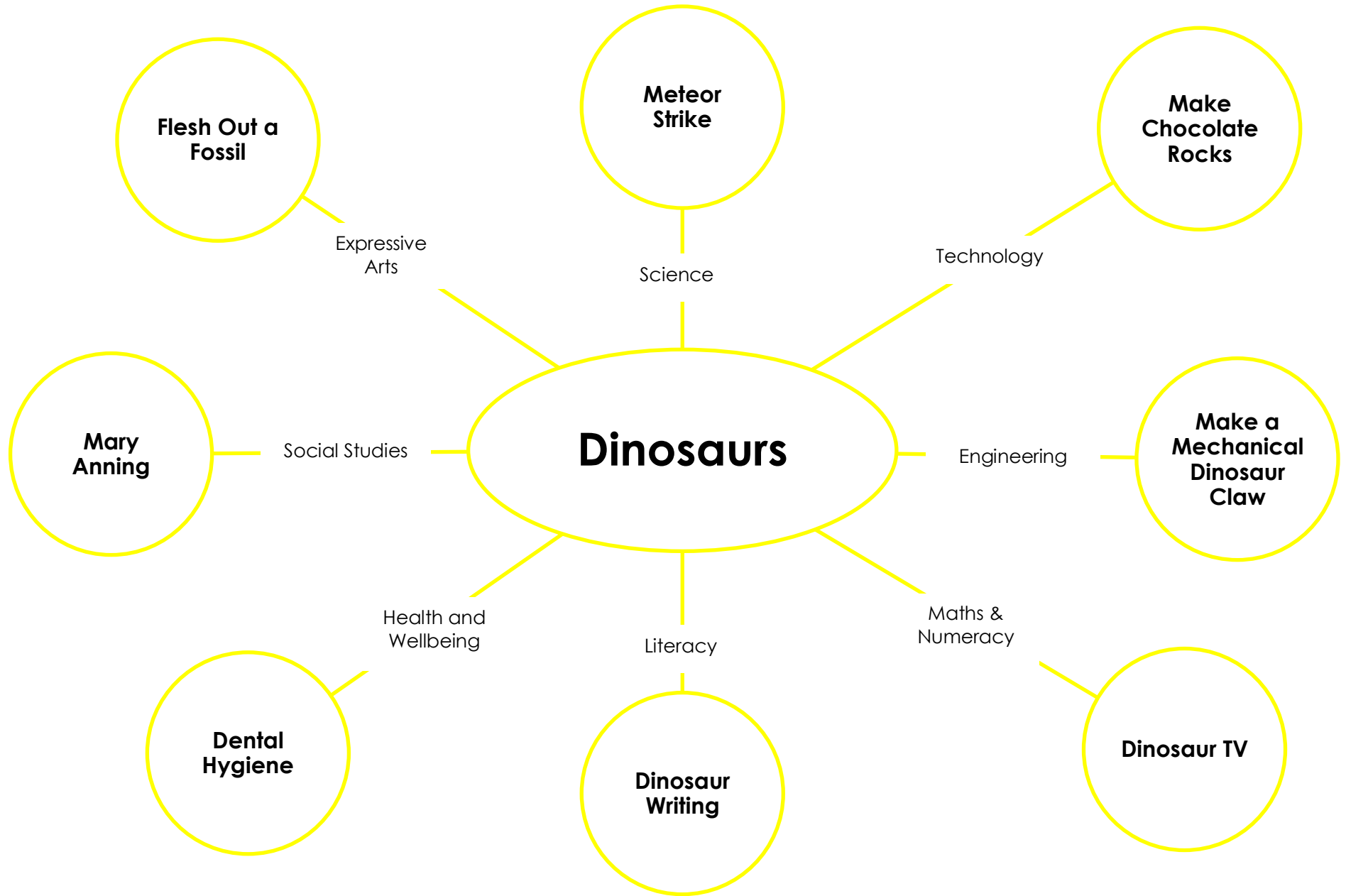




Learning from Home



Science Challenge



Meteor Strike

The extinction of dinosaurs is thought to have been caused when a meteor struck the Earth millions of years ago. How big do you think the meteor would have had to be and how fast would it have had to be travelling to wipe out all the dinosaurs on our planet?

