Einstein's puzzle

Now see if you can find the key words (in bold) to solve this!

Letters visible in crossword grid: G, R, T, G, M, S, E
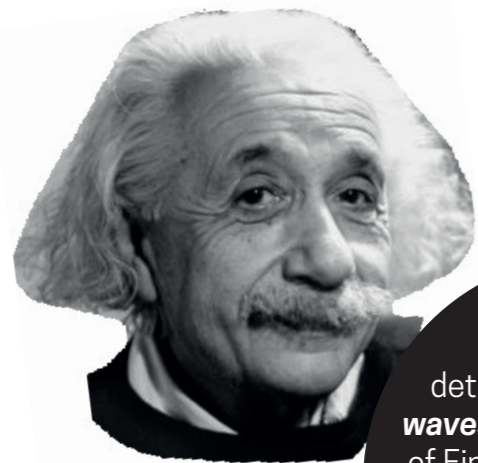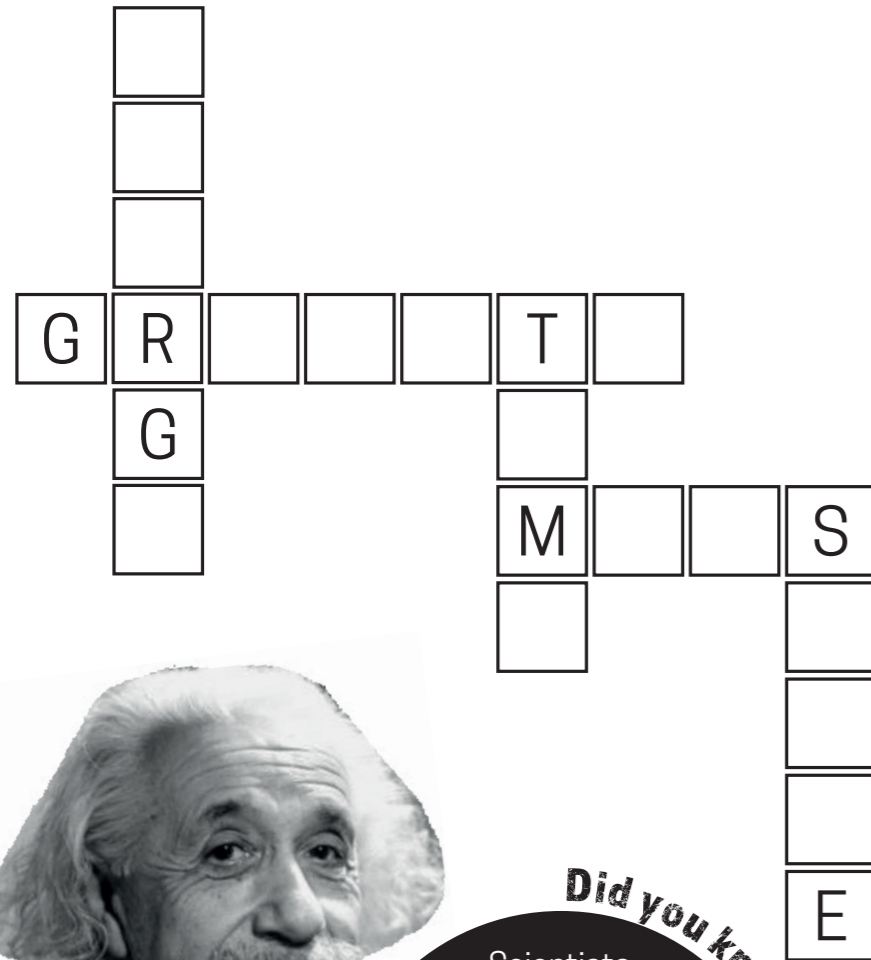
Did you know?

