

Science Challenge



The Water Cycle

Water is very important. We can not survive without clean water. Have you ever heard of the water cycle? That is the process with which water evaporates from land and sea, rises into the sky, where it condenses and changes back to water droplets and eventually falls back down to earth again as rain or sometimes snow. You can make your own water cycle in a plastic bag.

You will need a zip lock bag, some water (add some blue food colour to it if you can) a permanent marker, some Sellotape and a sunny window. On the outside of the plastic bag draw some water at the bottom, a cloud and the sun near the top like this-



Put a small amount of water in the bag and seal it up. Stick the bag to a sunny window and leave it to heat up. You should see the water droplets form at the top of the bag and begin to 'rain' back to the 'sea' again.



This video has several demonstrations about weather including how to make your own water cycle in a bag.

<https://www.youtube.com/watch?v=ZYu3o9goRG4>

Melting Ice

Investigate how to melt an ice cube. How would you melt an ice cube. Would you add something to it, would you put it somewhere different or would you wrap it up? Try out some different ideas and see what works best. You could then try to preserve your ice cube. Who in your family can keep an ice cube for the longest? (without putting it in the freezer!)

Technology Challenge



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Build a table

Your technology challenge is to build a table, using newspaper and tape, that can hold the weight of several books.

To make this more challenging, your table must be at least 30cm high. To create a further challenge, set a time limit for completing the task in.

Materials needed

Newspaper

Masking Tape / Sellotape

Scissors



First roll up the newspaper sheets tightly. (hint: If you roll along the diagonal you get a longer, tighter roll.)

Depending on what the design of your table is, it might be a good idea to create rolls of different sizes.

Use pieces of the tape to hold the paper roll in place.

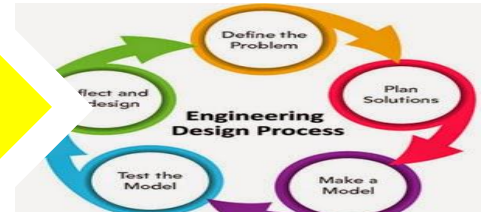
Once you have a collection of newspaper rolls, get creative!



When you've finished you need to test the design!

It is strong? Is it stable? How many books does it hold? Think how it could be improved.

Engineering Challenge



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Wicked Water Slides!

Have you ever been on a water slide or seen one in action? Read [this article from National Geographic](#) about the science and engineering behind water slides. Create a mind-map or make notes about the **key science and engineering ideas** which allow water slides to work and also some of the steps designers and engineers put in place to ensure the **safety of the riders**.



Challenge: Use what you have learnt above to design and construct your own model water slide. You are aiming to **get 6 riders to travel as fast as possible to the bottom without colliding or flying off the ride!** For riders you could use beads, marbles or LEGO mini-figures. Test your design outside or in a bath tub!

Rules:

1. Your water slide should have a **collecting pool** to catch riders at the bottom of the slide
2. You need to **make a way for riders to get from the ground to the top** of the slide (e.g. a ladder or stairs)
3. It should include **2-3 twists or turns**
4. When you release riders, you need to make sure they **don't collide** with each other (unless they are in the collection pool)
5. Sides should be adapted to make sure **riders do not fly off the ride!**
6. **Maximum height of the ride is 45cm**

Possible resources: cardboard tubes, straws, tin-foil, cellotape, empty boxes, paper cups, plastic bottles, cling-film and a bottle or jug of water with blue food colouring (for your water flow.)

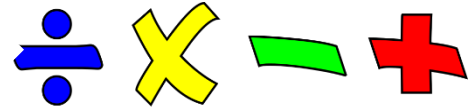
Testing: Copy the table below and use it to **test and record data about your water slide.**

	Time taken for 6 riders to get from top to bottom	Number of rider collisions (if any)	How many riders stayed on the ride from top to bottom
Test 1			
Test 2			



Adapt and improve: Look at your results, is there anything you could change to **improve** your timing or safety? Make your changes, **re-test and compare** your results.

