

SCIENTIFIC RESEARCH

$E=MC^2$

DISCUSS



1. What do you think is the most important invention in history, Why do you think so?



2. Can you tell the names of the names of any famous scientists you learnt before?



3. Why is asking questions important in science?



4. How can we prove if something is true or false? What do we need to do?



5. Have you ever wondered why the sky is blue or why some things float in water?
What other questions do you have?



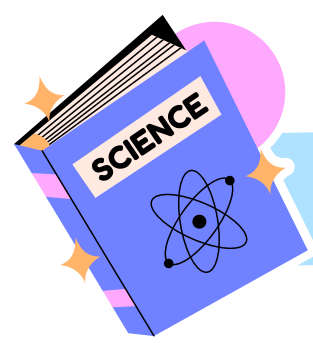
Why?

What?

How?

Where?

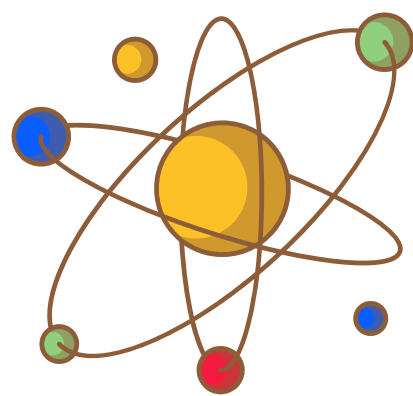
SCIENTIFIC RESEARCH



Match the words with definitions



1. Research



2. Science



3. Observation



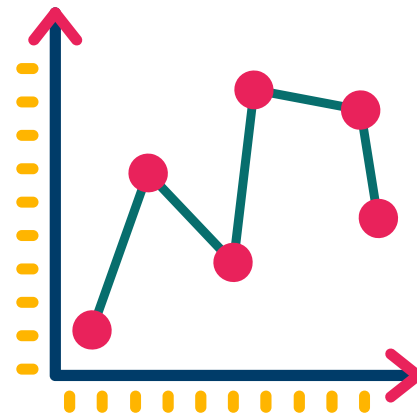
4. Experiment



5. Hypothesis



6. Analyze



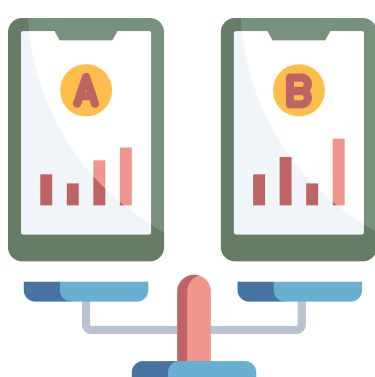
7. Variable



8. Measure



9. Sample



10. Compare



11. Conclusion



12. Solution

Number	Definition
	To watch something carefully to learn more about it.
	A test you do to learn something or to see if an idea is right.
	Something that can change in an experiment.
	A guess you make before doing an experiment to say what you think will happen.
	Looking for information to find out more about something.
	The study of the world around us to understand how things work.

Number	Definition
	A small part of something that shows what the whole thing is like.
	To find out the size, amount or number of something.
	To look at two or more things to see how they are the same or different.
	A way to fix a problem or the answer to a question.
	The decision or answer you make after looking at all the results from an experiment.
	To examine something carefully and think about different parts to understand it better.

SCIENTIFIC RESEARCH

EXPERIMENT: "SINK" OR "FLOAT"



Apply the steps of the scientific method

STEP 1 : Ask a question

 Does coin/eraser/ feather etc. sink" or "float" in water?



Let's guess which objects will "sink" or "float" in water!



- coin _____
- eraser _____
- feather _____
- toy car _____
- a piece of dry pasta _____

STEP 2 : Make a hypothesis

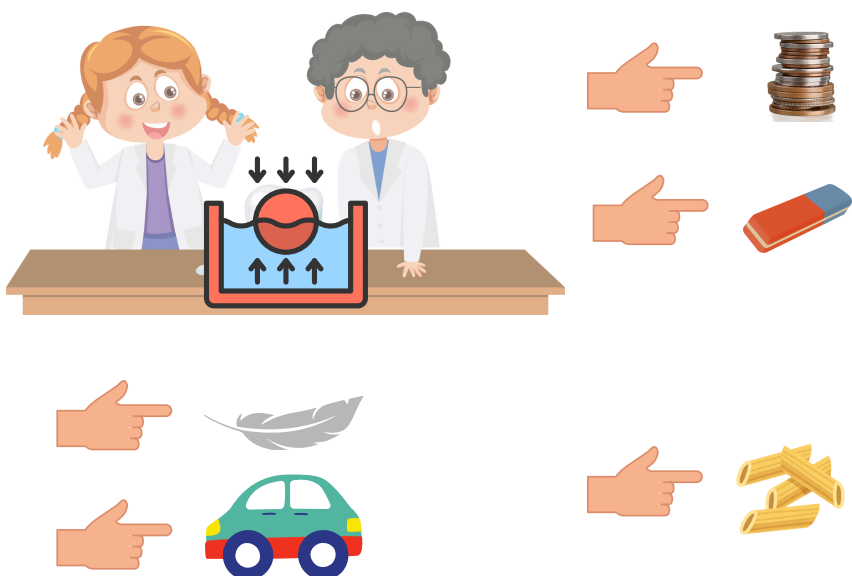
 Write a hypothesis statement for each prediction.



