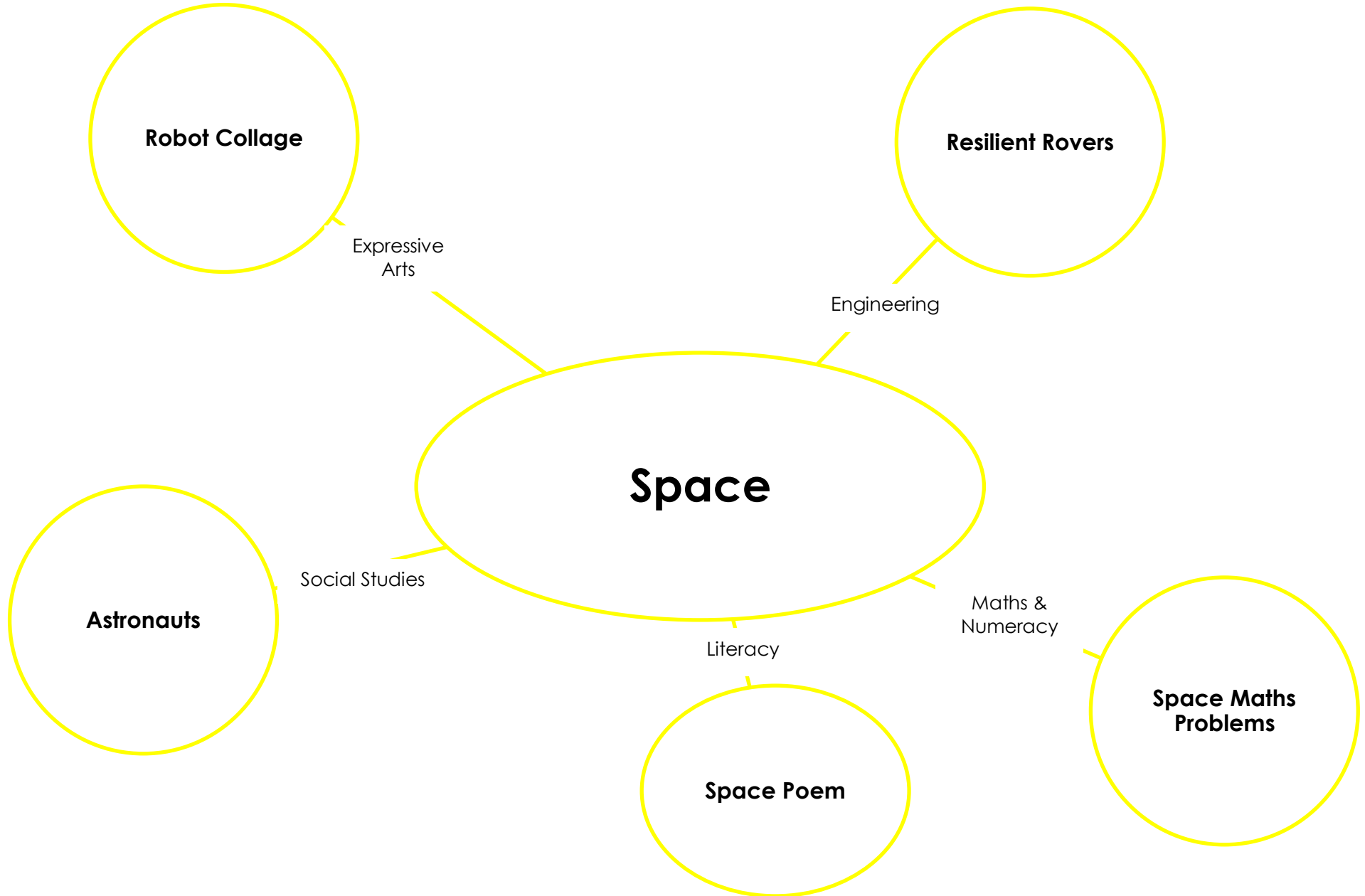
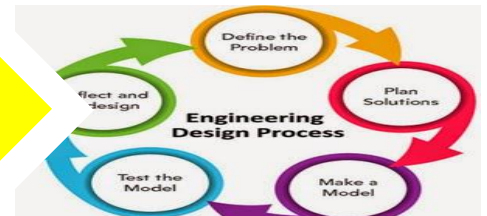


