Space Travel

This activity is designed to help children (and adults) get their heads round the enormous distances in space. It also provides some experience with big numbers.

And then the spaces between the electrons and atoms in a molecule in relation to their size are even larger. Anyone fancy producing an activity on that?

Webaddress: http://www.collaborativelearning.org/spacetravel.pdf

Last updated 4th November 2010

COLLABORATIVE LEARNING PROJECT
Project Director: Stuart Scott
We support a network of teaching professionals to develop and disseminate accessible talk-for-learning activities in all subject areas and for all ages.
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BRIEF SUMMARY OF BASIC PRINCIPLES BEHIND OUR TEACHING ACTIVITIES:

The project is a teacher network, and a non-profit making educational trust. Our main aim is to develop and disseminate classroom tested examples of effective group strategies that promote talk across all phases and subjects. We hope they will inspire you to develop and use similar strategies in other topics and curriculum areas. We want to encourage you to change them and adapt them to your classroom and students. We run teacher workshops, swapshops and conferences throughout the European Union. The project posts online many activities in all subject areas. An online newsletter is also updated regularly.

*These activities are influenced by current thinking about the role of language in learning. They are designed to help children learn through talk and active learning in small groups. They work best in non selective classes where children in need of language or learning support are integrated. They are well suited for the development of speaking and listening . They provide teachers opportunities for assessment of speaking and listening.

*They support differentiation by placing a high value on what children can offer to each other on a particular topic, and also give children the chance to respect each other's views and formulate shared opinions which they can disseminate to peers. By helping them to take ideas and abstract concepts, discuss, paraphrase and move them about physically, they help to develop thinking skills.

*They give children the opportunity to participate in their own words and language in their own time without pressure. Many activities can be tried out in pupils' first languages and afterwards in English. A growing number of activities are available in more than one language, not translated, but mixed, so that you may need more than one language to complete the activity.

*They encourage study skills in context, and should therefore be used with a range of appropriate information books which are preferably within reach in the classroom.

*They are generally adaptable over a wide age range because children can bring their own knowledge to an activity and refer to books at an appropriate level. The activities work like catalysts.

*All project activities were planned and developed by teachers working together, and the main reason they are disseminated is to encourage teachers to work more effectively with each other inside and outside the classroom. They have made it possible for mainstream and language and learning support teachers to share an equal role in curriculum delivery. They should be adapted to local conditions. In order to help us keep pace with curriculum changes, please send any new or revised activities back to the project, so that we can add them to our lists of materials.

Space Travel

Distances in space are very large. Some stars are 60 million light years away. That means we see the light from them that started travelling here when dinosaurs lived on Earth. Billions of stars are further away than that. The nearest stars are 4.3 light years away. What were you doing in August 2006 when the light you see now started its journey?

Space ships can travel fast, but at the moment they are much slower than the speed of light. Can you work out how long it might take to get to the nearest star on the space ship we now have.

Match Speed and Fractions of Speed of Light cards

Half the speed of light.

0.5

$\frac{1}{2}$

8.6 Years

93,000 miles second

Now Finish the Task on Paper/Calculator

2,907 miles a second is 174,420 miles an hour, which is still much faster than the spaceship that went to the moon. Can you keep on halving the speed of light and doubling the time it takes to travel to find out how long it would take to get to Alpha Centauri at 25.000 miles an hour.

Half the speed of light. 0.5	$\frac{1}{2}$	93,000 miles second
A quarter the speed of light. 0.25	$\frac{1}{4}$	46,500 miles a second
An eighth the speed of light. 0.125	$\frac{1}{8}$	23, 250 miles a second
A sixteenth the speed of light. 0.0625	$\frac{1}{16}$	11,625 miles a second
A thirtysecond the speed of light. 0.03125	$\frac{1}{32}$	5,813 miles a second
A sixty fourth the speed of light. 0.015625	$\frac{1}{64}$	2,907 miles a second

8.6 Years

17 Years

39 Years

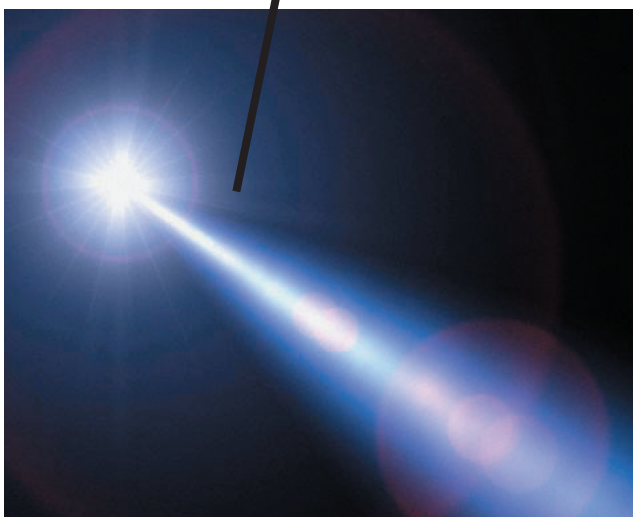
78 Years

156 Years

312 Years

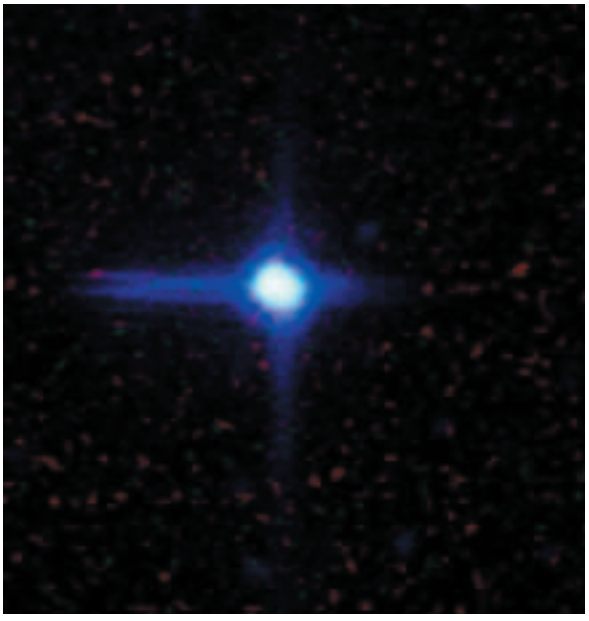
Space Travel Information

I am a beam of light. My speed is 186.000 miles a second



I am the moon. I am 238,857 miles from Earth.

We are Alpha Centauri. We are a group of stars. We are the nearest stars to Earth. We are 4.3 light years away.



I am the Apollo space ship. I went to the moon. My speed is 25.000 miles an hour.