Maths & Numeracy Challenge



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Shape Draw

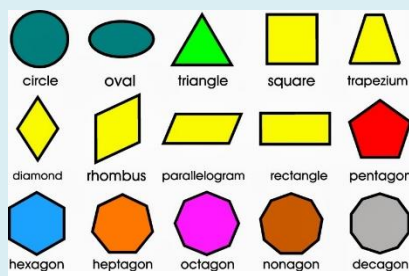
Can you use the information in the listed clues to draw the one shape which is being described?

1. The shape has two pairs of parallel sides.
2. The area of the shape is 24cm^2 .
3. The shape has four right angles.
4. The shape's perimeter is numerically larger than its area.
5. The length of each side is an even number.
6. The shape is irregular.
7. The shape is a quadrilateral.
8. The shape has two lines of symmetry.

The AREA of a flat/2D Shape is the amount of space it takes up.

Did you need all the information that was given? Why or why not? Could the solution to some of the clues have more than one possible shape as the answer?

Why not use the Illustrated Mathematical dictionary (<https://www.mathsisfun.com/definitions/>) to check some of the words used above and to help you write your own shape identification clues?



Literacy Challenge



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Cartoon Strips

Create your own Cartoon strip in 6 easy steps

A comic strip is a sequence of images with a small amount of text in each box. The text is usually inside speech bubbles, thought bubbles or captions. Comic strips are a form of storytelling, using drawing to tell a story. Most comic strips are created to be funny, but some can be serious.

Step 1: Write your ideas for your comic-A comic strip is no different from a short story. It still needs a beginning, middle and ending. Write down your ideas for the characters, settings and speech. Make sure each part has some action and you have a strong ending.

Step 2: Draw the three-frames-On a piece of paper, draw your three frames. You can make these quite big so that you can draw big at first.



Step 3: Use basic shapes to draw- One of the hardest parts of creating a comic strip is drawing your characters, try to keep them quite simple at first. Sketch in the speech bubbles and sound effects.

Step 4: Add in the speech and lettering- Now add in the words into your speech bubbles and don't forget to check your spelling. Remember the size of your letters can show whether a character is shouting or whispering.

Step 5: Add detail to your cartoon- Now go back to your characters and add any extra details, such as facial expression, movement lines, shadowing on the floor. You can draw in the background for each frame.

Step 6: Now add colour - Use felt-tip pens to go over your pencil add some colour and check the details.

Now that you have a process for developing a cartoon strip you can make any short story into a cartoon. You could use it to give someone a message or tell a joke.



Health & Wellbeing Challenge

Sleep is important!



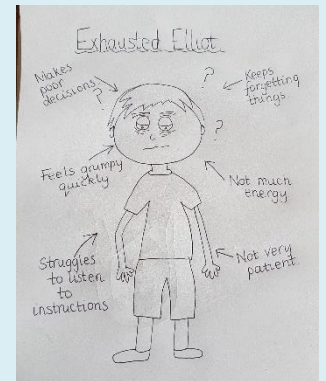
Have you ever had a bad night's sleep before? How did you feel the next day? Did you behave or look any different to normal? Can you remember any reasons which caused you to struggle to sleep?

Did you know that children between the ages of 6 and 12 years need between 9 and 11 hours of sleep each night?

[Go to this website](#) which has lots of information about sleep and why it is important. **Work through the tabs at the side** to find out about why sleep is important, how it works, the impact of sleep on our body and mind, sleep tips and why we dream. There are also different **printable puzzles and activities** which you could complete. *(If you don't have a printer, you could take a screenshot and complete them in Paint or Photo Editor.)*

Create and draw two cartoon characters: one who has slept well and one who hasn't. Come up with alliterative names which sum up their sleep state e.g. Tired Tim, Dreamy Darla or Bouncy Bella. Label each character to show the key characteristics of their sleep state – use information from the [‘Sleep and you’ section](#) of the above website to help you.

Super stretcher: Create a comic strip using your characters which shows the impact a lack of sleep can have and [ways to sleep better](#).



Keep a sleep diary over the next week, [this pdf sleep diary](#) has lots of different things which you can track as well as sleeping tips. This will allow you to look at your bedtime routine, what you eat or drink and how you feel each day of the week.

