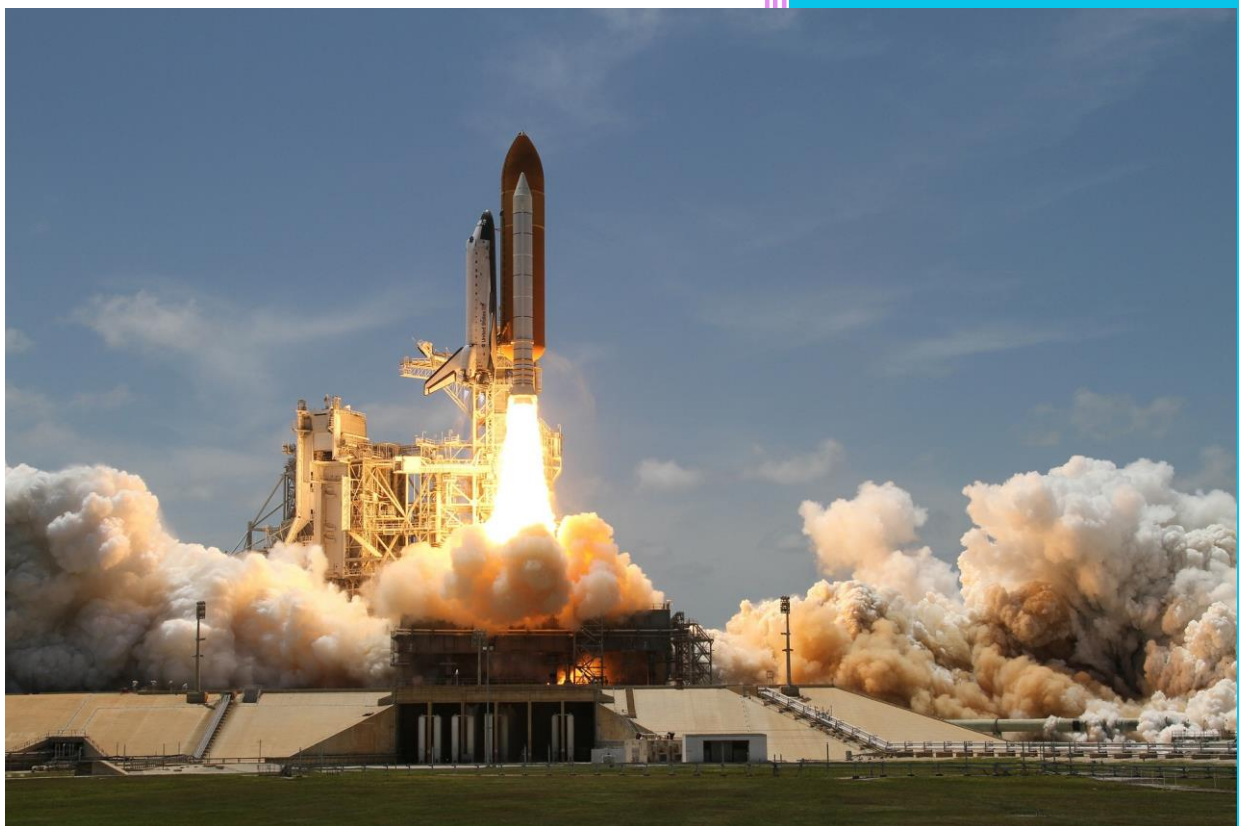




stem4math

Mission to Mars



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Engage

Discuss in your group:

1. Do you believe that there is life on Mars? Do you believe that there is life anywhere else than on Earth?

2. Which parts do you need to build a rocket?

3. What do you know about space research? Have you heard about moon landings? Do you think it is good that we do research about the solar system? Why do you think we do research in space?



4. How good does your group work together?



Investigate

1. How many millilitres are there in a 1,5 l. bottle?

2. Why do we put water in the rocket? What do you think would happen if we don't put water in the rocket?

Your task is to decide how much water you need in order to launch your rocket. Every team can test this with a different amount of water.

After every test, your team can decide which amount of water will be used by the team.



These tests are done with a 1,5l bottle without wings or a cone.

The task in your team is to measure how long it takes for your bottle to go up and down to the ground. This can be done with a clock or with a video (video is recommended).

1. With how much water will your team do the test? _____ ml
 2. Write down your flight times: 1. _____s 2. _____s 3. _____s
 3. Calculate the average flight time and write it on the blackboard for other teams to use _____s
 4. Decide how much water your team will be using _____ml
 5. Why do you think that measurement was done three times?
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Plan

