

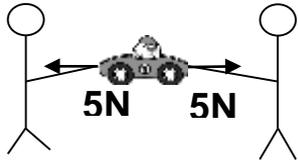
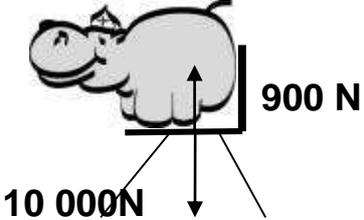
## Alien Homework Exercise 1

A force is balanced when two equal forces push or pull in the opposite direction, like a draw in a Tug of War.

An unbalanced force is when one force is larger than the other. The object will then change its speed or the direction it is moving in.

Look at the pictures. Decide whether the force is *balanced or unbalanced*.

Write what will happen in each picture.

	<ol style="list-style-type: none"><li>1. This man is jumping through the air. Are the forces acting on him balanced or unbalanced?</li><li>2. Which 2 forces are acting on the man?</li><li>3. What happened to the man after the photo was taken?</li></ol>
	<ol style="list-style-type: none"><li>4. Are the forces acting on the car balanced or unbalanced?</li><li>5. In which direction will the toy move?</li></ol>
	<ol style="list-style-type: none"><li>6. Are the forces in this picture balanced or unbalanced?</li><li>7. What will happen to the chair?</li><li>8. What will happen to the hippo?</li></ol>

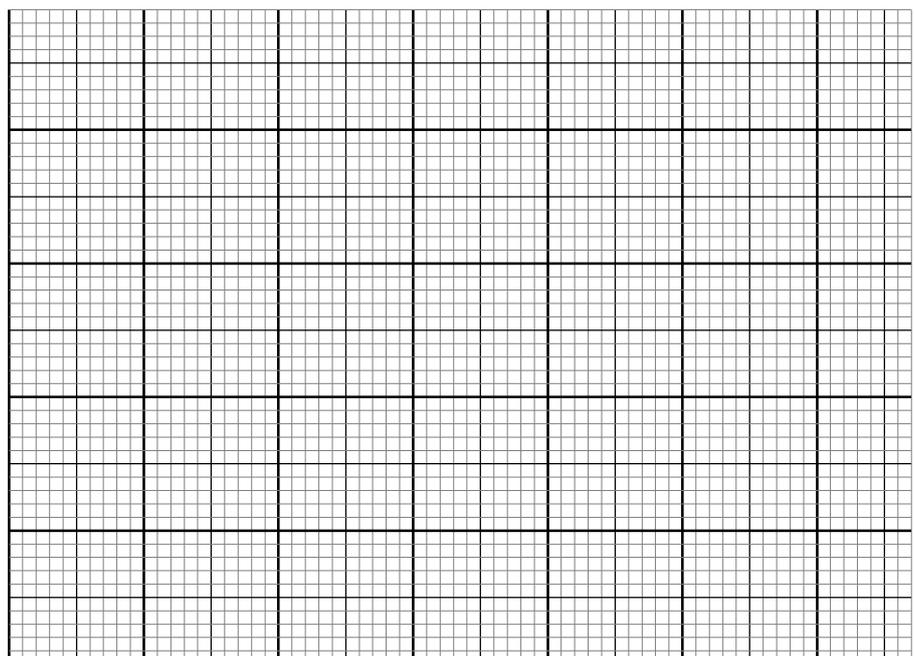
## Alien Homework Exercise 2

Use your knowledge of gravity, mass and weight to answer the following questions.

1. A boy has a mass of 50kg. What is his *weight* in Newtons?
2. A girl puts her school bag on a set of scales. The reading is 10kg. What is the *weight* of her school bag?
3. A teacher weighs a science textbook. The Newton balance reads 25N. What is the *mass* of the book?
4. The force of gravity on a car is 10 000N. What is the *mass* of the car?
5. Use the following information to calculate the weight of a person, with a mass of 60kg on different planets:

Place	Gravity on planet (N/kg)	Weight (N)
Earth	10	
Jupiter	23	
Mars	4	
Saturn	11	
in deep space	0	

6. Now use this information to draw a bar graph



### Alien Homework Exercise 3

1. Complete the following sentences using all or some of the words below;

**Mass, weight, kilograms, Newtons, force, upthrust**

\_\_\_\_\_ measures how much material an object is made of. It is measured in \_\_\_\_\_. Weight measures the \_\_\_\_\_ of gravity on an object. Because weight is a \_\_\_\_\_ it is measured in \_\_\_\_\_.

2. Can you explain why your **weight** would be less on the moon (compared to the earth)?
3. Can you explain why your **mass** would be the same on earth and the moon?
4. On the picture of the earth below, can you draw what would happen to the ball if each man threw the ball up into the air?



5. Gravitational field strength is different on different planets. Why?

## Alien Homework Exercise 4

Choose a planet in our Solar System which you would like to know more about. You cannot choose Earth.

Using books, the internet or any other sources of information, find out five facts about that planet.

Design a postcard from that planet. You must have an interesting front cover to the postcard that suits your planet.

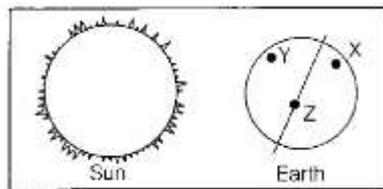
Write your postcard to someone on Earth as if you visiting the planet you have chosen. You must use your five facts in your postcard.



## Alien Homework Exercise 5

Select the **correct** statement from each of the following:

1. The Earth moves round the sun OR the moon
2. Earth spins in a clockwise OR anticlockwise direction
3. It takes 1 day OR 1 month for the Earth to spin on its axis
4. It takes 1 month OR 1 day for the Earth to go round the sun.
5. Look at this diagram of the sun and the Earth. Decide which point would be in:  
a) the day      b) the night      c) explain each of your answers



6. Look at this diagram of the movement of the Earth around the sun. On the poles, how long does a day and a night last for?

