

# Modelling the planets

Solar System – Wk 2, lesson 2

WC 23.04.12

# Title: Modelling the planets

- **Objective: Use string to demonstrate the relative distances of planets from the sun and use some data to practice graph writing**
- I must be able to use the data to identify how far a planet is from the sun and demonstrate this with string
- I should also use the data to draw a graph
- I could use the data to draw some conclusions about whether the orbit time is related to orbit distance

# Modelling the planets

- Today we are going to use a piece of string to model how far each of the 8 planets is from one another and from the sun
- How might we do this?
  - The string is knotted every metre for 40 m
  - Each metre represents one unit from the data
  - GROUPS – Whichever planet you did your homework on – you will work out the distance along the string for that planet
  - You will then give the rest of the class a little explanation about your planet.

The sun is about 108 times larger than the Earth



# The planets are different sizes

Jupiter



Saturn



Uranus



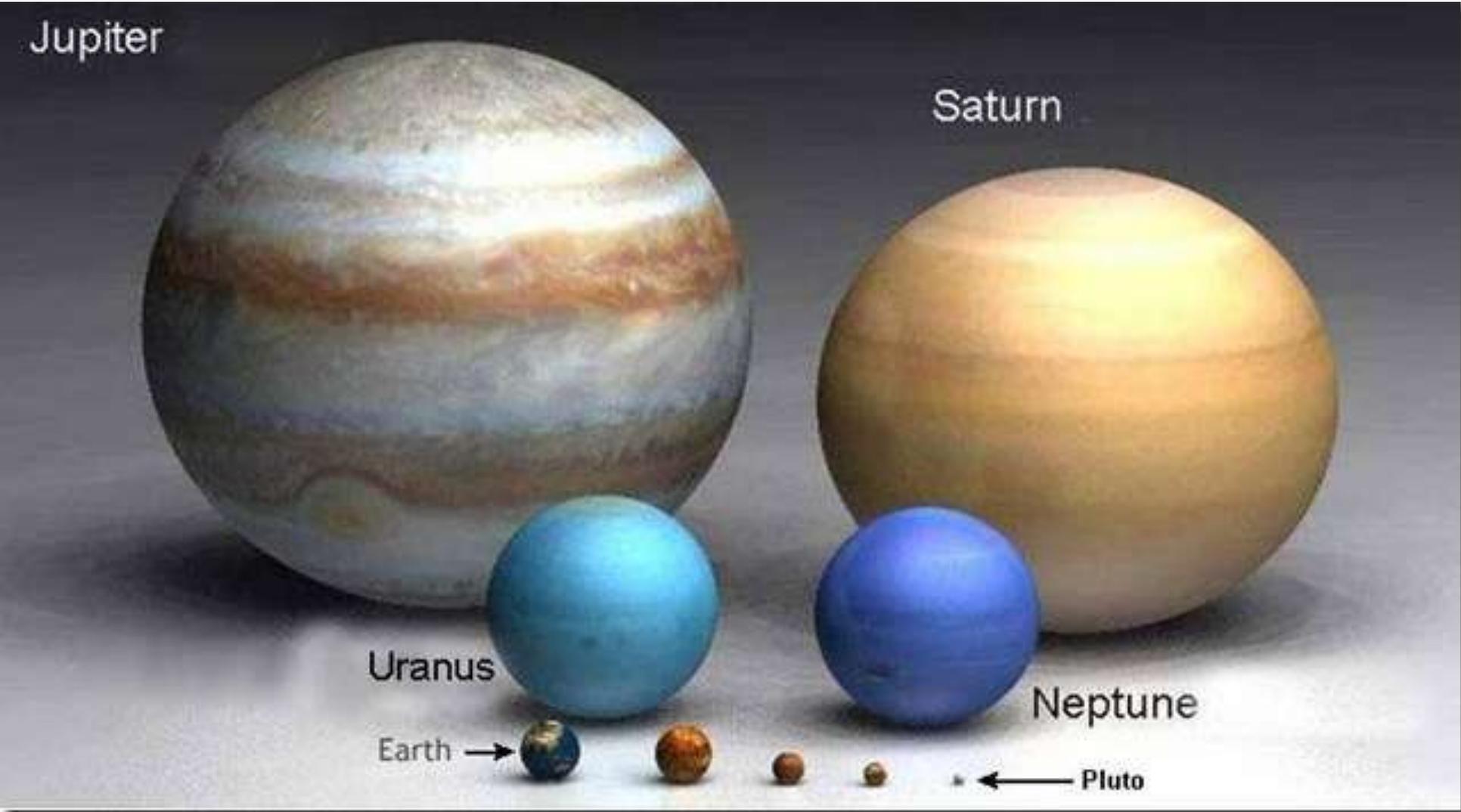
Neptune



Earth



Pluto



Use the data to draw a bar graph showing the diameter of the 8 planets

Planet	Orbit M km	Orbit-AU	Orbit- Year	Diameter K km	Mass 10x24 kg	Gravity	Density	Moons	Rings
Sun	0	0	0	1390	2,000,000	28	7.6	9	0
