces In Action

Learning Objective:

To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

NEXT

What is weight?



Discuss your ideas.

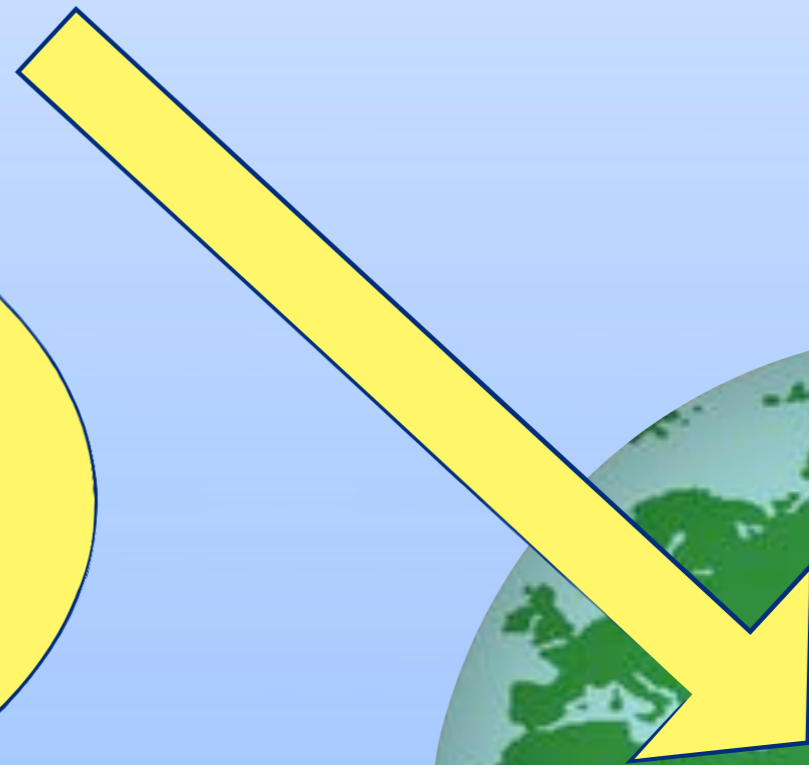
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‘Weight’ is the word we use to describe how heavy something is. Earth’s **gravitational force** causes objects to have weight.



Gravity is a force that pulls objects towards the centre of the Earth.