# Learning from Home



# Engineering Challenge



This Photo by Unknown Author is licensed under [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/4.0/)

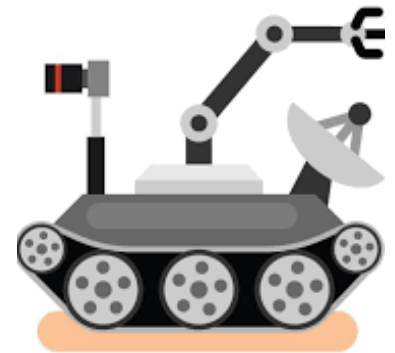
## Resilient Rovers

A rover is a Space exploration vehicle or buggy, designed to move across the surface of a planet or other celestial body – like the moon.

**Your Task:** Design and build a model space rover using materials from home. (You can use junk materials, or you may want to use construction kits like Lego, K'NEX, Meccano etc.)



A rover's wheels are very important, and you will need to think about this when you are planning your design. iRings are specially developed rugged rover wheels made of an outer layer that looks like chain mail, which can be filled with whatever material might be available (for instance, lunar soil and rocks). Their sturdy, flexible design allows a rover to drive over rocks, and lumps and bumps, that are typical of the extreme terrain found on the Moon. The Juno rover, designed by the Canadian Space Agency, can use many different types of wheels (rubber, metal or iRings) or a set of metal tracks.



Think about what components (parts) a lunar rover might need. Think about what it is used for, who or what it might need to carry, and what kind of terrain it might need to cover. Can you think of any vehicles on Earth that do a similar job?

**Plan It:** Research rovers in books and / or online to get some ideas of what your rover will look like and what materials you might be able to use – for the wheels in particular. Make a drawing to show your idea and list your materials.

**Build It:** Use the information in your plan to build your vehicle.

**Test It:** Try your rover out inside and outside on various surfaces. Can the wheels turn? Does your rover stay in one piece, or does it break up?

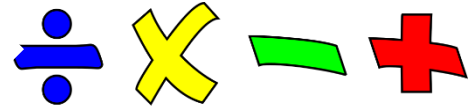
**Reflect:** What improvements could you make? Is the journey smooth or is it very bouncy and out of control? How could you improve this?

**Improve It:** Use any reflection points to make any changes to your rover. Can you decorate it to make it look more realistic?

Idea from [www.stem.orauk/](http://www.stem.orauk/) Images from [www.clipart-library.com](http://www.clipart-library.com)



# Maths & Numeracy Challenge

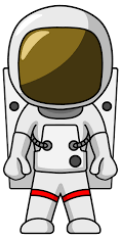


This Photo by Unknown Author is licensed under [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/)

## Space Maths Problems

Read the following word problems carefully to work out what you are being asked to do. All 4 maths operations are covered so you might have to add, subtract, multiply and / or divide. (+ - x ÷)

1. The space crew have to fly 245 light years away. They have to refuel after 87 light years. How much further do they still have to fly?
2. NASA buy their first rocket for \$93,500. Eventually, they sell it, making a profit of \$9,000. How much do they sell it for?
3. Judy is one eighth of the age of the visitor from Mars. The visitor is 72. How old is Judy?
4. The data discs were stored on racks which each held 18 data discs. If there were 6 racks which were all full, how many discs were there?
5. The visitor from Venus wants to know - how many hours are there in three Earth weeks?
6. There were 143 aliens floating in the anti-gravity pool. During the next hour, another 57 aliens started floating and 69 stopped. Now how many aliens are floating?
7. One quarter of the 128 customers at the **Restaurant at the End of the Universe** were Vulans. The rest were Vogons. How many were Vogons?
8. A market trader on the Moon has seven crates each containing 40 blue rocks. He also has five crates containing yellow rocks. There are 400 rocks altogether. How many yellow rocks are there in each box?