Mercury	57.9	0.39	88 d	4.88	0.33	0.38	5.41	0	0
Venus	108	0.72	225 d	12.1	4.9	0.91	5.25	0	0
Earth	150	1.0	365 d	12.76	6.0	1	5.52	1	0
Moon	0.38	1.0	28 d	3.48	0.074	0.17	3.3	0	0
Mars	228	1.52	687 d	6.79	0.64	0.38	3.9	2	0
Jupiter	778	5.2	11.9 y	143.0	1900	2.53	1.3	58	1
Saturn	1425	9.52	29.5 y	120.5	570	1.14	0.7	30	8
Uranus	2870	19.2	84 y	51.1	87	0.9	1.3	21	11
Neptune	4490	30	165 y	49.5	100	1.14	1.7	8	4
Pluto	5910	39.5	248 y	2.35	0.013	0.08	2	1	0

# Using your graph and the data....

- Which is the largest planet and which is the smallest?
- How many times bigger than the smallest planet is the largest?
- Is there any relationship between the orbit distance and the orbit time?

# Plenary

- What were your conclusions from the data?
- Quiz questions...writing down in silence.



WICK



WICK

# Question 1

How many hours does it take for the Earth to rotate once on its axis?

## Question 2

Another way of describing  
365  $\frac{1}{4}$  days is?

## Question 3

What is at the centre of the Solar System?

# Question 4

Is the sun a star?

## Question 5

When the Northern Hemisphere is tilted towards the Sun, what season is it in Britain?

# Question 6

What orbits the Sun?

## Question 7

At night is the UK facing towards or away from the Sun?

## Question 8

When the northern hemisphere is tilted away from the Sun, what season is it in Britain?