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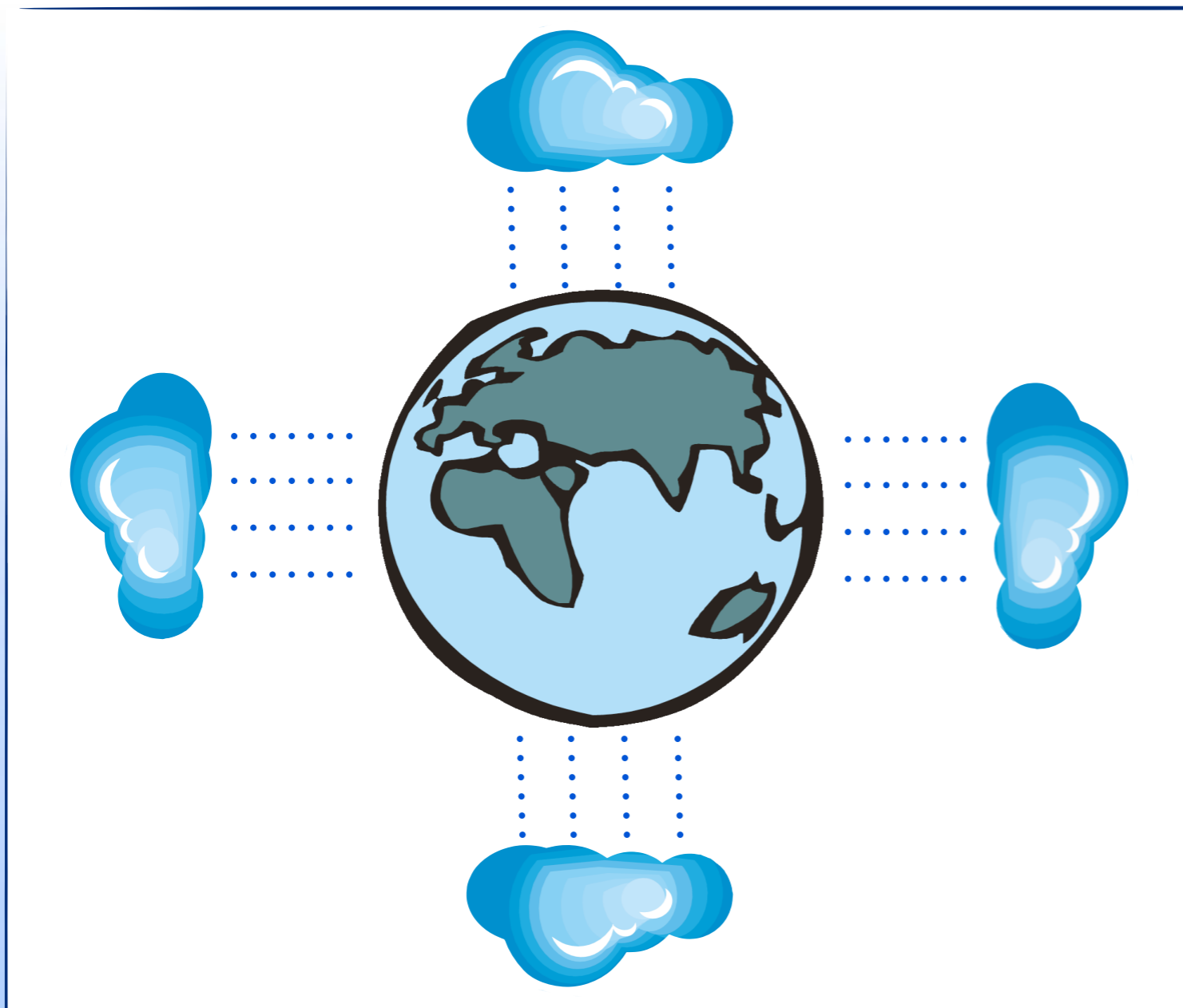
Can you draw in the direction the rain would fall in this diagram?



Remember, gravity pulls everything to the centre of the Earth.

