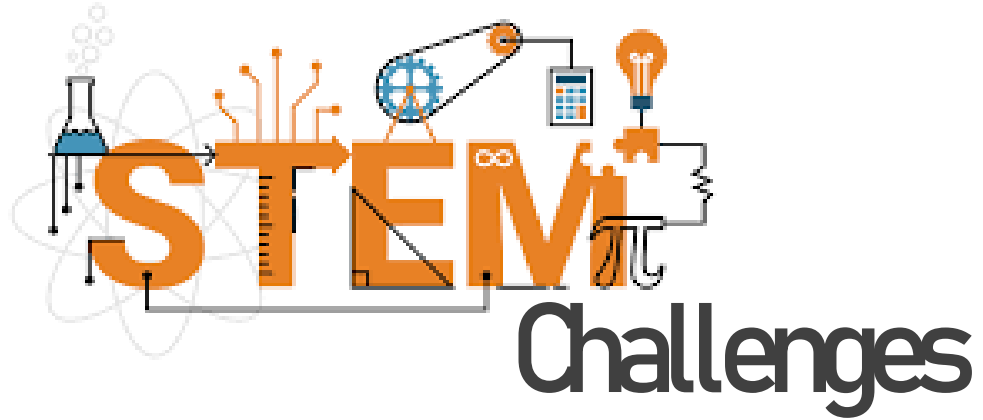


THE JCB ACADEMY



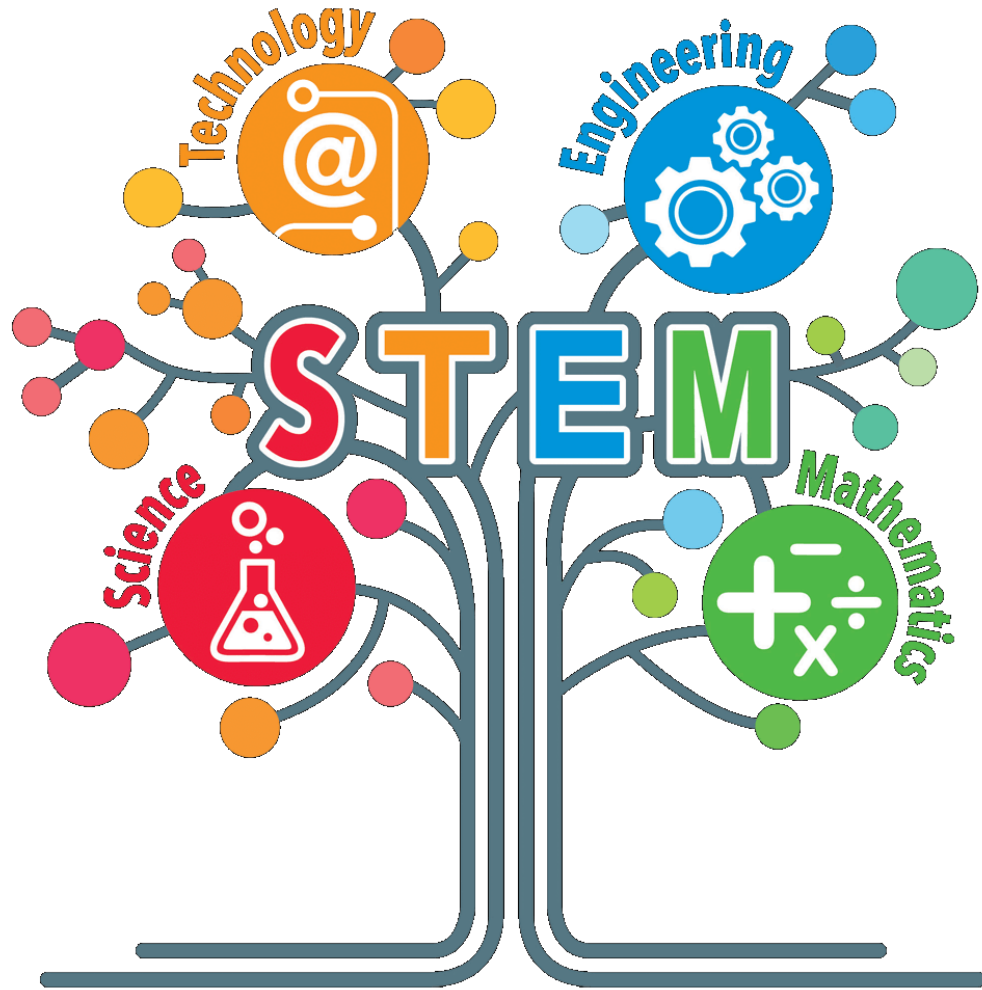
What's it like at the JCB Academy?

<https://jcb-academy.com/>



STEM Challenge

What is STEM?



STEM stands for -

Science

Technology

Engineering

Mathematics

These subjects are linked directly to each other and this task will highlight your skills in each of these subject areas.