Activity from TES Images from [www.clipart-library.com](https://www.clipart-library.com)

# Literacy Challenge



This Photo by Unknown Author is licensed under [CC BY-SA-NC](https://creativecommons.org/licenses/by-sa/4.0/)

## Space Poem

### When I'm An Astronaut

First I'll get into my spacesuit.  
Then I'll bravely wave good-bye.  
Next I'll climb into my spacecraft  
Built to sail right through the sky!  
In command inside the capsule,  
I will talk to ground control.  
When we've checked out  
all the systems,

I'll say, "Let the countdown roll!"  
And it's 4-3-2-1 - - blast off - -  
With a smile upon my face,  
I'll spin loops around the planets  
up, up, up in outer space!

**Bobbi Katz**



**Read the poem then answer the following questions and complete the tasks:**

1. What does the astronaut do to prepare for his journey into space?
2. Explain what 'ground control' is.
3. Which lines tell you that the person in the poem enjoys being an astronaut?
4. List the reasons why astronauts would go into space.
5. Imagine you are in a spaceship blasting off into space. Write a paragraph describing what you would see out of the window as you leave Earth.
6. Now use the information in your paragraph to write a 'senses' poem describing what you might see, hear, smell, touch etc., during your rocket trip into space.
7. Share your poem with someone at home.

Activity adapted from TES Images from [www.clipart-library.com](https://www.clipart-library.com)

# Social Studies Challenge



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

## Astronauts

An astronaut is a person who has been trained to travel to and through Space.

**Task 1:** Talk to an adult about the following questions:

1. How do you think people become astronauts and what kind of training do they have to do?
2. What skills do you think you would need to become an astronaut? What do you think they actually do?
3. Why do you think astronauts have to wear special suits and helmets?
4. What do astronauts eat and drink while in Space and how do they go to the toilet?

Now click here to watch a video which will answer some of these questions and more!

<https://www.bbc.co.uk/iplayer/episode/m000rjtl/maddie-space-and-you-series-1-5-astronaut-training>

**Task 2:** Would you like to become an astronaut?

Have a think about what it would be like to be an astronaut then complete a 'for' and 'against' table like the one below. Explain the reasons 'for' and 'against'. You can talk to someone at home to get more ideas if you want to.

Do you think we should be exploring Space at all? What about the impact on the environment of burning massive amounts of fossil fuels required for the journey? Are we adding to space 'junk'? etc.

Reasons 'for' becoming an astronaut	Reasons 'against' becoming an astronaut

**Extension:**

1. Design a poster encouraging people to train as astronauts. Include the skills they require and the conditions they will encounter e.g., good at solving problems, able to speak other languages, physically fit, will spend long periods of time away from home, will have to live in an enclosed space whilst on board the rocket / space station etc.
2. Research a famous astronaut and create a poster or factfile about them.





# Expressive Arts Challenge



This Photo by Unknown Author is licensed under [CC BY-NC-ND](https://creativecommons.org/licenses/by-nc-nd/4.0/)

## Robot Collage

When humans travel to space, robots are essential to assist them in their missions. For example, they may be busy collecting rock samples, or they could be building essential equipment needed to keep the astronauts safe.

You might want to look at some pictures of robots in books or online before you begin today's tasks.

**Task 1:** Design a robot collage using coloured paper cut into 2D shapes. Join the body parts up using coloured pens/ pencils.

Click here to watch a video showing you how:  
<https://www.youtube.com/watch?v=YQ4856iR1E>



**You Will Need:** plain A4 paper, coloured paper, scissors, glue, coloured pens / pencils.

**Task 2:** Now expand your design process by making your 2D (and this time 3D) shapes from other materials found at home. For example, you might make the body from corrugated cardboard, the legs from bubble wrap etc., Using bottle tops or buttons for eyes could add some extra 3D elements. If you have some metallic paint you may wish to paint some of your items, but this is optional.

**You Will Need:** junk materials including corrugated cardboard, bubble wrap, bottle tops, egg boxes etc, plus household items like tin foil, straws, buttons, paper clips, screws etc.



Click here to play an interactive build a robot game: [https://www.abcya.com/games/make\\_a\\_robot](https://www.abcya.com/games/make_a_robot)

Images from Pinterest and YouTube (see video link above)