Scientists have recently detected **gravitational waves** which are final proof of Einstein's theory. These are tiny ripples through the Universe created by the collision of two black holes about 1.3 billion years ago!
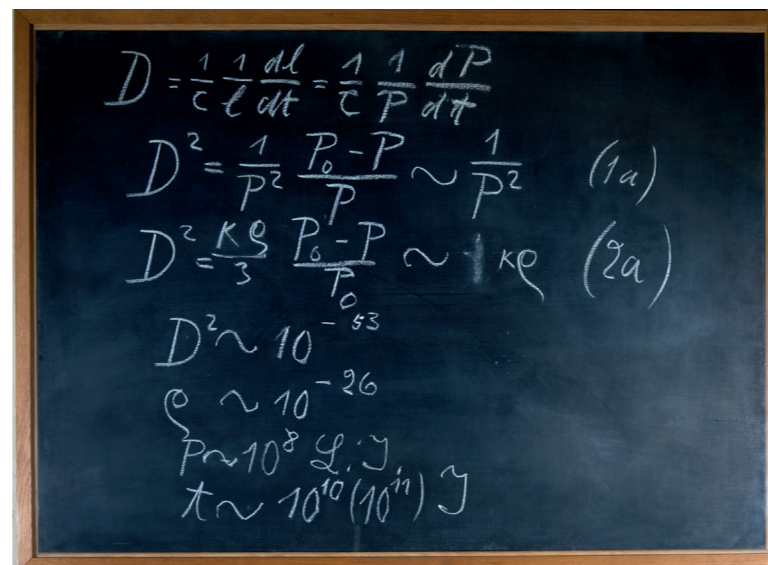
Try this at home!

Amazingly, you can measure the speed of light using a bar of chocolate, a microwave oven, and Einstein's famous equation E=mc2. Search for it at **www.planet-science.com**

Bonus Question for Young Einsteins!

If light travels at 300 million metres per second, can you write a sum to calculate how far a light year is in metres?

....
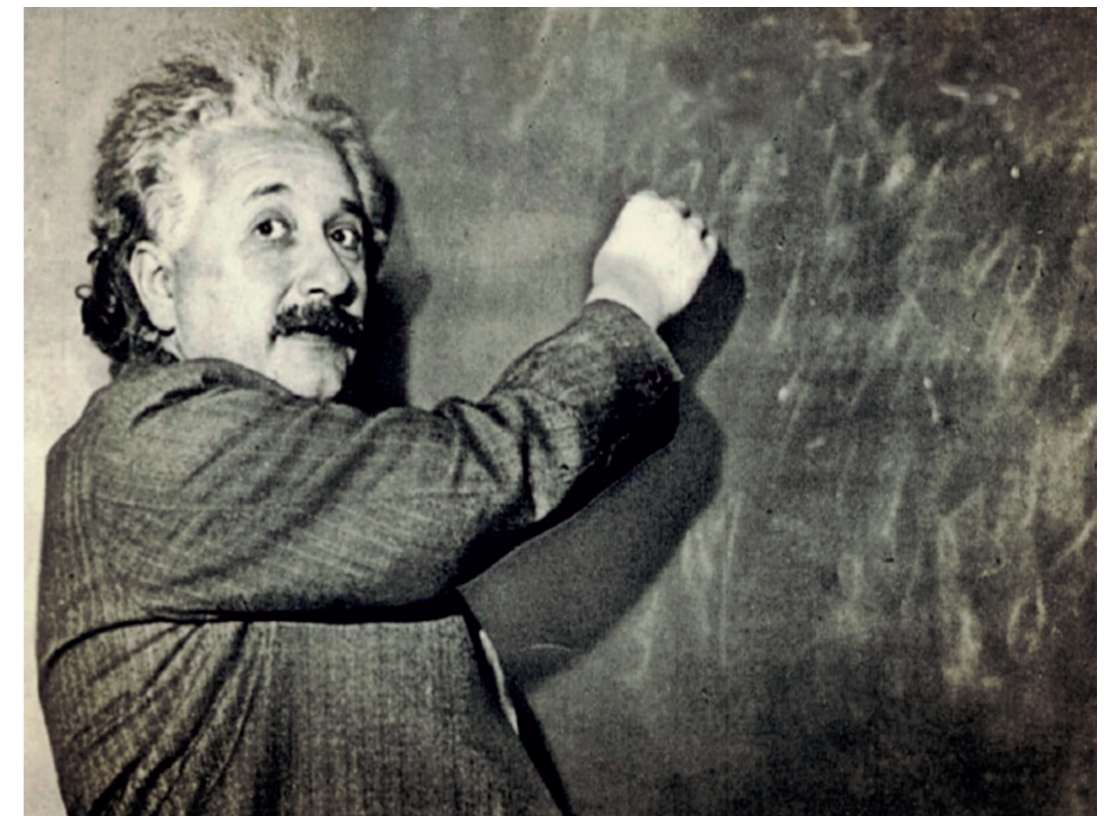

Blackboard Used by Albert Einstein, Oxford, May 16, 1931
Inv.44725

Blackboard used in the second of three Rhodes Memorial Lectures on 16 May 1931. The blackboard is neatly laid out and the measures of distance and time are written in German (eg L.J for Licht Jahre).

Einstein's Trail

Follow the clues and see where a little logic and imagination take you in the museum.

