CREST AWARDS | SUPERSTAR

Warm or Cold

Organiser's Card

About the activity

This activity is designed to get children thinking about warm and cold-blooded creatures.

Dina Digg needs some help working out whether dinosaurs were cold-blooded or not. Can the children work it out by doing some tests?

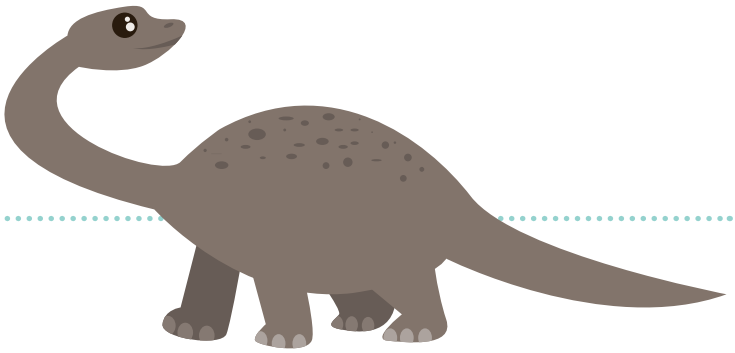
Through this activity you will support your group to:

- Explore whether dinosaurs were warm or cold-blooded
- Investigate the difference size makes to how quickly things cool down
- Complete a grid to compare warm and cold-blooded theories
- Design a dinosaur fact sheet

Kit list

To test temperature change of water in different sized bottles they will need:

- Different sized plastic bottles with lids
- Measuring jugs
- Warm water
- Thermometer and stop watch or data logger



What to do

1. Read the activty card to familiarise yourself with the activity
2. Check the kit list and ensure you have the correct resources.
3. Set the scene by discussing the story with the children.
4. Help children gather the resources.
5. Encourage children to talk together about their ideas and carry out their own investigations.
6. Discuss the differences between warm-blooded and cold-blooded animals.
7. Encourage children to read scientists' arguments for and against dinosaurs being cold-blooded.
8. Help children to recognise that more tests may be needed to reach a firm conclusion.

Things to think about

Scientists argue about whether dinosaurs were warm or cold-blooded. Cold-blooded animals lie in the sun to warm up. They need to stay warm for as long as possible. One theory says that dinosaurs could have been cold-blooded because very large animals are able to stay warmer for longer than small ones. Evidence from this investigation appears to support this theory.

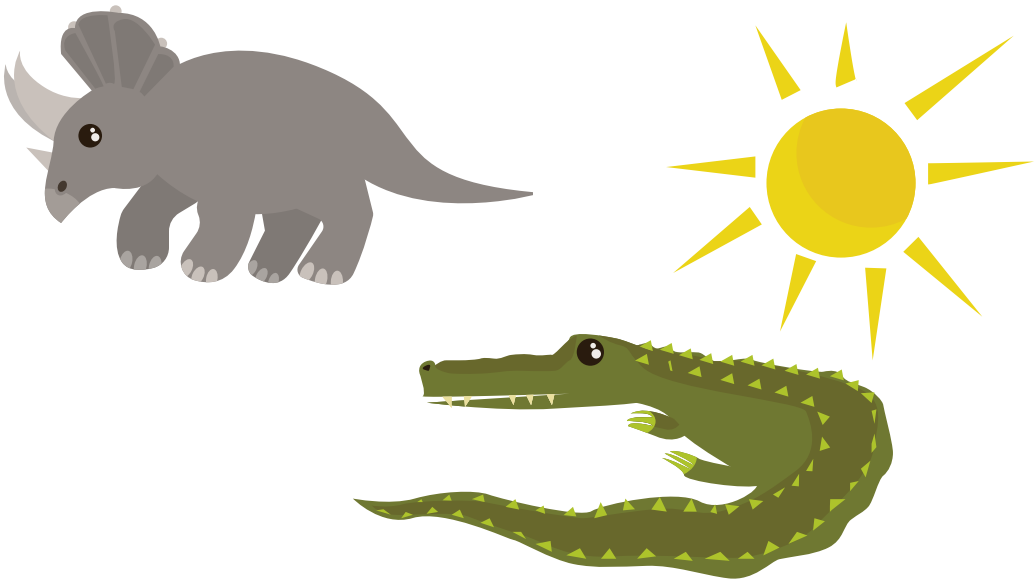
However, there are other theories. Encourage children to research these theories. The current view seems to be that some dinosaurs were cold-blooded and some warm-blooded.

Keywords

- Dinosaurs
- Water
- Temperature
- Warm-blooded
- Cold-blooded

Watch out!

If children do not use very hot water there are no safety issues with this investigation.



CREST AWARDS | SUPERSTAR

Warm or Cold

Activity Card

No one has ever seen a live dinosaur but scientists know a lot about them.

Some ate meat, some only plants. They laid eggs. Dinosaurs lived between 230 and 65 million years ago. They lived on dry land.

Scientists have worked out all these dinosaur facts from looking at fossils.