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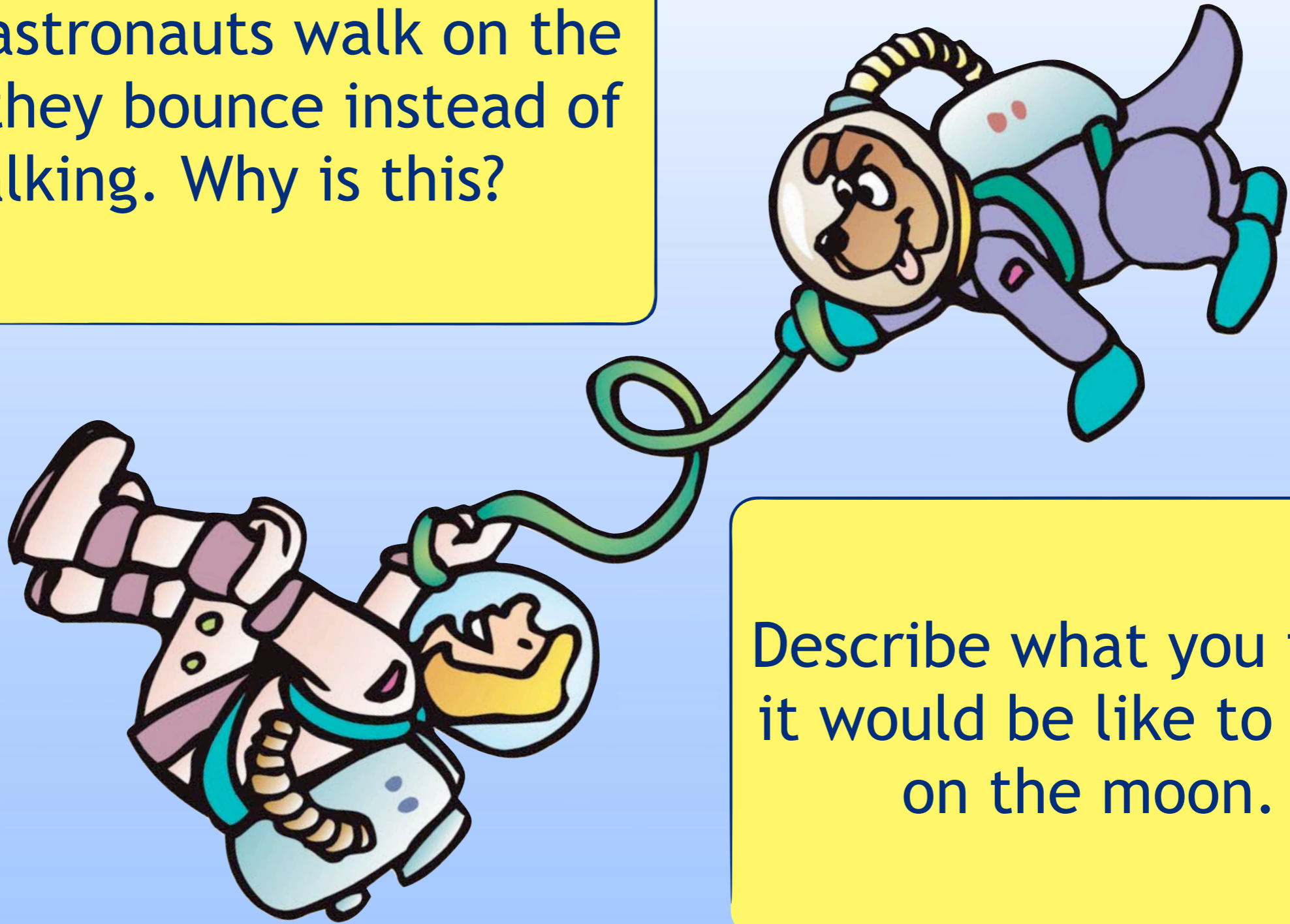
This is what your diagram should have looked like.
Were you correct?

We usually think of gravity as pulling everything **DOWN** but that is not always correct. Gravity pulls everything towards the centre of the Earth. That is why the rain in this diagram appears to be falling upwards.

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When astronauts walk on the moon they bounce instead of walking. Why is this?



Describe what you think it would be like to walk on the moon.

