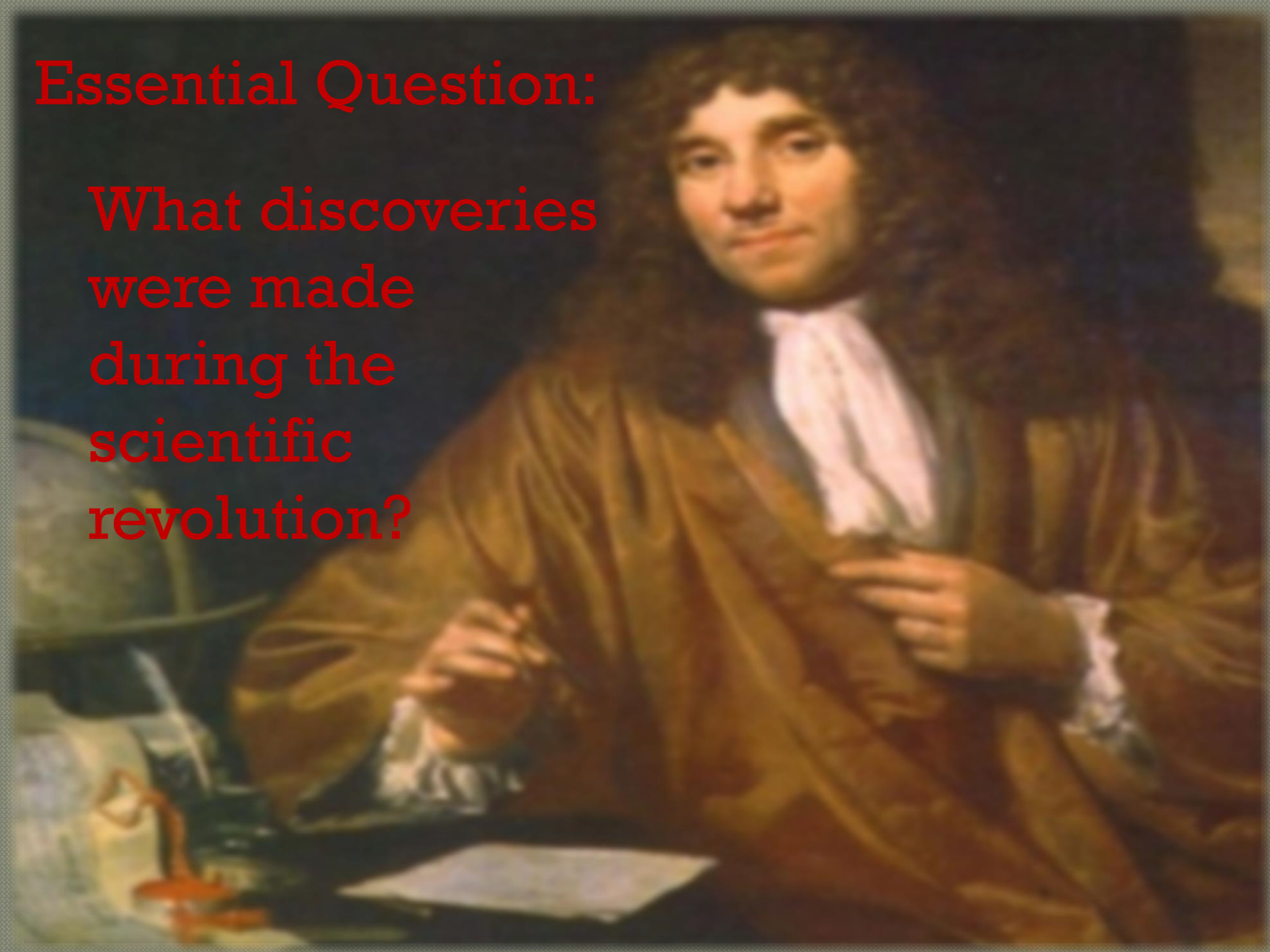


An Age of Modern Science

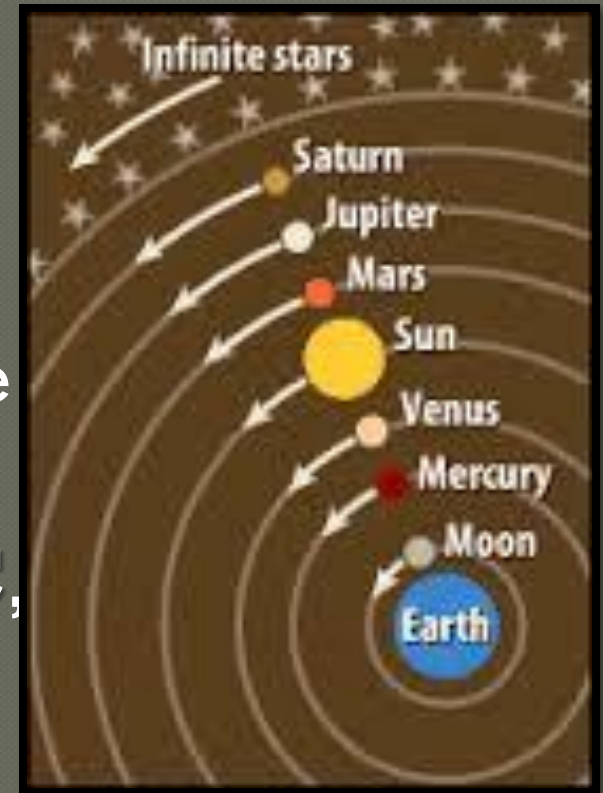
Essential Question:

What discoveries
were made
during the
scientific
revolution?



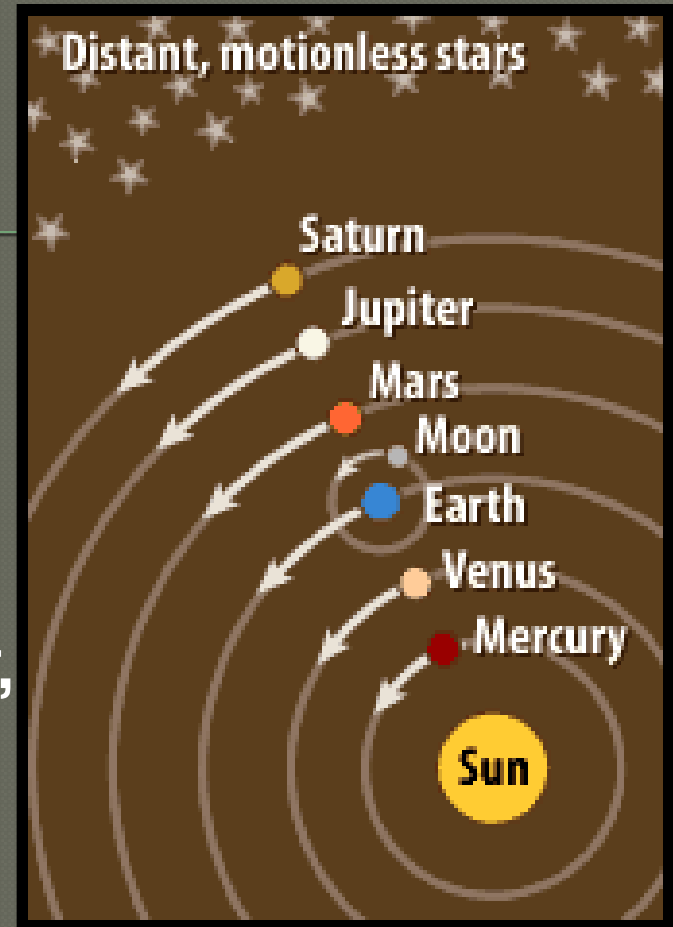
(1) How did our idea of the universe change?


- In the 1500's, Europeans were expanding their knowledge to other parts of the **WORLD**
- Many artists and explorers emerged from the Renaissance
- Until now, many thought the universe was **GEOCENTRIC**, with the Earth in the middle, but ideas were beginning to change.



