JURASSIC LARK - Part 1 - Physics

Objectives

L.O:

I Understand
The Relationships
Between The Smallest
And Biggest
Dinosaurs.

The Scale and Size of Dinosaurs

STARTING ACTIVITY – (10 minutes)
Explain to the class that we will be building a scale and comparing the weights and sizes of land dinosaurs. Have the empty scale stuck up on the wall ranging from 'smallest' to 'biggest'.

Begin by using a tape measure to have the class measure their own heights and compare with each other, then stand in order of smallest to tallest. Now compare the smallest height to the smallest person in history and the tallest person to the tallest person in history.

The smallest person to ever be verified by the Guinness Book of World Records, stands at 21½ inches tall.

Whilst **the tallest person** in recorded history towers over him at 8 foot 11.1 inches.

MAIN TEACHING – (25 minutes)
Ask the class if they are familiar with SI units and scientific notation. Explain that SI (Systeme Internationale or International System) units are units like metre (m) or kilogram (kg), that are the units used in sciences across the world. If a figure is shown in feet or stone it should first be converted into the appropriate SI unit before being used in any scientific formulas.

As a class go over some common conversions between non-SI units and SI units. Using the conversion table below, have volunteers come up with different lengths to convert into the SI unit of length, metres.

- **Kilometre =** Metre x 1000
- **Centimetre =** Metre / 100
- **Mile =** Metre x 1609.34
- **Foot =** Metre / 3.281

After the class is comfortable with converting to metres, explain that scientific notation is a method of writing very large or very small numbers to make them easier to read and that in this class we would be dealing with very big numbers.

Tell the class that a 1 with fifty 0s would be incredibly hard to read. It would be easy to lose count of the 0s and make mistakes in calculations.

Tell the class that instead that number would be written: **1 x 10^50**.

Extra Information

Materials Required:
- Paper for the scale
- Printed objects for the scale
- Blue Tack
- Pens
- Paper

Key Words:
- Metre
- Centimetre
- Mile
- Foot
- Parvicursor Remotus
- Velociraptor
- Stegosaurus
- Tyrannosaurus Rex
- Titanosaurus
- Argentinosaurus

Success Criteria:
- I understand what scale is.
- I understand what scale is and I can place different objects on a scale of size.
- I understand what scale is, can place different objects on a scale of size and can convert between common units of length.

Objectives	The Scale and Size of Dinosaurs	Extra Information

This means 1 multiplied by 10, fifty times. If any are having trouble with this idea use smaller examples such as 1 x 10^2 being the same as 1 x 10 x 10, the 2 meaning the number of times you multiply by 10. Explain that an easy way to think of this is that the number next to the 10 means the number of places you move the decimals point to the right.

(Maybe figure of 1 x 10^4 = 1.0000 with an arrow showing the movement of the decimal point)

As a class write the following numbers in scientific notation:

10000 = 1x10^4
300 = 3x10^2
120000 = 1.2 x 10^5 but acknowledge 12x10^4 as being technically correct but not proper notation

MAIN TASK – (25 minutes)
Printing out and using the images included in this lesson plan split the class into three groups and give them two random dinosaur images each, then ask them to work together to figure out where they think their objects go on the scale.

Begin by placing the Average Joeosaurus (human) in the middle of the scale.

Average Joeosaurus - 6 foot tall (A human)

- **Parvicursor Remotus - 39cm tall / 1.3 foot long**
  Whilst the Parvicursor Remotus is the smallest of dinosaurs (even smaller than a chicken) it did have long legs in comparison to its body meaning it was most likely a very fast runner. But some people think it is so small that it cannot be considered a dinosaur. We think it can be whatever it wants to be.

- **Velociraptor - 2 foot tall / 2 metres long**
  Unlike the large, scaled raptors seen in the movies, real Velociraptors were actually feathered creatures the size of a turkey. But they could still do considerable damage with a huge claw on their feet and could run at high speeds.

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- **Stegosaurus - 14 foot tall / 9.1 metres long**
  The Stegosaurus was a herbivore, which means it ate plants. But it could certainly stick up for itself with massive bony plates along its back that acted as armour and big spikes on the end of its tail which it used to defend itself.

- **Tyrannosaurus Rex - 17 foot tall / 12.4 metres long**
  The T-Rex is probably the most recognized dinosaur, with its wide jaws for chomping meat, dagger-like teeth (some of which were 30cm long), strong legs that helped it run at around 20 miles an hour and of course its tiny little arms.

- **Titanosaurus - 65 foot tall / 39.6 metres long**
  Titanosaurus were not only rather large but also very heavy, in fact some of the heaviest creatures to have ever walked the earth. Fossils of this big dinosaur have also been found all over the planet, including Antarctica.

- **Argentinosaurus - 70 foot tall / 36.5 metres long**
  Discovered in (you guessed it) Argentina, the Argentiniasaurus is one of the biggest creatures to have ever lived, weighing as much as 10 African Elephants and stretching as long as a football field is wide.

PLENARY – (5 minutes)
During the lesson prepare a space on the wall to display the scale (ensuring there is enough space for the items in lesson 2). Once the main activity is completed, stick each of the items up on the display and ask the class to share fun facts about each item that they learned during the lesson.

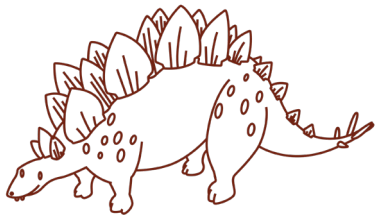
Use this opportunity to see if the class has any questions regarding any points from this lesson.