" Logic will get you from A to B. Imagination will take you everywhere."

Albert Einstein

Suggested donation **£1**

TOP GALLERY

Find the picture called **The Measurers**. (inv.27046)
It shows lots of activities which use maths to measure things.

Q1

How many different **measuring** activities can you spot in the picture?

....

Q2

In the same cabinet, what kind of measuring instrument can you find to do with chocolate? (inv.54656)

....

There are lots of instruments called astrolabes in this gallery. Astrolabes are a kind of astronomical calculator which were invented a very long time ago. The earliest one in this museum is more than a thousand years old!

See if you can find an **astrolabe** that belonged to **Queen Elizabeth I** .(inv.42223) in a cabinet called **The Sixteenth-century**?
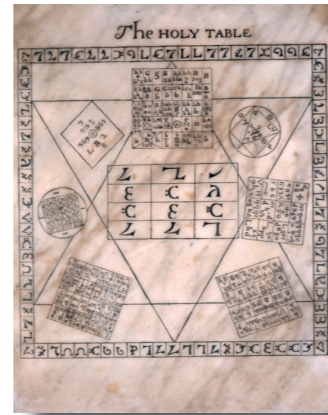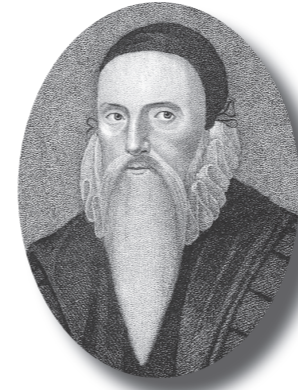
Q3

How many stars does it show?

....

ENTRANCE GALLERY

Four hundred years ago there was a man called **John Dee** who also loved mathematics. He believed that numbers had magical properties.

See if you can find his **Holy Table.** (inv.15449)

Q4

What is the smallest number of sides any **geometrical shape** has on this table?

....

See if you can find out what he was trying to do with the table. Do you think he was successful?

Q5

Space and time are also very interesting to scientists.
Can you find some instruments in this gallery which show **space** or **time**?
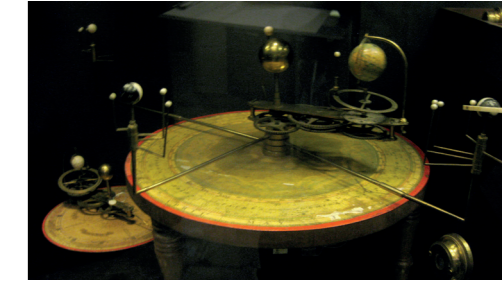
Choose one and draw a picture of it in the space below:

SMALL BASEMENT GALLERY

An orrery is a type of instrument which shows the movement of planets around the sun.

There is a colourful orrery in one of the wall cabinets. (inv.72367)

Q6

How many planets does it show?

....

The famous scientist Isaac Newton got very interested in what was holding the planets in orbit around the sun.
He called this invisible force **gravity** and discovered that the force of gravity depended on the size or mass of the planets.

LARGE BASEMENT GALLERY

Before Einstein, most people believed that space and time were separate from each other. But Einstein had the brilliant idea that they were part of the same thing which he called **space-time**.
This was the big idea behind his **special relativity theory**.

See if you can find Einstein's blackboard from his lecture. in Oxford in 1931. Here he uses mathematical ideas from relativity theory to calculate that the age of the Universe (A) is 100 billion years, and the size of the Universe (P) is 100 million light years!

Q7

What do you think a **light year** is?

....

....

Einstein's most famous equation is $E=mc^2$.
It shows how mass m can be changed into energy E.
Scientists today are still puzzling over the balance between stuff **mass** and **energy** that makes up the Universe.
Astronomers are still listening to the Universe to pick up clues from cosmic events that took place billions of years ago.

See if you can find this listening device in the gallery.(inv.86390)
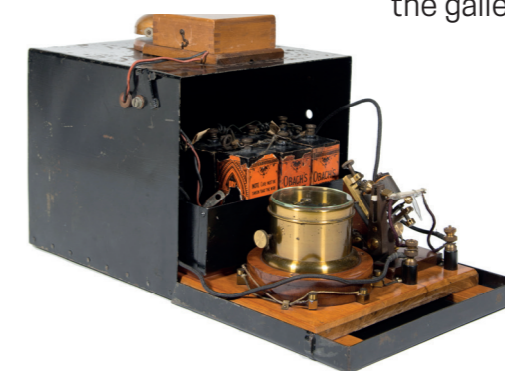
Q8

What kind of device is it and who invented it?

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