Today, we are going to investigate the size of crater (bowl shaped hole on a surface) a moving object makes when it hits another surface. Our results might help us understand what could have happened to cause dinosaurs to die out.

Our Investigation: How does the height a ball is dropped from affect the size of the crater it produces in sand?

You Will Need:

Tub / basin containing sand (or light soil), ruler, ball (tennis ball size), recording table, pencil

Method:

1. Place the tub containing sand on the floor.
2. Using a ruler, measure a height of 10cm from the surface.
3. Drop the ball from 10cm above the sand.
4. Carefully take the ball out of the sand.
5. Measure the size/diameter of the crater.
6. Record the results in the results table below and smooth the sand back down.
7. Repeat this twice at the same height.
8. Then, repeat at different heights.



Image from www.clipart-library.com

Height (cm)	Size of the Crater (cm)			Mean crater size (Add up Drop 1, 2 and 3 then ÷ 3)
	Drop 1	Drop 2	Drop 3	
10				
20				
30				
40				
50				
60				

Before you begin **make a prediction** as to what will happen...

Evaluation

1. What went well in your experiment?
2. How could you improve it?
3. Why do you think it is important to repeat the drops from the same height?
4. How did the height affect the size of the crater? What might this mean for a meteor travelling thousands of miles before striking the Earth?

Activity adapted from Twinkl



Technology Challenge



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Make Chocolate Rocks

The Jurassic Coast stretches for 96 miles. The site spans 185 million years of geological history, covering the Triassic, Jurassic and Cretaceous periods. The fossilised remains of the various creatures that lived here have been preserved in the rocks. The Jurassic Coast is made of four main sedimentary rocks (sandstone, limestone, clay and chalk)

- **Sedimentary** (Created from sediment layers under the sea – e.g., Sandstone, Limestone, Chalk, Shale)
- **Metamorphic** - Sedimentary (or igneous) rock that has been changed by heat and pressure underground – e.g., Marble, Slate
- **Igneous** - Formed from molten rock from underground forced up to the surface e.g., through volcanoes e.g., Granite, Basalt

Today's activity explores the rock cycle and uses chocolate to demonstrate how the different rock types (sedimentary, igneous and metamorphic) form.

Adult Support Required!

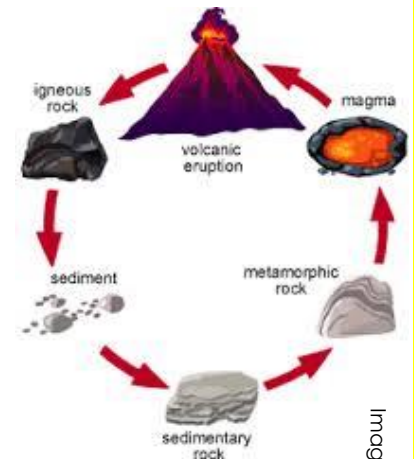
You Will Need: 50g grated milk or dark chocolate, 50g grated white chocolate, 2 cups, cling film

Sedimentary

1. Line a cup with a piece of cling film, place 2-3 teaspoons of grated milk or dark chocolate onto it.
2. Place 2-3 teaspoons of grated white chocolate on top.
3. Repeat with a second layer of milk or dark chocolate.
4. Fold the cling film over the top.
5. Push down hard with fingers until the chocolate feels like it has stuck together. Pull out gently and unwrap.
6. Break the rock in half to reveal the layers.
7. Put a some of this rock to one side and use the rest to make metamorphic rock.

Metamorphic

1. Start with a sample of chocolate sedimentary rock (see above).
2. Put the sample into the square of cling film and seal it in.
3. Squeeze the chocolate into a sphere.
4. Massage the sphere with fingertips until the heat from your fingers begins to melt the surface of the chocolate sphere.
5. The longer and harder you squeeze the stronger the finished rock will be. The *heat* and *pressure* change the shape of the rock. If you squeeze too hard you just get a slimy mess of melted chocolate covering the cling film – keep the sphere shape.
6. Allow to cool for a couple of minutes.
7. Unwrap and use a metal or plastic spreading knife to cut through the sphere.



