E10 Mains plug Name..... Date.....

- Complete the following sentences. Use the words in brackets below.

1 The UK mains …… is about 230 volts.

2 Mains electricity can …… if it is not used safely.

3 A mains cable has two or three inner cores of copper because copper is a good …… .

4 A mains cable has outer layers of …… , because it is a good …… .

5 An electric 13A plug has a plastic case because plastic is a …… insulator.

6 The pins of the plug are made from …… because it is a good conductor.

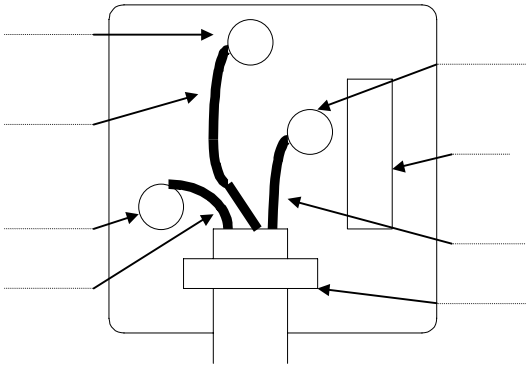
7 Appliances with a metal case are usually …… for safety.

8 The cable should be …… in the plug by the cable grip.

(good kill brass supply conductor secured insulator earthed plastic)

- Label the diagram of the plug using the terms given in bold print.

blue wire
brown wire
green / yellow wire
fuse
cable grip
earth terminal
live terminal
neutral terminal



- Complete the table below. Show all of your working. Available fuses are **3A, 5A** and **13A**.
  Use the following equation and learn it.

power = potential difference x current
(watt, W) (volt, V) (ampere, A)

	appliance	power / W	p.d. / Volts	current / A	suitable fuse / A
9	lamp	60		0.25	3
10	iron	750	230		
11	kettle	2 300	230		
12	TV		230	0.5	

F3 Force and acceleration Name ..... Date .....

- Complete the following sentences. Use the words in brackets below.

1 The forces acting on an object may ……. each other out i.e. balanced forces.

2 An object resting on a bench exerts a downward force on the ……. .

3 The bench will exert an equal and opposite force on the object because the body is ……. .

4 Balanced forces will have no effect on the ……. of a body, which must remain the same.

5 If the forces acting on a body do not cancel each other out, an ……. force remains.

6 An unbalanced force will make a stationary object begin to move in the direction of the ……. .

7 An unbalanced force acting in the same direction as the motion of the body will make it ……. up.

8 An unbalanced force in the opposite ……. to the motion of the body will make it slow down.

9 The ……. the size of the unbalanced force the faster the object will speed up or slow down.

10 The greater the mass of a body the greater the force need to give the object an ……. .

(stationary cancel movement force acceleration greater unbalanced direction bench speed)

- Look at the following diagrams.

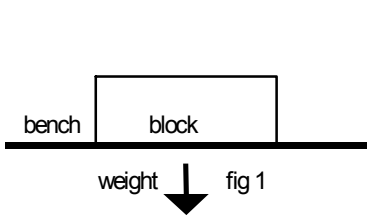


fig 1

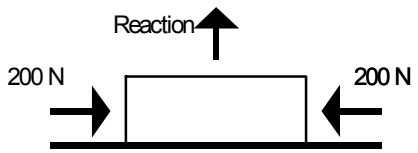


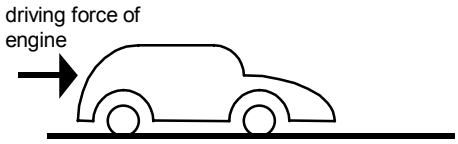
fig 2

11 Add an arrow to fig 1 to show the direction of the Reaction force from the bench.

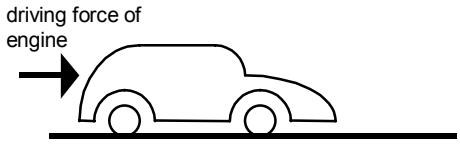
12 The block is stationary so what can you say about the two forces? .....…….....

13 In fig 2 the block now has two extra sideways forces acting.
(a) Add an arrow to fig 2 to show the direction of the missing force.
(b) By considering all the forces acting on the block decide whether they are balanced. .....…….....

- Look at the following diagrams.



Car starting from rest



Car running at maximum speed

14 Add two arrows to each diagram to indicate the weight and the reaction.

15 Add an arrow to the maximum speed diagram to indicate the air friction (drag) force.

16 The car is running at its maximum speed so there is no acceleration. Are the forces balanced? .....

S2 Comets Name ..... Date .....

- Complete the following sentences. Use the words in brackets below.

H1 A comet has an ……. which is far from circular.

H2 Comets are much closer to the ……. at some times and that is when they can be seen.

H3 To stay in orbit at a particular ……. a body must move at a particular speed .

H4 Planets and satellites are smaller bodies which orbit around a larger ……. .

H5 The further away an orbiting body is the longer it takes to make a ……. orbit.

H6 Communications satellites are usually put into a ……. orbit, high above the equator.

H7 In a geostationary orbit they are always in the same position when viewed from the ……. .

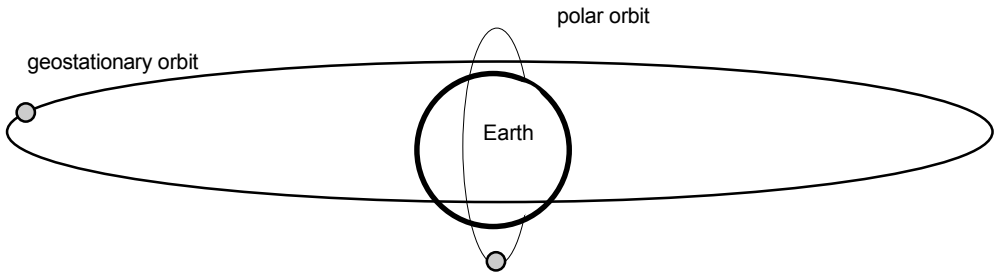
H8 In a geostationary orbit the ……. moves around the Earth at the same rate as the Earth spins.

H9 Monitoring satellites are usually put into a low ……. orbit.

H10 In a low polar orbit the Earth spins beneath them and they scan the whole Earth in a ……. .

(orbit distance satellite complete body day Sun geostationary Earth polar)

- Look at the following diagram of two typical orbits.



H11 A satellite in a stable circular Earth orbit moves at a constant speed because a single force is acting.

(a) What is the direction of this force? .....

(b) Draw the force acting on each satellite.

(c) What is the effect of this force on the velocity of the satellite? .....

.....

(d) Which satellite has the largest force acting on it? .....

(e) A geostationary orbit takes 24 hours. Suggest with an explanation, one use for such a satellite.

.....

(f) A polar orbit takes about 90 mins. Suggest with an explanation, one use for such a satellite.

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H12 Explain why Halley's comet is only seen for a short time approximately every 75 years.

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