## Question 9

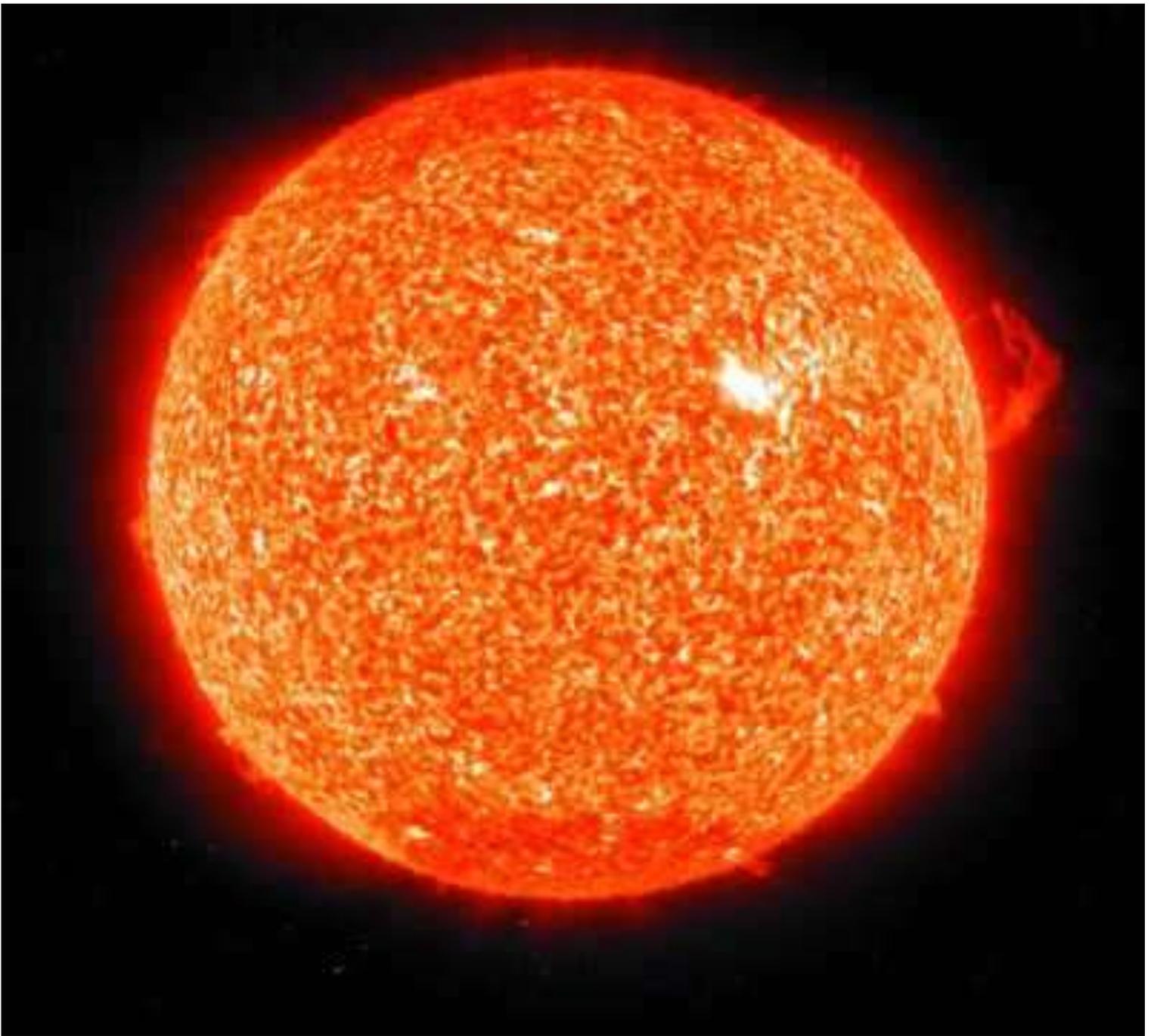
What is the name of the Earth's natural satellite?

## Question 10

What is the invisible line that runs around the middle of the Earth?







The \_\_\_\_\_ orbits the Sun every \_\_\_\_\_ days (or 1 \_\_\_\_\_). The Earth also rotates fully every \_\_\_\_\_ hours which gives us our \_\_\_\_\_ and \_\_\_\_\_. When it is dark in the UK on the other side of the earth it is \_\_\_\_\_. The Moon orbits the Earth every \_\_\_\_\_ – this is also called a \_\_\_\_\_ month.

365 $\frac{1}{4}$     lunar    daylight    Earth  
year    28 days    night    day    24

The **Earth** orbits the Sun every **365¼** days (or **1 year**). The Earth also rotates fully every **24** hours which gives us our **day** and **night**. When it is dark in the UK on the other side of the earth it is **daylight**. The Moon orbits the Earth every **28 days** – this is also called a **lunar** month.

$365\frac{1}{4}$	lunar	daylight	Earth	
year	28 days	night	day	24