Igneous **Note: Ask a grown up to do this part**

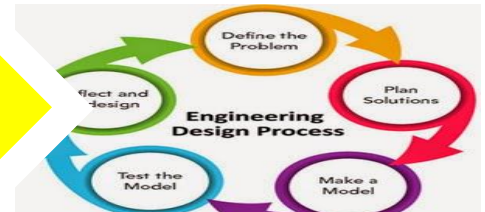
1. Start with a sample of chocolate sedimentary rock (see above)
2. Put the sample into some cling film and seal it in.
3. Squeeze the chocolate into a sphere.
4. Dip the sphere in its cling film into a cup of hot water (or tea) for 30 secs to a minute depending on size.
5. Leave to cool.
6. Unwrap and use a metal or plastic spreading knife to cut through the sphere.

Now taste and feel the differences in the internal structure and strength of the different types of rocks.

Activity from <https://pstt.org.uk/>

Images from www.clipart-library.com

Engineering Challenge

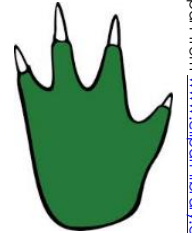


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Make a Mechanical Dinosaur Claw

Your challenge today is to make a moving dinosaur claw.

If we think about our own hands, when the muscles in our forearms contract, they pull on the tendons in our fingers which make them bend. This is the same thing that will happen when you pull on the strings of your mechanical claw.

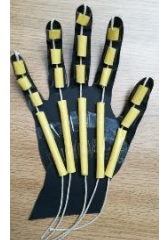


Clipart from www.clipart-library.com

Try relaxing your hand and gently squeezing your arm below the wrist. You might notice your fingers moving as you pull on the tendons!

You Will Need:

- Card
- Straws (paper or plastic) or uncooked pasta tubes
- String / thread
- Tape and scissors
- Pens / pencils / other craft materials to decorate



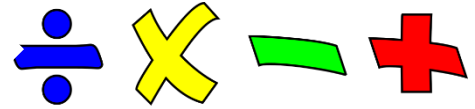
Note: Dinosaurs aren't thought to have had 5 fingers like us, but you can still use your hand as a template if you wish.

Instructions:

1. Draw a claw template or draw around your hand with your fingers out straight. Lengthen the fingers and finish them with a point to make them look more claw like.
2. Cut out the outline of your hand / claw and make pencil marks where the joints should be. (Check the points where your own fingers bend) Slightly bend the card at each joint to make it easier for the finger to curl later.
3. Tape a piece of string slightly longer than the hand to the back of one of the claws.
4. Cut a straw into three small pieces and one long piece which roughly match the size of the finger sections. (Or collect your pasta tubes) Thread the string through each section and tape them down. Try it out before moving on to the other claws.
5. Repeat this for the other claws, using only two pieces in the thumb. Be sure to test as you go and make sure you don't tape down any part of the string.
6. Decorate if desired.

Activity adapted and photos from www.instructables.com

Maths & Numeracy Challenge



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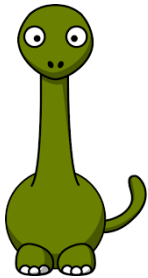
Dinosaur TV

These are the times of some dinosaur themed television shows which are on today.

1. Fill in the blanks in the table.



Name of Show	T.V channel	Start Time	End Time	How long did it last?
Pterodactyl Time	Dino TV	12:15 pm	1:00 pm	
Big Brontosaurus	Dino TV	14:10	15:00	
Terrifying T Rex	Jurassic Channel		15:15	1 ¾ hours
Critical Chase	Dino TV	16:10	5:00pm	
Jurassic Food	Jurassic Channel		19:20	30 minutes
Ferocious Dino's	Fascinating Facts		9:00pm	1 ¼ hours
Sleepy Stegosaurus	Dino TV	21:00	22:50	



Images from www.clipart-library.com



- Which 2 shows are on at the same time?
- How many minutes did Jurassic Food and Ferocious Dino's last for altogether? Write this down in minutes and in hours.
- Which shows lasted for 50 minutes each?
- Add 2 programmes of your own – they can be real or made up. One show should last for 75 minutes and the other should be written in both 12-hour and 24-hour time.