New Ideas

- A Polish scientist, Nicolaus Copernicus, believed in a **HELIOCENTRIC** universe, with the **SUN** in the center, and not the Earth
- Copernicus studied the sky, and also studied mathematics
- The **TELESCOPE** was invented and scientist's ideas about the universe really began to **CHANGE**



A portrait of Isaac Newton, an English natural philosopher, mathematician, and astronomer. He is depicted from the chest up, wearing a dark brown robe over a white cravat. He has long, dark, curly hair and is looking slightly to the right of the viewer. His hands are resting on a desk in front of him. To the left, a globe is partially visible. The background is dark and indistinct.

How did our idea of the universe change?

○ What does **GEOCENTRIC** mean?

○ What does **HELIOCANTRIC** mean?

What new discoveries did Galileo make?

- Galileo was a scientist born in Italy in 1564
- He began to notice math all around him
- He started to **QUESTION** things from the past
- His new **IDEAS** opened the way for other thinkers to begin to change the world



Inventions and Experiments

- Galileo became a **TEACHER**, but he did not make very much money
- Galileo wanted to make some more money, so he came up with some useful inventions
- One of his inventions was the first **THERMOMETER**, it was 22 inches long and filled with water, but nobody wanted it



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(5)

- Galileo took the invention of **EYEGLASSES** and modified them to make a telescope
- He gave a telescope to the ruler of Venice
- This device became very **POPULAR**
- The navy began to use them to look for distant ships

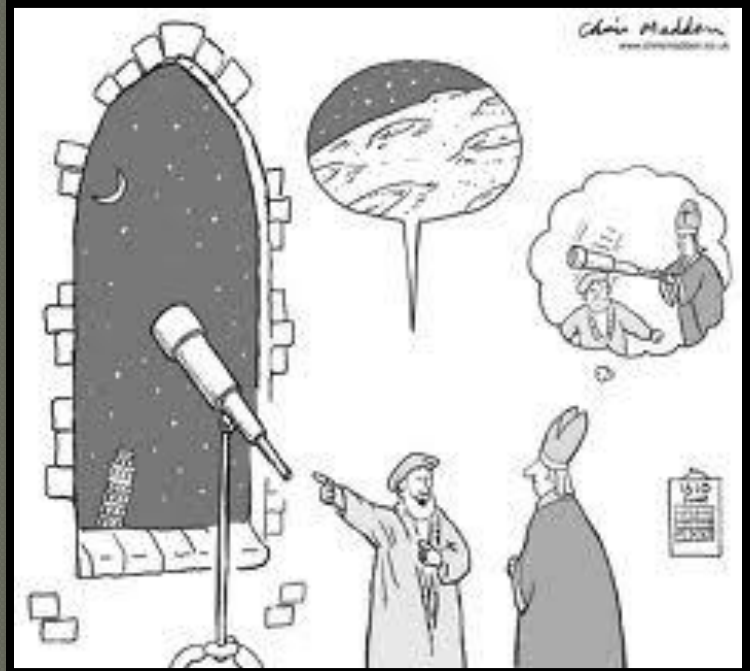
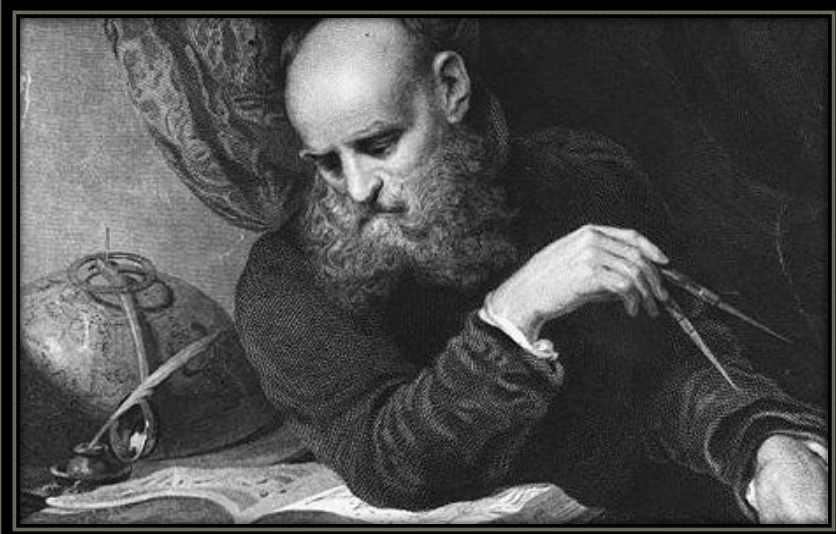


