

Objectives	Creating Craters	Extra Information
<p>L.O:</p> <p>To Understand What May Have Killed The Dinosaurs.</p> <p>To Understand How Craters Are Created.</p>	<p>STARTING ACTIVITY – (10 minutes) GROUP DISCUSSION – Ask the class if they know what happened to the Dinosaurs. Acknowledge any answer to do with fossils or oil, but tell the class that the Dinosaurs became extinct, following an Extinction Event.</p> <p>Explain to the class that Extinction is when a Species dies and there are none left to reproduce. Then explain that an Extinction Event is an event in history in which many Species go Extinct over a short period of time and due to similar reasons.</p> <p>Tell the class that Dinosaur is a term used to describe many many different Species that were alive millions years ago. However approximately 65 million years ago, something happened and most died out over a relatively short amount of time. Explain to the class, that whilst it’s impossible to be 100% certain, we currently believe that the cause of this Extinction Event was a Massive Asteroid.</p> <p>MAIN TEACHING – Creating craters (45 minutes) Tell the class that hundreds of Asteroids or Meteorites hit Earth’s atmosphere every year, but almost all go unnoticed. Tell the class that they will be performing a simple experiment to determine what properties the Asteroid that caused the Extinction of the Dinosaurs probably had.</p> <p>GUIDANCE – This experiment can be formalised by asking the class to write down predictions and referring back to previous lessons on the Scientific Method.</p> <ol style="list-style-type: none"> ➊ Fill your tray or container with your powder at least 2cm deep. ➋ Fix a ruler to the tray or box vertically, this will be used to measure the height of our drops. ➌ Smooth the powder so that the surface is as flat and level as possible. ➍ Select an object to drop, note its mass and size. ➎ Drop one of your objects, making a note of the height of the drop. ➏ Carefully remove the object without disturbing the powder. 	<p>Materials Required:</p> <ul style="list-style-type: none"> ▶ Deep Baking Tray or Container ▶ Powder (e.g. Flour or Sand) ▶ 2 x Rulers ▶ Range of Balls of Differing Mass and Size (e.g. Marble, Golfball, BB Pellet, Ball bearing etc.) <p>Key Words:</p> <ul style="list-style-type: none"> ▶ Dinosaur ▶ Extinct ▶ Extinction Event ▶ Species ▶ Mass/Massive ▶ Asteroid ▶ Meteor/Meteorite ▶ Crater ▶ Velocity ▶ Acceleration ▶ Energy <p>Success Criteria:</p> <ul style="list-style-type: none"> ▶ I understand what an extinction event is and what may have killed the dinosaurs. ▶ I can perform an experiment to determine what causes craters of different sizes . ▶ I understand that by looking at a crater it can be determined how much energy caused it.

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	<ol style="list-style-type: none">7 Record the size and shape of the crater created.8 Smooth the powder again.9 Repeat steps 4-8 until you've dropped all of your objects.10 Repeat steps 4-9, but dropping the objects again from a different height.11 Repeat steps 4-10, but adding additional force by moving it sideways or down as you drop it. Be mindful of those around you and don't throw the objects. <p>GROUP DISCUSSION – Discuss with the class their findings. Ask the class to suggest, based on their findings, what caused larger Craters.</p> <p>The class should have noted the following:</p> <ul style="list-style-type: none">▶ For the same Mass, dropping from a higher height causes a larger Crater.▶ For the same height, a greater Mass causes a larger Crater.▶ For the same height or Mass, adding additional force changes the size and shape of the Crater. <p>Explain to the class that the greater the speed (or Velocity) of an object and the greater the Mass of the object, the greater the Energy it will have on impact with another object (such as Earth). By dropping an object from a greater height, you're allowing it to gain a greater Velocity due to Accelerating under Gravity.</p> <p>PLENARY - (5 minutes) GROUP DISCUSSION – Ask the class if they can think of any Craters they see on a regular basis. Tell the class that everytime they look at the moon, those darker patches are actually giant Craters, and that by looking at the size of these Craters, scientists are able to work out the Energy of the Asteroid or Meteor that caused them, and then estimate their Velocity and Mass.</p>	