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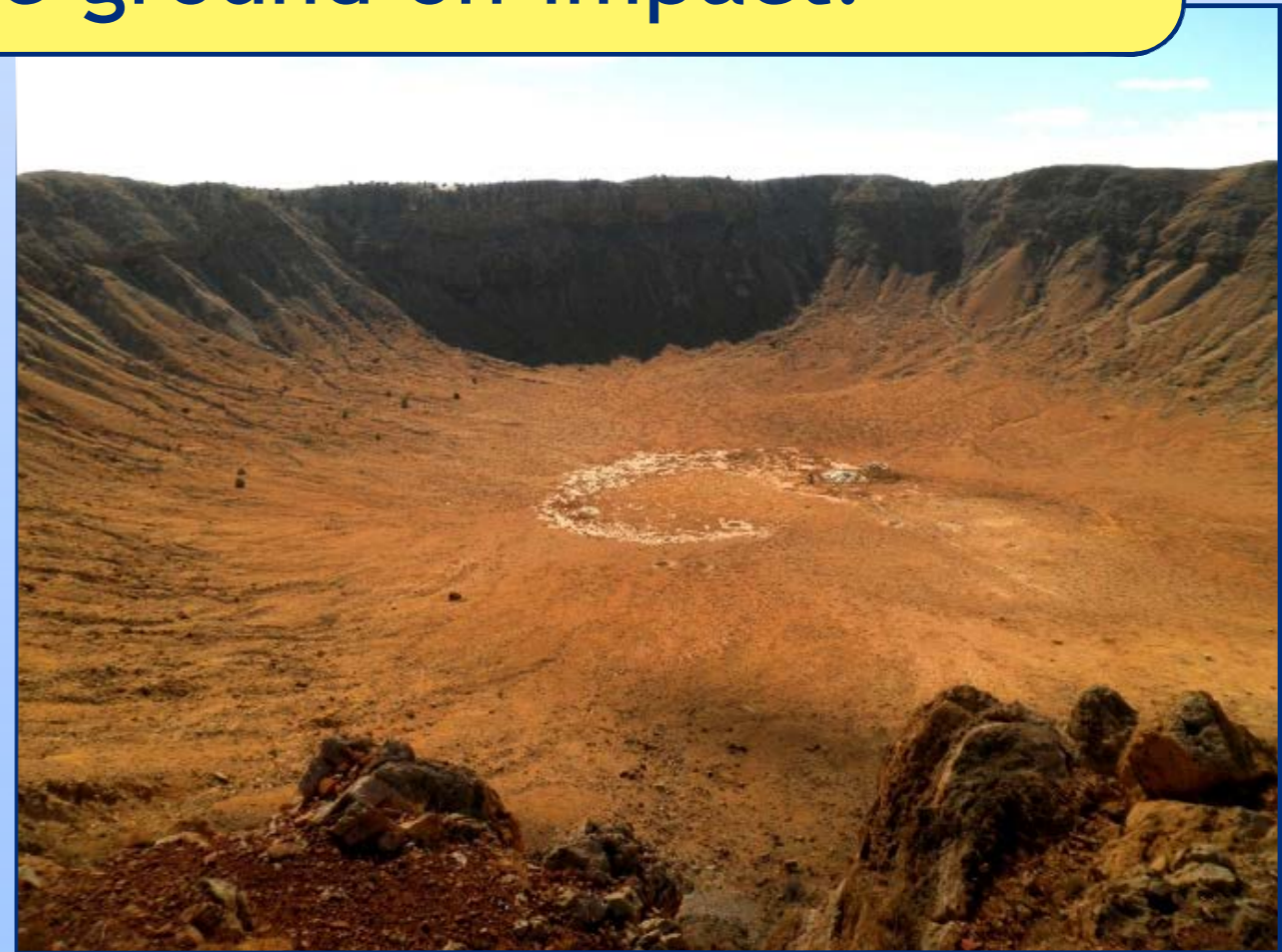
NEXT

One of the ways we can see the effect of gravity is by looking at craters left in the ground by meteorites that have landed.

How might the size and shape of a meteorite affect the size and shape of the crater that it leaves in the ground on impact?



Discuss
your ideas.