(6)

- Galileo looked at the moon with the telescope and noticed it was not smooth, as everyone thought, but very **BUMPY**
- Galileo started to study the **SKIES** more with his telescope
- He discovered there were thousands of stars
- He discovered **JUPITER**



- He realized that the Earth **ROTATES** and **REVOLVES** around the sun
- Galileo shared his discoveries with the world in 1610
- Many were shocked, and some, like the church, were **ANGRY**





[Galileo video 3 min](#)

A portrait of Galileo Galilei, an Italian astronomer, physicist, and engineer. He is depicted from the chest up, wearing a dark brown robe over a white shirt with a large, ruffled collar. He has long, dark, curly hair and is looking slightly to the right of the viewer. The background is dark and indistinct.

What new discoveries did Galileo make?

- What new things did Galileo discover when he looked at the skies?
- Why were these discoveries important?

What happened to Galileo?

- ◉ Earlier scientists had been put to **DEATH** because they had taught about heliocentric ideas
- ◉ The church prepared to put Galileo on **TRIAL**
- ◉ They said his views went **AGAINST** church teachings

- ◉ Galileo was a member of the Roman **CATHOLIC** Church
- ◉ In 1633 Galileo was put on trial and told to **TAKE BACK** what he had said about the Earth and sun



- When he was threatened with **TORTURE**,
he took back what he had said
- He was escorted back to his home, where
he was not allowed to leave for the rest of
his life
- Though he never spoke of his ideas again
publicly, he still believed he was
CORRECT

What happened to Galileo?

A portrait of Galileo Galilei, an Italian astronomer, physicist, and engineer. He is depicted from the chest up, wearing a brown robe and a white cravat. He is seated at a desk, looking slightly to the right. On the desk, there is a globe and a telescope. The background is dark and indistinct.

- ◎ What was he on trial for?
- ◎ What was the result of the trial against Galileo?

What did Van Leeuwenhoek first use his microscope to look at?



- In the 1670's, another important invention began to change the world
- Antonie Van Leeuwenhoek, a Dutch cloth merchant, began using the **MICROSCOPE** to inspect his cloth
- When he looked at a drop of water up close he noticed that it contained "**TINY ANIMALS**"
- These tiny animals were **BACTERIA**



Leeuwenhoek and Microscopic Life



Amazing
Moments
in
Science
311



[Microscope 3 min](#)

A portrait of Antonie van Leeuwenhoek, a Dutch scientist, wearing a brown robe and a white cravat. He is seated at a desk with a globe and a book. The text is overlaid on the image in a red, bold, serif font.

**What did Van Leeuwenhoek
first use his microscope to look
at?**

What name was given to the new way of thinking about things?



- The same year that Galileo died, another great scientist, **ISAAC NEWTON**, was born
- In 1675, an apple fell on Isaac's head
- From this, Isaac began to study the idea of **GRAVITY**
- Newton understood that the moon and Earth had gravity just like the apple
- His ideas helped scientists better understand the idea of a heliocentric universe

