Black Hole - What is a black hole in space?

Fact

- Scientists believe that a black hole forms when a star stops giving out energy and dies out. That makes it collapse in on itself.
- The collapsing or imploding causes a very strong gravitational pull (think about how strong the Earth's gravitational pull must be to keep our feet on the ground.)
- Gravity in a black hole is so strong that anything that goes into a black hole can never come out.

Do you know

- Scientists that study stars are called astronomers.
- Although no one has ever seen a black hole astronomers use Einstein's rule of General Relativity which is that everything has a gravitational pull and the bigger the object's mass the stronger the pull.
- Earth has a smaller gravitational pull than the sun because it's much much smaller.
- Earth's moon is much smaller than Earth so it has a smaller gravitational pull.
- Albert Einstein is a famous scientist and his theory of relativity helps to explain things like gravity, speed and force.

Experiments you can do

Spread out two sheets of newspaper in front of you. Look at how much room a piece of newspaper takes up. Place your hands in the middle of one of the sheets and start scrunching the paper up, drawing it in with your fingers towards the middle. Keep scrunching until it's a tight tiny ball and you can't scrunch it any smaller. Put the ball of newspaper in the middle of the other sheet of newspaper and compare the size of them.

That's what happens to a star when it implodes or collapses inwards. Instead of spreading outwards like a fireworks display it collapses inwards so that although there's still the same amount of paper there it doesn't take up as much room.

Other Investigations

Next time you have a bath leave a few bath toys floating in the water when you pull the plug. Have a good look at the water as it rushes down the plughole – does it go straight down or does it swirl down in a spiral? Do the bath toys stay where they are or are they pulled towards the plughole with the water? That's how a black hole is supposed to work. The pull of gravity in the black hole is so strong that things near it are pulled towards it and into it.