A hypothesis is a guess you make before doing an experiment to say what you think will happen. But not just a guess – it should be based on existing theories and knowledge. It also has to be testable, which means you can support it through scientific research.

- coin _____
- eraser _____
- feather _____
- toy car _____
- a piece of dry pasta _____

STEP 3 : Do the experiment



STEP 4 : Record results



SCIENTIFIC RESEARCH

STEP 4 : Record the results



Which objects sink and which objects float.
Write each result after conducting the experiments.

STEP 5 : Draw conclusions



Review your results and compare them with your hypotheses. Why do you think some objects float but some sink? Can you guess the reason?

Variables in Hypotheses !

Hypotheses propose a relationship between two or more types of variables.

An **independent variable** is something the researcher changes or controls.

A **dependent variable** is something the researcher observes and measures.

Example:



Does the amount of sunlight affect how tall a plant grows?

- Independent Variable: The amount of sunlight (this is what you change). You could have plants in full sunlight, partial sunlight and/or no sunlight.
- Dependent Variable: The height of the plant (this is what you measure). You observe how tall the plants grow under different amounts of sunlight.

SCIENTIFIC RESEARCH



GROUP WORK

- Get into groups of 2-3.
- Choose a simple experiment which can easily be applied in the class.
- Start with a simple scientific question.
- Make a hypothesis.
- Conduct the experiment.
- Analyze results & Draw a conclusion.
- Present your experiment to the class.



Fill in an exit ticket for each group.

EXIT TICKET 694036

The best part of your work _____

You need improvement in _____

One word to describe your performance would be _____



EXIT TICKET 694036

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EXIT TICKET 694036

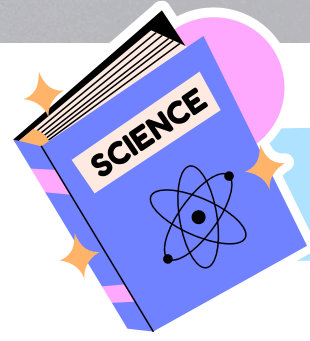
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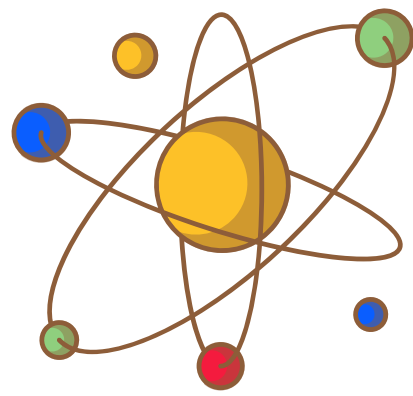
ANSWER KEY



Match the words with definitions



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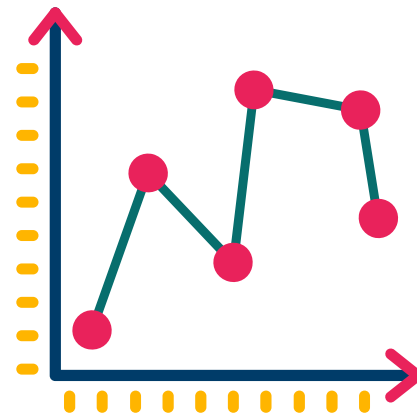
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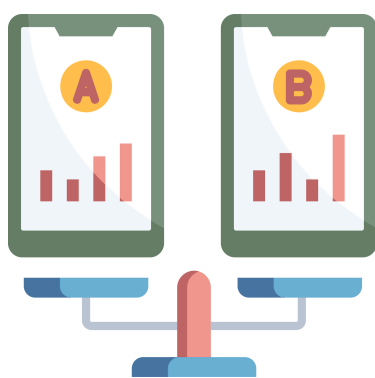
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ANSWERS

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Number	Definition
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