The results of new knowledge

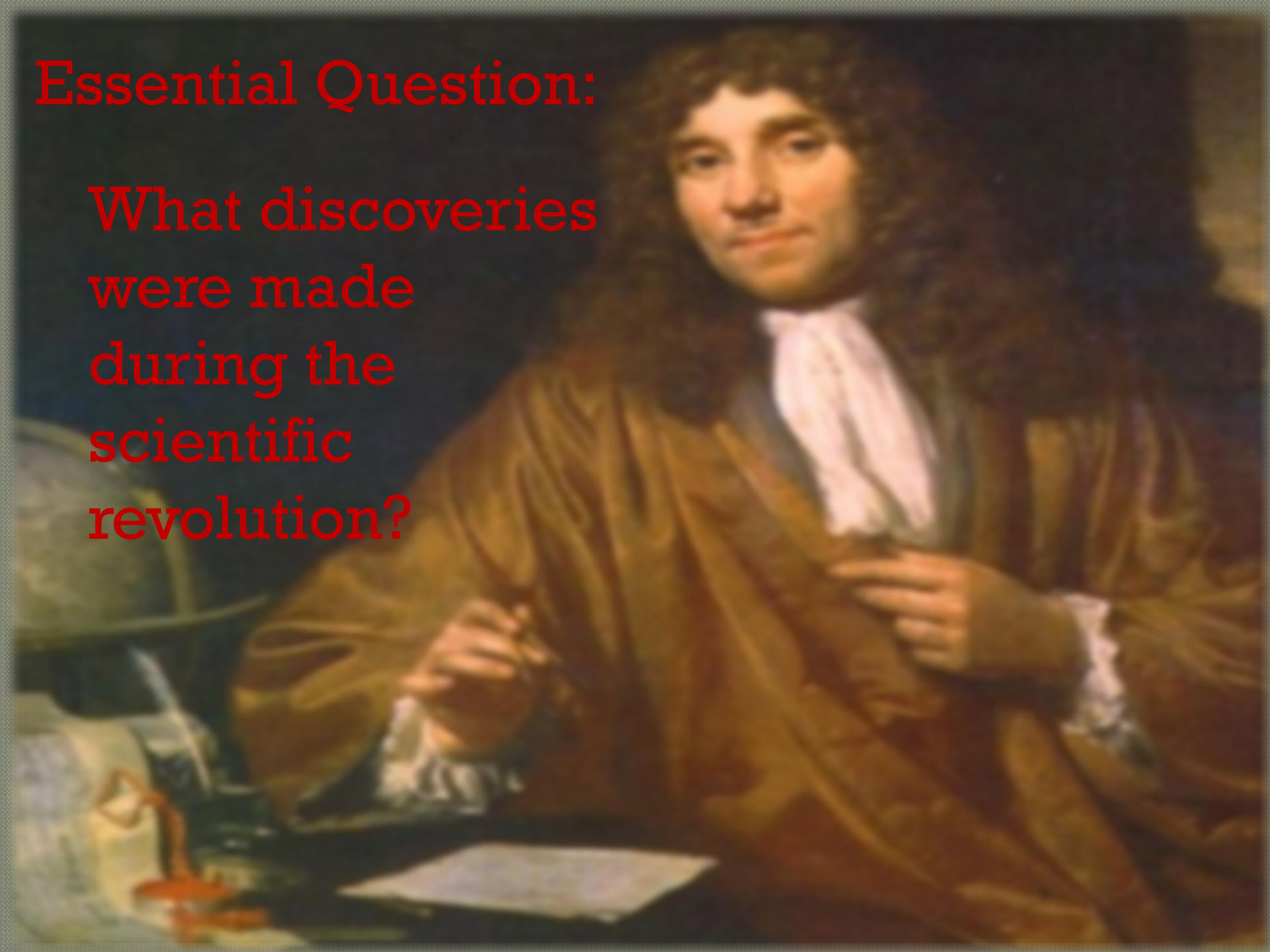
- New discoveries by Newton, Copernicus, Van Leeuwenhoek, and Galileo, helped mankind to better understand how the **UNIVERSE** worked
- Telescopes helped at see
- A clock that Galileo had invented helped to keep time
- The development of the **SCIENTIFIC METHOD** also came about
- A new age of scientific reasoning had begun

What name was given to the new way of thinking about things?



Essential Question:

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The End

• Power Point created by James Reese
• 2013