The Scale and Size of Dinosaurs

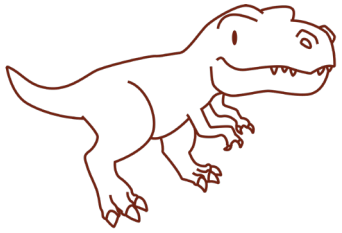
Parvicursor Remotus

Velociraptor

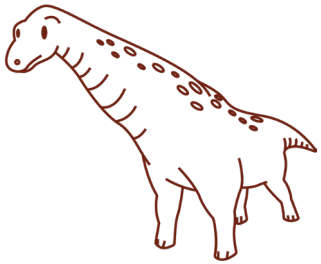
Stegosaurus



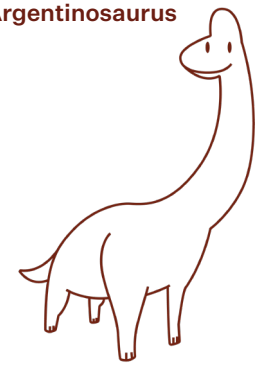
Tyrannosaurus Rex



Titanosaurus



Argentinosaurus



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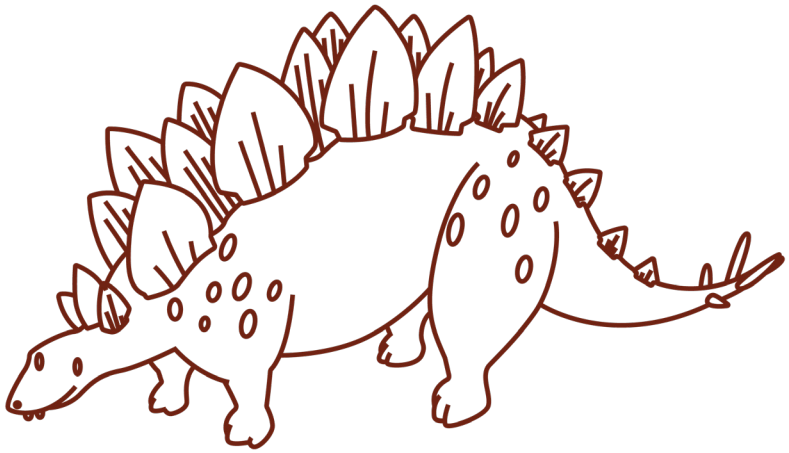
Parvicursor Remotus

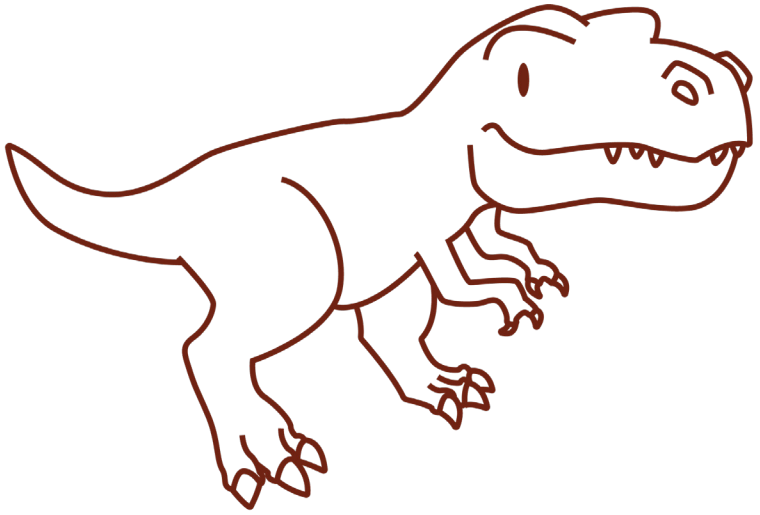
Velociraptor

The Scale and Size of Dinosaurs

Stegosaurus

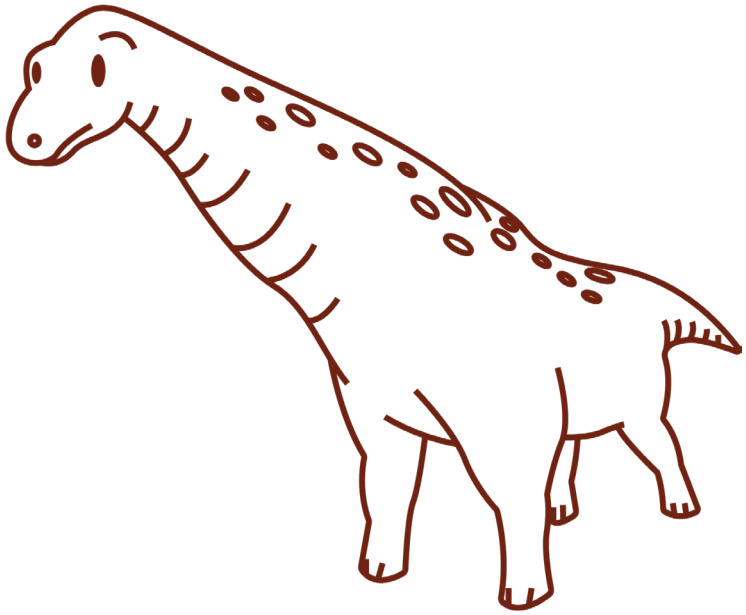


Tyrannosaurus Rex



The Scale and Size of Dinosaurs

Titanosaurus



Argentinosaurus