Literacy Challenge



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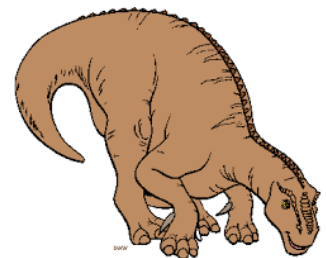
Dinosaur Writing

Today, you have an opportunity to do some writing based around the theme of dinosaurs. You may choose the genre.

Here are some prompts – choose one to base your writing on. You should write at least a page and share your work with a grown up when you have finished.



- A.** During a fossil digging expedition, you find the bones of a brand new, never discovered dinosaur. Try to describe the bones you found and provide a name for this newly discovered dinosaur.
- B.** In a very different world, you and your friends are dinosaur riders. You have the ability to tame any dinosaur you like and control it. Write a story about one of your adventures.
- C.** Dinosaurs went extinct thousands of years ago. Imagine if they never went extinct. Would it be possible for humans to live alongside dinosaurs? What would the world look like today if dinosaurs still roamed the Earth?
- D.** If scientists could clone dinosaur DNA, and bring back dinosaurs – Do you think they should? What are the reasons for and against bringing dinosaurs back to life?
- E.** What is your favourite dinosaur, and why? You could even draw a picture of this dinosaur to go with your text.



Activity adapted from www.imagineforest.com



Health & Wellbeing Challenge

Dental Hygiene

Which physical features do you think about when you think of dinosaurs?

You might think of them as being really big – many were, although there were also small dinosaurs too. You might think of scaly, rough skin or feathers. You might also think about their big, long jagged claws but we also think about their teeth.

There were 3 types of dinosaurs: **carnivores**, which ate meat, **herbivores** which ate plants and **omnivores** which ate meat and plants.

There were no shops millions of years ago when dinosaurs were alive, so they had to hunt or scavenge for their food. There were no other options...and there were also no processed foods or sweets, which is a good job because if a dinosaur lost its teeth then it would have died as it wouldn't have been able to eat anything.

Humans are also omnivores as we can choose to eat both plants and meat. Not many of us hunt or scavenge for our food nowadays as we have shops...and processed foods, including sugar. We need to brush our teeth to keep them clean and healthy. We wouldn't die if our teeth fell out, but it would limit what we could eat, and it also wouldn't make us look so good. Plus, having toothache is really painful!

Click on the link to watch a short video about the importance of brushing our teeth

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

Do you make sure you brush your teeth twice a day? If you don't then try to from now on.

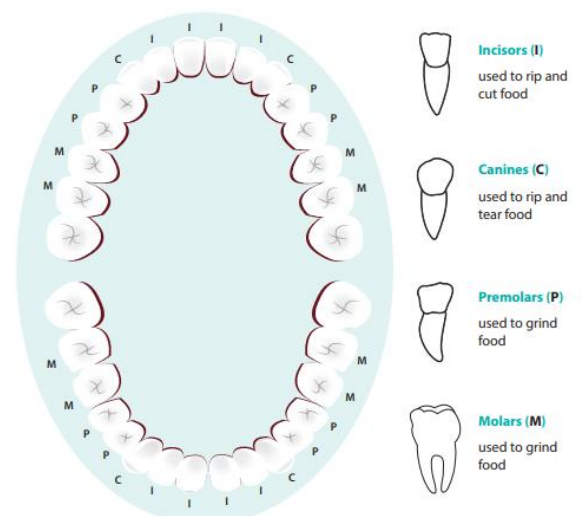
Over our lifetime, we get 2 sets of teeth. We start to get our first teeth, or 'milk teeth', from about 6 months old. These start to fall out from about 6 years old as our adult teeth start to grow in.

