Name: Answer key /54

Year 7 Physics

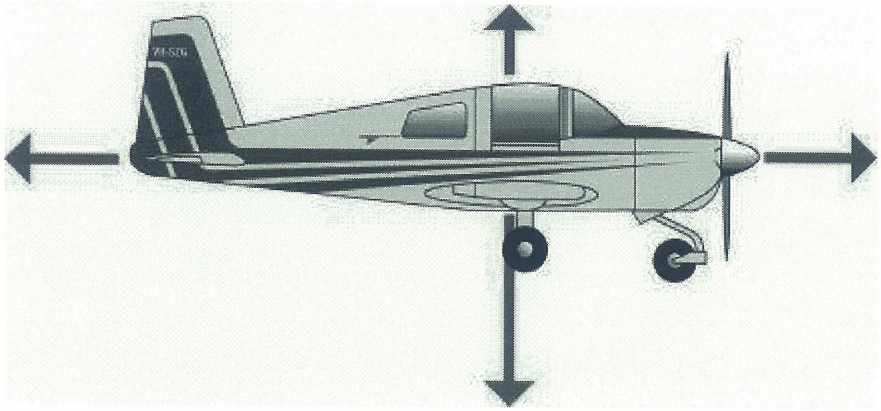
Mid Topic Test

Multiple Choice

Please circle the correct answer on table below

1.	A	B	C	**D**
2.	A	B	**C**	D
3.	A	B	**C**	D
4.	A	**B**	C	D
5.	A	**B**	C	D
6.	A	**B**	C	D
7.	**A**	B	C	D
8.	**A**	B	C	D
9.	A	**B**	C	D
10.	A	**B**	C	D
11.	A	**B**	C	**D**
12.	A	B	C	**D**
13.	A	B	**C**	D
14.	A	B	C	**D**
15.	**A**	B	C	D
16.	A	**B**	C	D
17.	**A**	B	C	D
18.	**A**	B	C	D

1. The aircraft shown below has four forces acting on it.



As a result of these forces, it will:

A Move to the right
B Move to the left
C Move up
D Move down

2. A car moving in a straight line at constant speed:

A is accelerating.
B is decelerating.
C has no overall force acting on it.
D must be on a downhill slope.

3. Trolleys are used to shift furniture because rolling surfaces produce:

A more friction than sliding surfaces.
B no friction.
C less friction than sliding surfaces.
D lots of heat which helps the furniture to move smoothly.

4. A lubricant, such as oil:

A produces friction.
B reduces friction.
C increases friction.
D is a force caused by two surfaces moving over each other.

5. It is more slippery walking on ice than walking on a footpath. This is because:

A there is more friction between the ice and your shoes.
B there is less friction between the ice and your shoes.
C your shoes get wet.
D you weigh less on ice than on the footpath.

6. Weight is:

A the same as mass.
B a force due to gravity on an object.
C a period of time.
D the amount of matter in an object.

7. Select the ***incorrect*** sentence about magnets.

A All magnets are permanent.
B All magnets have a north and a south pole.
C The north pole of one magnet is attracted to the south pole of another magnet.
D The north pole of one magnet will be repelled by the north pole of a second magnet.

8. Select the response that is ***incorrect***.

A A positively charged object is attracted to another positively charged object.
B A positively charged object is attracted to a negatively charged object.
C A negatively charged object can be discharged by losing electrons.
D A negatively charged object is attracted to a neutral object.

9. A plastic rod was rubbed with a piece of cloth and is now positively charged. This means that it has:

A gained electrons from the cloth.
B lost electrons to the cloth.
C gained protons from the cloth.
D lost protons to the cloth.

10. The size of a force can be measured using a spring. The greater the weight force, the greater distance a spring will be stretched when an object is hung from it. If a 50 N weight stretches a particular spring by 6 cm, then a 100 N weight would be likely to stretch the same spring by:

A 6 cm
B 12 cm
C 15 cm
D 18 cm

11. Choose the statement that is TRUE.

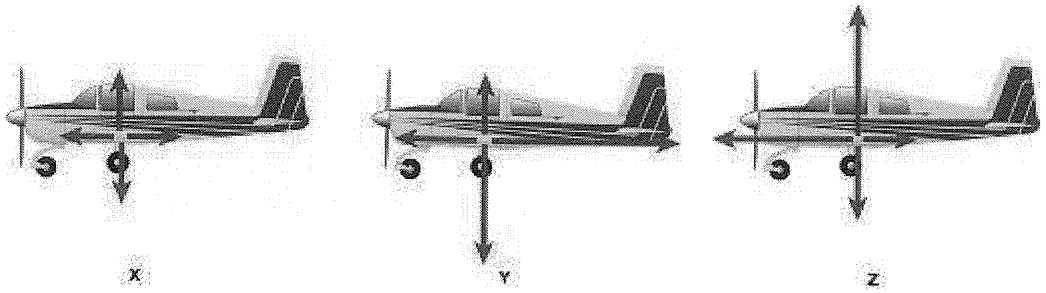
A If the forces acting on an object are balanced, then it is not moving.

B You supply a force when you squeeze a tube of toothpaste.

C Inertia describes the tendency of an object to change its motion.

D The less mass an object has, the greater its inertia.