Objectives

To understand what is meant by STEM. To demonstrate how diffusion affects cells

What is diffusion?

Diffusion is the movement of a substance from an area of high concentration to an area of low concentration. Diffusion happens in liquids and gases because their particles move randomly from place to place. Diffusion is an important process for living things; it is how substances move in and out of cells

Osmosis is a special type of diffusion that involves water moving across a membrane.

Diffusion Challenge 1

removing shells from eggs

Resources

Vinegar

Glass jar/pot

2 eggs

Method

1. Place both eggs into the jar or pot
2. Completely cover with vinegar
3. *Leave for 24 hours*
4. After 24 hours, rub the eggs gently, under running cool water to remove the shells.



Objectives

To understand what is meant by STEM. To demonstrate how diffusion affects cells

Diffusion Challenge 2

making a concentrated solution

Resources

Sugar

teaspoon

2 cups or glasses (same size)

Lukewarm Water (Be careful)



Method

1. $\frac{3}{4}$ fill one cup with lukewarm water
2. In ONE cup add a spoonful of sugar and stir
3. Add another spoonful of sugar and stir
4. Repeat this until you've added 5 teaspoonful's of sugar
5. The second cup $\frac{3}{4}$ fill with lukewarm water only

Objectives

To understand what is meant by STEM. To demonstrate how diffusion affects cells

Diffusion Challenge 3

Eggs and diffusion

Resources

Cup of lukewarm water

Cup of lukewarm sugar
solution

2 shell-less eggs

Method

1. Add an egg to each glass
2. Leave for 24 hours

Can you predict what will happen?

Objectives

To understand what is meant by STEM. To demonstrate how diffusion affects cells

Diffusion Challenge 4

Eggs and diffusion

Resources

Your eggs from the water
and sugar solutions

Pin (be careful)

Method

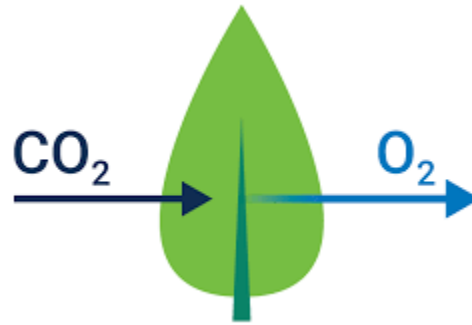
1. Take each egg out the solutions
How do the eggs compare?

2. Prick the egg from the water with a fine needle
What happens? Why do you think it happened?

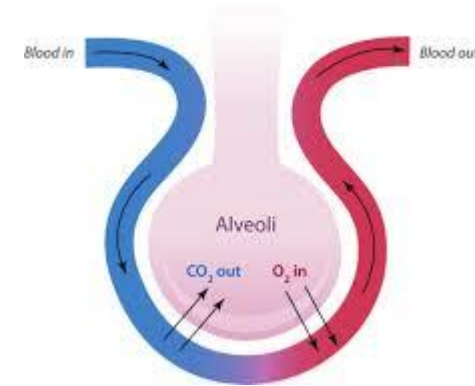
3. Can you rehydrate the shrunken egg? How?

Diffusion in Real Life

Where is diffusion happening?



Pulmonary Gas Exchange



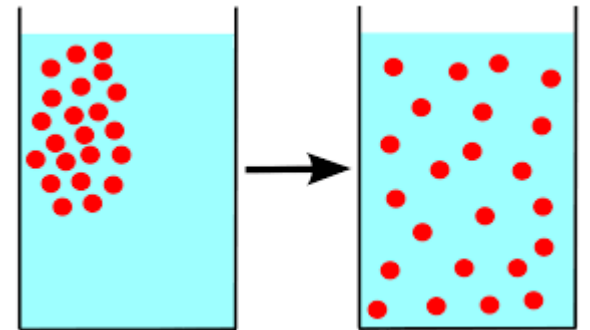
Where is diffusion happening in nature?



Write about what you did

You can make a report to show what you did and what you found out about diffusion and the movement of water

Then say where diffusion is important in life and in nature.



STEM Challenge

What's next?

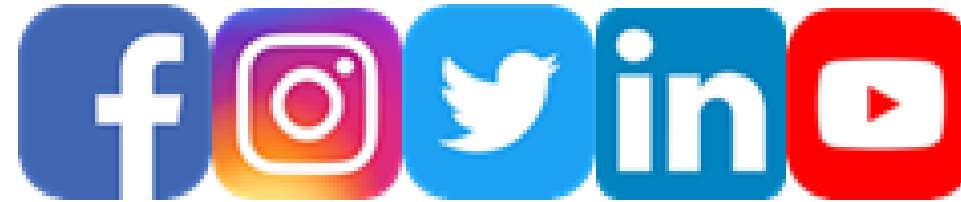
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