We have 20 milk teeth and there are 32 teeth in a full adult set. Have a look at the picture which

shows you an adult mouth. Did you know that different types of teeth do different jobs? We have teeth for ripping and tearing meat (like a T Rex), but we also have teeth for grinding down vegetables and plants. (Like a diplodocus)

Count your teeth by feeling them with the tip of your tongue, how many do you have?

Image from www.dentalhealth.org



Social Studies Challenge



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Mary Anning

Mary Anning was born just over 200 years ago, in the seaside town of Lyme Regis, Dorset, UK, in 1799.

Young Mary and her brother, Joseph, would join their father, looking for fossils at the beach and selling them to tourists. After their father died, Mary and Joseph continued fossil hunting.

In 1811, they found a strange 5.2-metre-long skeleton! Back then, people believed that this creature must have travelled from far away, so scientists simply thought it was a crocodile. They eventually realised it was an ancient species, a dinosaur, and it was named **Ichthyosaurus** – meaning ‘fish lizard’.



Mary continued to scour the beach and crumbling cliffs with her dog Trey, and in 1823 she made another important discovery – the first ever **Plesiosaur** skeleton! This long-necked sea creature looked so odd that many people thought it was fake at first! Mary made many other discoveries, such as a **Pterodactyl**, and **coprolites** – fossilised poo – which helped her work out what dinosaurs ate!

Mary died in 1847. She was well-known for her discoveries but wasn't taken seriously as a scientist back then because she was female, and she came from a poor family. Some of her findings were even stolen and claimed by some of the male scientists she worked with. Thankfully, today, Mary is recognised as a pioneer in the field of **paleontology** (the study of fossils), and she is celebrated as the greatest ever fossil hunter.

Click on these links to find out more about Mary, watch a video and play a game about her life.

- <https://www.bbc.co.uk/bitesize/topics/zd8fv9q/articles/zf6vb82>
- <https://www.natgeokids.com/uk/discover/history/general-history/mary-anning-facts/>

Information adapted from www.natgeokids.com
Images from BBC Bitesize



Chat to a grown up about the following:

- Do you think Mary was treated fairly by other scientists when she was alive? Why?
- Do you think it was important that Mary came from a poor background? How might things have been different if Mary's family had been wealthy?

People think the Loch Ness Monster may be a plesiosaur!

Expressive Arts Challenge







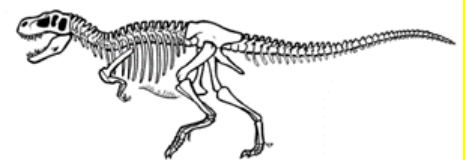
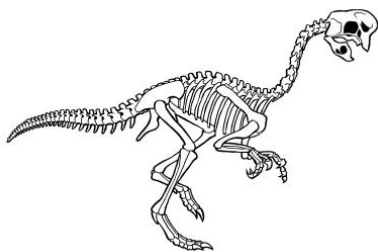
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Flesh Out a Fossil

Your Task today is to draw your own version of a dinosaur based on the starting point of its skeleton.

You will Need: paper, pencil, colouring pens / pencils, skeleton template (see link below)

	<p>After finding and reconstructing a dinosaur skeleton, scientists often work with artists to recreate what the animal may have looked like in real life.</p>
	<p>1. Using a pencil and on top of your skeleton template, outline where you think the dinosaur's muscles and flesh might have been. Add a body. Use short, light strokes to create shadows to make your dinosaur look more lifelike. Use firmer strokes to refine the dinosaur's outline, eyes, nostrils, and claws. Tip: Pretend a light is shining from the upper left corner. Where would the shadows be?</p>
	<p>2. Add shading. Add skin texture, feathers, or scaly skin then colour your dinosaur. Tip: Use your imagination! Some dinosaurs had scaly skin; some had feathers. Fossils don't tell us anything about skin colour or patterns, so pick a colour (or colours) you think this animal may have had.</p>
	<p>3. Add further details.</p> <p>Why not follow the steps to flesh out another dinosaur skeleton. Visit https://www.amnh.org/learn-teach/curriculum-collections/dinosaurs-activities-and-lesson-plans/flesh-out-a-fossil to print out larger versions of dinosaur skeletons that you could flesh out.</p>



Activity and images from <https://www.amnh.org/>