



stem4math

Greenhouse



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Make a list and underline the ones that you think are the most important.

[illegible]



Investigate

Compare your answers with a friend and agree on which are the most important ones. Explain why you've chosen each one of them. Then fill:

.....is important because

.....is important because

.....is important because

.....is important because

.....is important because

Write down the elements that your class has agreed should be taken care of in order to build a greenhouse:



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Plan

Make a list of the materials that you need in order to build your greenhouse:

For the walls:

For the floor/roof:

For the structure:

Other parts:



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Create

My greenhouse

Think of how your greenhouse should look. Make a couple of sketches and discuss with your team what parts are needed and which ones are optional (four walls? a floor? a door?, a roof?, windows?).

Remember that the most important elements to keep a plant alive should be taken care of in your greenhouse and that you need to keep your costs low while the functionality is not lost.

While designing you will have to keep into account that you work with the right measures of your Green house. You will need to scale every measurement.

Put the scale you use on your sketch (eg: 1:10, 1:5, ...), but mention the real measurements on the sketch.



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Conclude

Testing the temperature

We are going to check if the green house can keep our plants warm and make the best use of the energy it gets from the sun. We will measure the inside temperature when the house is in the sun and we will see how the temperature decreases when we put it in the shade.

1. Get a big sheet of paper for the whole class and prepare a table where you will write :
 - a. the time of each measurement,
 - b. the temperature inside of each green house, if it is in the sun or in the shade
 - c. the outside temperature both in the sun and in the shade.

Expect to take measurements during 1:30 or 2 hours and calculate the number of rows that you will need depending on the frequency of the measurements (temperature should be measured each 1 to 10 minutes).

2. Study the playground and look for a spot in the sun that will be in the shade in about 20 or 30 minutes. Put all green houses in that area.



3. Put a thermometer inside each greenhouse in such a way that it doesn't touch any surface and an additional one out of all greenhouses.
4. Let all houses warm-up under the sun for about 15-20 minutes and then write down all temperatures in the table as well as the exact time (or set a chronometer on) before the shade hits any greenhouse.
5. With the chosen frequency (every minute/5 minutes/10 minutes), write down the temperatures, the time, and make a mark indicating which greenhouses are in the sun.
6. Keep taking measurements as instructed by your teacher until 2 hours have passed or until all greenhouses show the same temperature as the outside thermometer.
7. Make a graph with all the measurements starting with the last measurement in the sun and then compare your greenhouse with the other teams and discuss and compare the graphs' shapes, heights, lengths, etc. Try to understand what the data is telling about the sizes, shapes or materials of the different greenhouses, and agree on which ones would make the plants live longer.





Report

What have you learnt during this project about Science, Technology, Engineering and Mathematics? Explain the challenges you went through during the process.

Draw a visual map of the photosynthesis. Remember to include all the elements that plants need to survive.



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