Social Studies Challenge



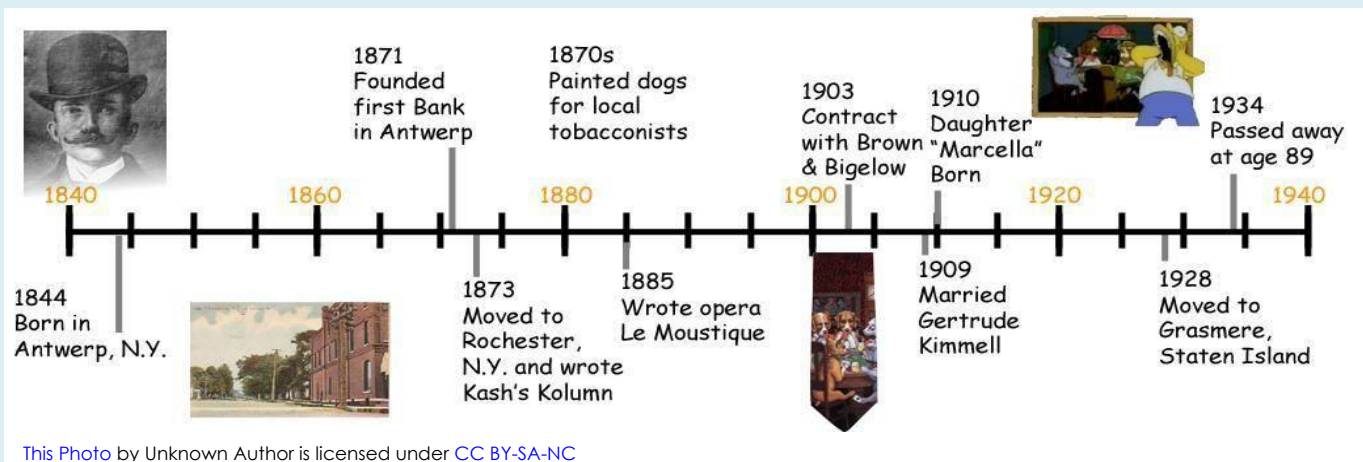
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Timelines

A helpful way to learn facts and important information about people is to create a timeline.

Select an important or influential person to research
 As you research record important information or dates about the person.
 Then, place the dates and events in a timeline to show your understanding of important facts in chronological order.

Like this example on Cassius Coolidge, and American Artist :-



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Challenge yourself to give as much detail as possible - support your timeline events, include illustrations/photos if appropriate. The example above could be expanded considerably by giving further information to the reader.

Expressive Arts Challenge



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Cup Song: Liza Jane

This is a cup song from NYCOS. You will need two plastic cups or something hand size you can easily tap on the floor.

You can access a demonstration of this song here-

<https://youtu.be/Sdg6NgcS9a8>

Liza Jane

I know a girl that you don't know

L'il Liza Jane

Way down south in Baltimore,

L'il Liza Jane

Oh Eliza, L'il Liza Jane

Oh Eliza, L'il Liza Jane

Actions:

Seated on the floor with a cup (*or other object) on the floor one on each side.

- (with right hand) - tap right cup*, tap right knee, , tap right knee
- Repeat (cup*, knee, hand, knee)
- pick up right cup* with right hand, swap cup into left hand
- cross over with right hand, pick up left cup* and place both down on the floor.
- (with left hand) – tap left cup*, tap left knee, clap right hand, tap left knee
- Repeat (cup*, knee, hand, knee)
- pick up left cup* with left hand, swap cup into right hand
- cross over with left hand, pick up right cup* and place down on the floor.
- (with right hand) tap right cup*, tap right knee, clap left hand, (with left hand) tap left knee, tap left cup*, tap left knee, clap right hand, (with right hand) tap right knee, pick up right cup*, change to left hand, crossover pick up left cup, put down both.
- (with left hand) tap left cup*, tap left knee, clap right hand, (with right hand) tap right knee, tap right cup*, tap right knee, clap left hand, (with left hand) tap left knee, pick up left cup*, change to right hand, crossover pick up right cup, put down both.

CHALLENGE:

If there is another person around you could play the game and sing the song as a round – the second person starts after four beats