Boffins 6

100M. Answer these questions:

1) **A force can either be a p…. or a p….**
2) **Name four things that a force can do to an object.**
3) **What is force measured in.**
4) **A force can often be measured with a s…….. b…….. (or newton metre).**
5) **If two forces come together and Force A is bigger than Force B, what happens? (Imagine a tennis racket hitting a moving tennis ball).**

(Two points for each correct answer).

Points: ……

Javelin Some of these statements are true; some are utter rubbish! Write 'true' or 'false' beside each of these statements:

1) **Rough surfaces slow things down quite a bit.**
2) **Smooth surfaces speed things up.**
3) **Rough surfaces speed things up.**
4) **Smooth surfaces slow things up slightly.**
5) **Friction produces heat.**
6) **Friction makes us slide.**
7) **Friction gives us grip.**
8) **Air resistance slows things down.**
9) **To travel slower through the air, you need to be streamlined.**
10) **To travel faster through the air, you need a larger surface area.**

(One point for each correct answer)

Points: …….

200M. Which is right?

1) **Gravity is a force of (attraction / repulsion) between two bodies.**
2) **The Earth's gravity (pushes us away from / pulls us toward) the earth.**
3) **The force of gravity depends upon (the size of the object / the time of day).**
4) **On the Moon, the gravity is (twice that of Earth / 1/5 that of Earth).**
5) **In space you would feel (no gravity / strong gravity).**
6) **To fight gravity, an eagle's wings provide a force in the (opposite / same) direction.**
7) **The ground provides a (downward / upward) force to balance gravity.**
8) **In the swimming pool, if the upthrust is the same as the force of gravity we would (float / sink).**
9) **Two forces which are equally matched are called (balanced / weighted) forces.**
10) **In water, the upthrust/gravity balance is called (friction / buoyancy).**

Discus. Read the passage. Choose the words that are missing, and write them in the correct order. (Don't write out the passage!)

STEEL, LESS, FOAM, GRAVITY, AMOUNT, DISPLACED, MORE, DENSITY, DENSE, DISPLACES

We've noticed that objects appear to weigh 1)…… in water than they do on land. This is because the water pushes up and equals the force of 2) …….., which is pulling down. In water, the upthrust is much greater than it is in air. The strength of the upthrust depends on the 3) …….. of water that has been pushed out of the way, or 4) ……. by the object. A larger object pushes away or 5) ……..lots of water, so the upthrust is large. A heavy ship can sail on the water because it displaces lots of water. A small, light pebble displaces very little water, so it sinks. Not all large things float. Large logs float because wood is less 6) ……. than water. Small stones sink because they are 7) ……. dense than water. 8) …….. is how much material is packed into the space inside the object. If you had two shapes of exactly the same size; one of steel and the other of foam, the 9) ……. would sink and the 10) …… would float because of the difference in their densities.

(One point for each correct answer) Points: ……..

<u>Weight Lifting</u> Choose just one question to answer. Write a SCIENTIFIC answer.

1) **If two tug-of-war teams pull with equal strength, what will happen? Why? (2 points)**

2) **In magnets, which poles a) attract b) repel each other? (4 points)**

3) **You can float on your airbed. What would happen if ten friends sat on the airbed with you? Why? (6 points)**

4) **Why does a football fly when you kick it? (8 points)**

5) **Why can't you jump out of an aeroplane and fly/float to the ground? (10 points)**

Points: ……

<u>Steeple Chase</u> Answer the questions. SCIENTIFIC ANSWERS, PLEASE! Don't forget, if you get one wrong, you must stop marking!

1) **Name two ways in which forces can work.**
2) **What is force measured in?**
3) **What might you use to measure force?**
4) **What sort of surface would you need to reduce friction?**
5) **What happens if you rub your hands together?**
6) **What two forces are acting upon you in the swimming pool?**
7) **How do bats beat the force of gravity to stay in the air.**
8) **When you run, what holds you back?**
9) **What shape should a boat be to travel easily through the water?**
10) **What would you have if two opposite forces were equal?**

(One point for each correct answer)

Points: …….

Total Points: ……..