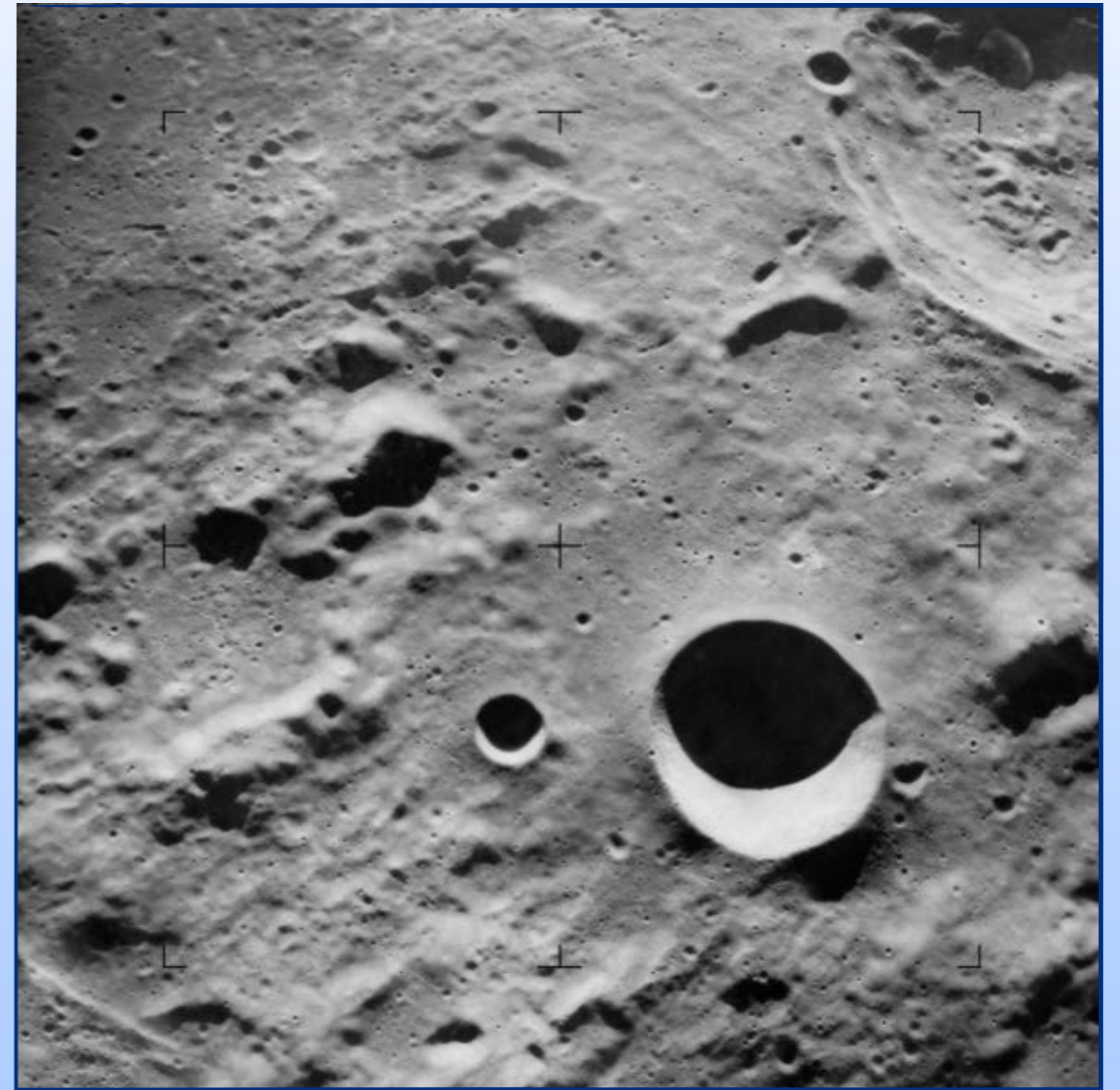


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The more a meteorite weighs, the deeper the crater and the more dust, earth and rock is scattered.

The size of a meteorite can affect the **diameter** of the crater it leaves in the ground.



Craters on the Moon have clear, well defined shapes because there is no atmosphere; they do not get blown away or eroded by wind and rain.

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You can explore the effect of gravity on falling objects such as meteorites too! Here's one way of using a few simple household items to make craters:



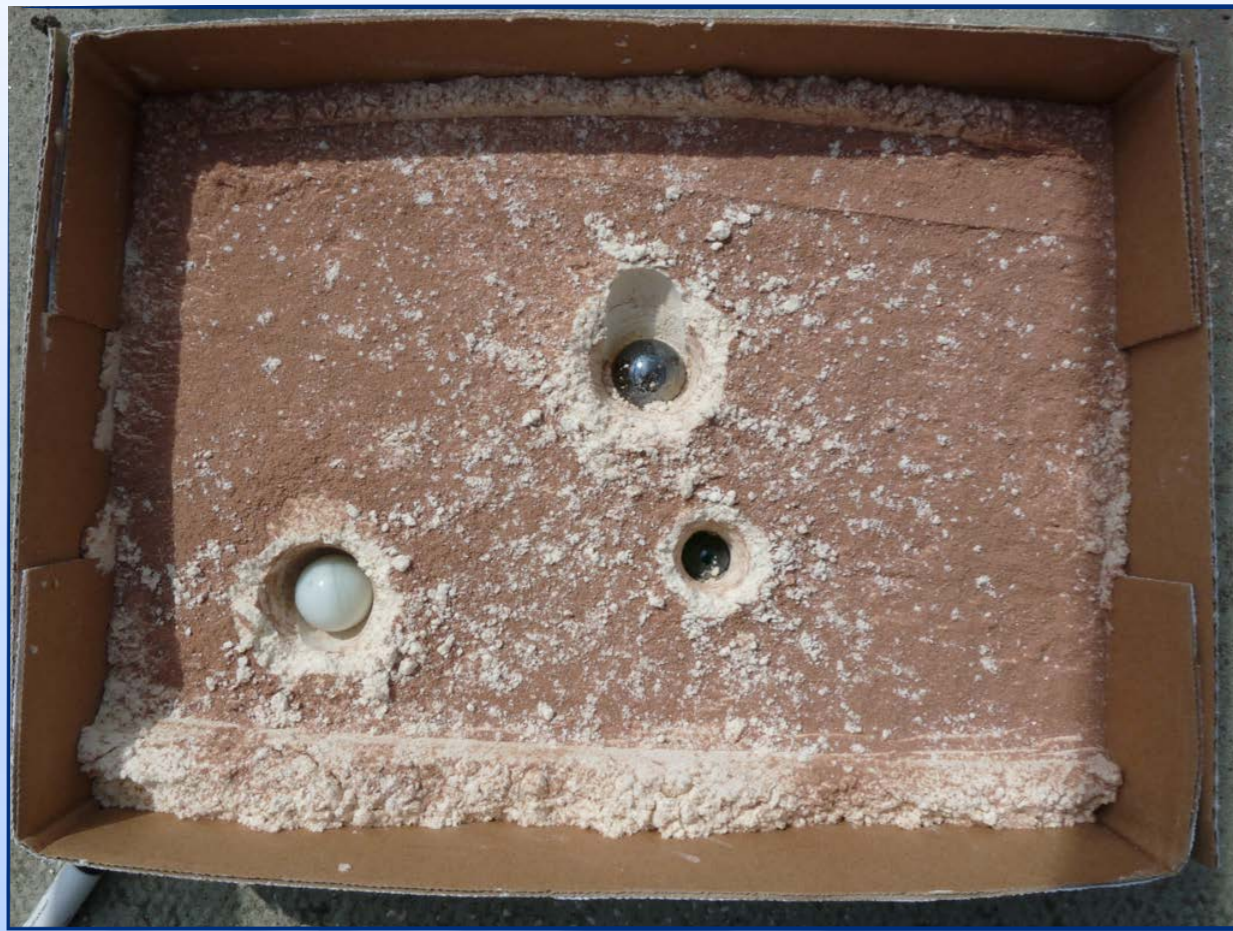
1. Fill a tray with flour to a depth of 7-8cm. Gently slide a ruler over the flour to create a level surface.



2. Sieve a fine layer of cocoa or hot chocolate powder over the surface of the flour.

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3. Now you can drop a variety of different objects into your tray. Make sure you always drop them from the same height.



4. Take photos, draw pictures and/or measure your craters. You could use a stick to measure the depth of your crater.

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When your tray is full of craters, stir the flour around, then gently shake it again to make a level surface. Add more cocoa. You can then carry on testing with a clean surface.

What do you notice?

What conclusions can you draw from this experiment?



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Plenary

Can you think of statements to show what you have learned about gravity? Try linking two or more of the words below in a sentence.

heavier

object

heavy

weight

gravity

Moon

pull

Earth

falling

force

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NEXT