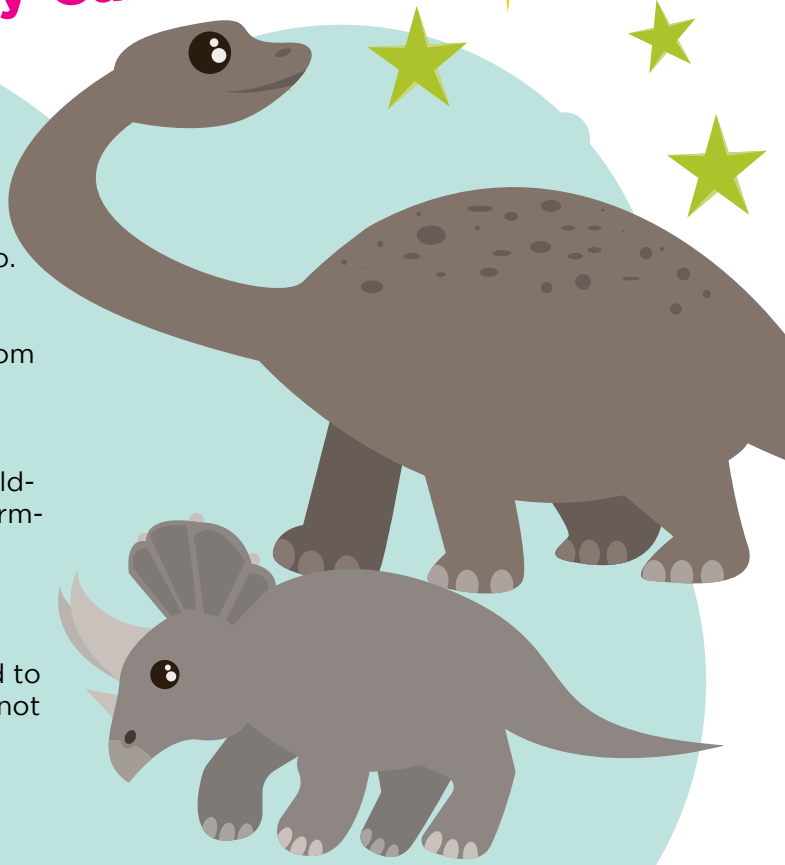
But one dinosaur fact is still puzzling Dina Digg.
For many years scientists believed dinosaurs were cold-blooded animals, like modern reptiles, rather than warm-blooded like birds and mammals.

Now they are not so sure.

Cold-blooded reptiles like crocodiles and lizards need to lie in the sun to warm up. Warm-blooded animals do not have to do this.

Time to become a dino detective...

Cold-blooded animals get warm by lying in the sun. The size of an animal's body makes a difference to how quickly it cools down again. Many dinosaurs were very big. If dinosaurs were cold-blooded, would being big be a problem? Or would being big be helpful? Do big things cool down faster or slower than smaller ones?



Your challenge

Help Dina Digg to explore if size matters.

Discuss

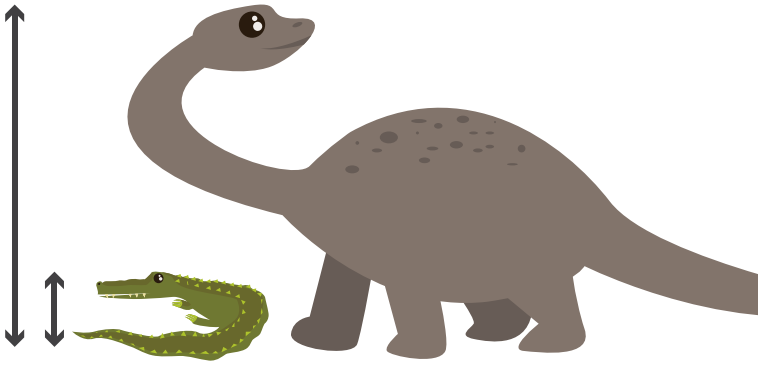
You can't get a real dinosaur but you can use large and small plastic bottles to make model dinosaurs.

If you fill the bottles with warm water you can see how long they take to cool down.

What will you measure in your test?

How will you record your results?

Getting started



You could start by looking at how quickly water cools in different size bottles:

To do the tests you will need:

- Different sized plastic bottles with lids
- Measuring jugs
- Warm water
- Thermometer and stop watch or data logger

You might want to use a table like this one:

Volume of bottle	Temperature at the start	Temperature after ? minutes	Temperature after ? minutes	Temperature after ? minutes

You may want to record your findings in a table like this:

	Evidence	Evidence	Evidence	Need to know more about
1	Birds could have descended from dinosaurs.	Birds are warm-blooded. This could mean that dinosaurs were warm-blooded not cold-blooded.	Dinosaurs were descended from reptiles. Reptiles are cold-blooded.	Could there have been both warm-blooded and cold-blooded dinosaurs?
2	The climate was warmer.	Plenty of sunlight would help cold-blooded animals warm up. So dinosaurs could have been cold-blooded.	It wasn't warm everywhere on Earth.	
3	Dinosaurs were very big.	Big things cool down.	Not all dinosaurs were big.	
4	Dinosaurs had scales.	Animals with scales, such as lizards, are... This could mean that dinosaurs are...	Some dinosaurs had feathers. Animals with feathers are...	If an animal has a layer on the outside like feathers or fur, can it get warm by lying in the sun? Try to investigate this.
5	Anything else you can think of?			

Can you find other scientific evidence to help you decide if dinosaurs were cold-blooded or not?

Test your ideas

Do big things cool down more quickly than smaller ones?

Does the shape of the container seem to make a difference?

Were there problems with your tests? How could they be improved?

Does your evidence support the argument that dinosaurs were cold-blooded?

Share your ideas

Why not help complete a dinosaur fact sheet for Dina Digg?

Use the internet or reference books to find out more.

You could design some different physics investigations to test your ideas.