

# Gravity

*A*

Check out this marble run, will it work on the moon?



*B*

What falls fastest, large or small objects?



*C*

What's stronger, gravity or magnetism?



*D*

Does this marble produce gravity?



*E*

Does gravity ever switch off?



*F*

Is there gravity in space?



*These are just some of the tricky questions scientists have been challenged with over the years. Can you match up the questions to their experiments and answers?*

## *Answers 1*

In ... the Italian scientist Galileo dropped two balls, a large and small one, and timed them as best he could to see which fell fastest. He concluded that they fall at the same rate, and decided that *all things* are attracted to the earth by the same force. We measure it as being about 9.8 m/s<sup>2</sup>

*2*

Isaac Newton came up with the idea that all objects with atoms have gravity, not just the earth. Everything is attracted to everything else with a force that lessens the further away the objects are from each other. Everything with atoms produces gravity, even you!!

*3*

Magnetism, by over a hundred billion times! It takes a planet as large as earth just to hold us on, and even a baby can resist the pull of the entire planet to stand up! However, gravity operates over a much larger distance than magnetism and, theoretically, reaches right to the end of the universe

*4*

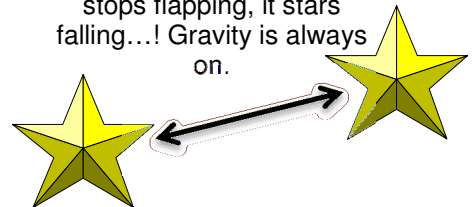
The answer to that question is yes. When the space men on the moon jump, do they keep going or do they fall back down again? They fall back, because there IS gravity on the moon – just less than there is on earth.

*5*

That's a tricky one, but the answer is, again, YES. Yes, but it's so small you need to be really *really* big to feel it, like, umm, a planet. Without gravity the earth would not go around the Sun, but away from it in a straight line like a cricket ball. Gravity helps keep satellites in orbit and the moon close.

*6*

When a cup sits on a table, is gravity pulling it down? Yes it is, but the table is holding it up! When a bird is flying, is gravity trying to pull it down. Yes it is, and if it stops flapping, it starts falling...! Gravity is always on.



## *Trickier Science...*

Remember – gravity doesn't only "pull things down", that's just a side effect. We should probably say gravity "pulls things together." (Remember, all forces are in pairs! If the Earth pulls your body down, then your body is also pulling the Earth up, but since the Earth is so much larger it 'wins' every time!!!)

Answers – A4, B1, C3, D2, E6, F5