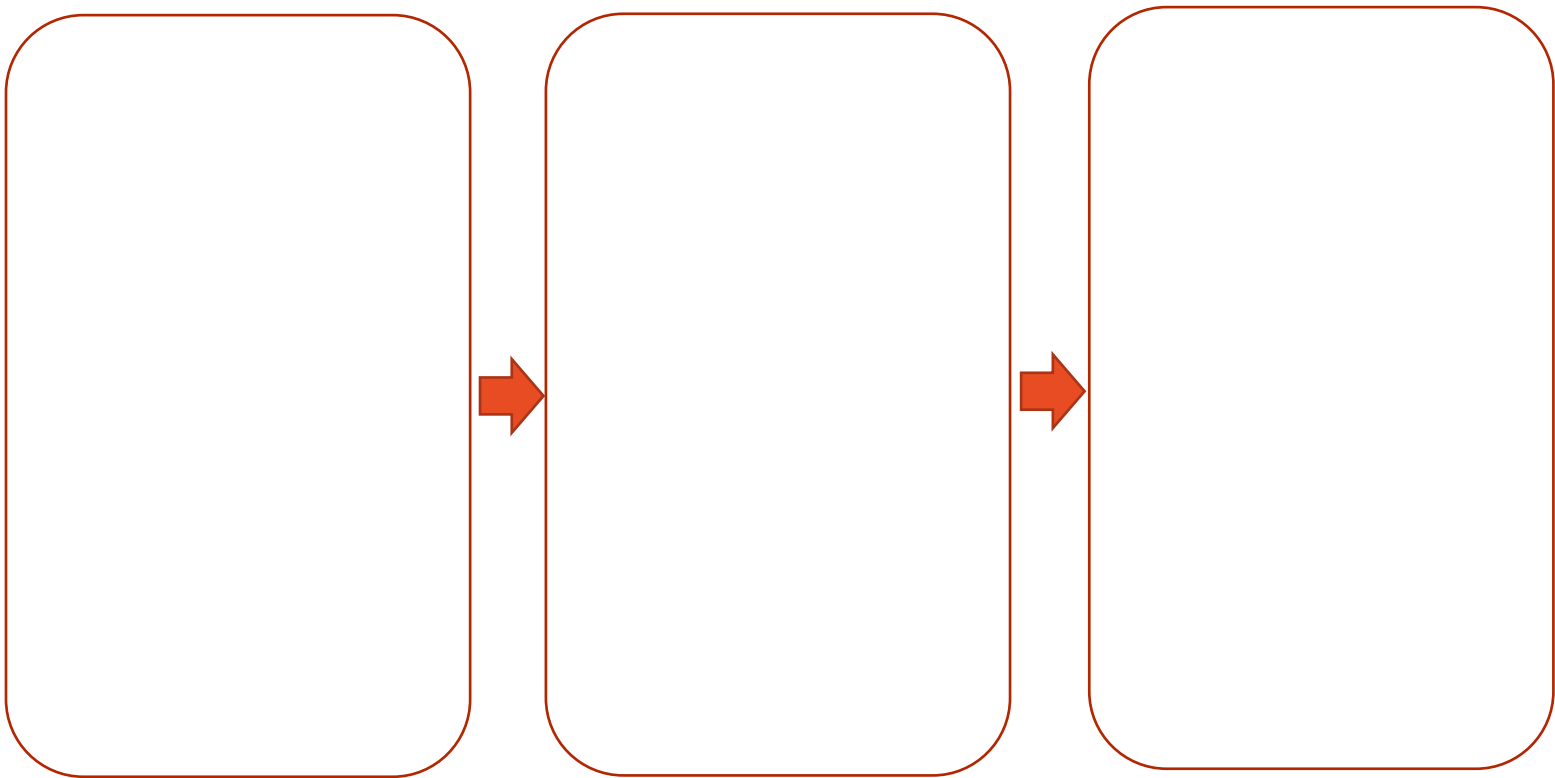
1. Wings

Your job is to design wings to your rocket. The teacher will give you a piece of paper, ruler, pencil and a compass to plan your wings and cone.

There are three boxes in this form. In every box you need to tell with a picture how many wings there are and how they are mounted to the rocket. There also needs to be an other picture of your wing design in scale 1:3.



The first box is for your first draft for the wings, the second one is for the first wings you will make from cardboard. The third one is for your final wings after testing. If you change your design in some ways, write down the reasons on the other side of the sheet.



2. Cone

Your job is to design the cone for your rocket. The teacher will give you a piece of paper, a ruler, a pencil and a compass to plan your cone and wings. There are three boxes in this worksheet. The first one is for your first draft of the cone, the second one is for the first cone you will make from cardboard. The third one is for your final cone after testing.

In these boxes you need to draw a picture of an unfolded and folded cone in 1:3 scale. If you changed your design in some ways, write down the reasons on the other side of the sheet.





Conclude

1. How many wings does your rocket have? Why did you choose for this amount?

2. What is air resistance and how can you make it as small as possible in your rocket?



Create

1. In real life projects, there is always a budget. How can you save money in this rocket project? Can being economical lead to being ecological?



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Budget

Your team will get 10.000€ for this project. Plan your budget on this sheet. Make sure that you leave money for the test launches and that you have some money left at the end if something doesn't go as planned.

- A4 paper for planning the wings and a cone is free
- A4 cardboard 2500€ Used 1,2,3
- One hour use of glue 1500€ Used 1,2,3
- Half a meter of tape 1500€ Used 1,2,3
- Test launch of the rocket 1000€ Used 1,2,3
- Pens, rulers, compasses and scissors are free to use

We bought ____ pcs. cardboard and the total amount was _____

We used glue for ____ hours and the total amount was _____

We used tape ____ meters and total amount was _____

We launched our rocket ____ times and the total amount was _____

Total used money amount was _____





Report

1. How did your group work together?

2. How did you contribute to group work?

3. What was the most difficult part for your group?

4. How did you cope with those difficulties?