12. For an aircraft to successfully take off, the lift force provided by its wings must be greater than the aircraft's weight force pulling it down. The thrust provided by its engine must also be greater than any drag forces pulling it backwards. To fly in the air, forces are balanced. A successful landing is the reverse process of the launch.



The order of diagrams that demonstrates the combination of force pairs required for an aircraft take-off, cruising at altitude, and a safe landing is:

A X, Y, Z

B Y, X, Z

C Z, Y, X

D Z, X, Y

13. Jake and Brittany set up an electromagnet by coiling a wire 25 times and connecting it to a power pack. They tested to see how many paper clips their electromagnet would pick up each time they changed the voltage of the power pack. Their results are shown below.

Voltage used	Number of paper clips lifted
1.5 V	7
3.0 V	16
4.5 V	20
6.0 V	25

An appropriate conclusion for this experiment is:

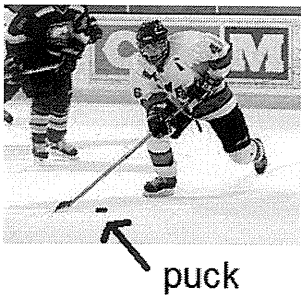
A Paper clips are very light.

B The more coils in an electromagnet, the more paper clips are picked up.

C The greater the voltage supplied to an electromagnet, the more paper clips it will pick up.

D Paper clips are magnetic.

14. Analyse the following and rate them in order from those that would experience the most friction to those that would experience the least friction.



i) a couch being dragged across carpet.

ii) a waxed pair of skis travelling on snow.

iii) an ice-hockey puck hit across the ice.

iv) a child's tricycle being pulled along the footpath.

A iv, ii, iii, i
B ii, iii, iv, i
C iv, iii, i, ii
D i, iv, ii, iii

15. Choose the statement that is **TRUE**.

A An elephant has greater inertia than a mouse.
B A person inside a bus that is turning left will lean to their left side.
C Gravity is a contact force.
D Weight is measured in kilograms.

16. A positively charged particle has more protons than electrons. A negatively charged particle has more electrons than protons. A neutral particle has equal numbers of each. If an atom of sodium has 14 electrons and 11 protons, then it is:

A Positively charged
B Negatively charged
C Neutral
D Unable to specify from this information

17. If you were to stand on a pair of scales at a height of 1000 km above the surface of the Earth:

A the reading would be the same as it is on the Earth's surface.
B the reading on the scales would be greater.
C the reading on the scales would be lower.
D there would be no reading on the scales.

18. A leaf and a pebble of the same mass are dropped from the same height at the same time. Which would hit the ground first?

A The leaf.
B The pebble.
C They would both hit the ground at the same time.
D There is not enough information to answer this.

Short Answer

1. Classify each of these actions as a **push, pull** or **twist** force. (5 marks)

a) Sweeping the floor. push or pull

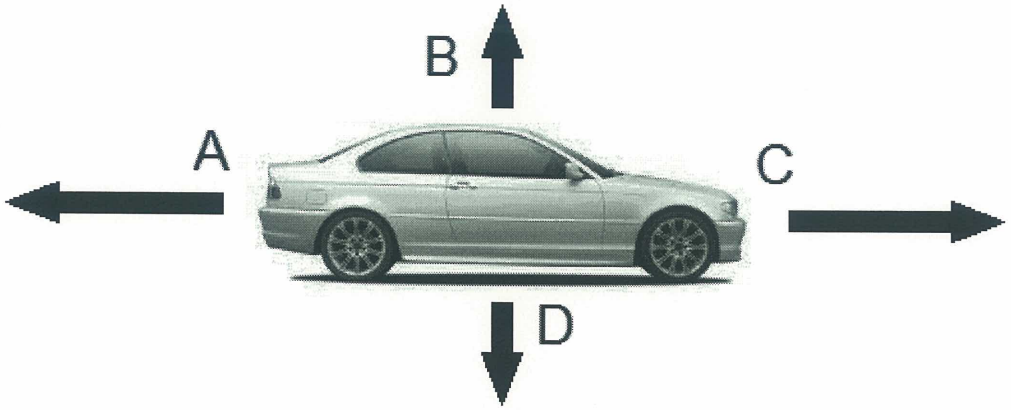
b) Dragging a heavy sports bag along the floor. pull

c) Throwing a cricket ball. push

d) Hitting a golf ball. push

e) Tightening a screw using a screwdriver. twist

2. This car is moving forward at a constant speed. Forces B and D acting on the car are equal in size.



a. Draw the arrows on the car below to show it is accelerating (speeding up) (2 marks)

b. Draw arrows on the car below to show it is decelerating (slowing down) (2 marks)

3. Fill in the missing words using the words given below. (12 marks)

Gravitational, spring, slow, friction, attract, weight, inertia, neutral, stop, electrons, mass, newton, kilograms, repel, surface, protons, field, pole, newtons, positively, shape, negatively, direction, pull

A force is measured using a spring balance by using a unit called the newton.

The tendency for an object to retain its current state of motion is called its inertia.

When pushing a fridge across the floor, you need to overcome the force of friction. This force exists whenever one surface slides over another.

A force of gravitational attraction exists between your body and the Earth.

Your weight is a downwards force due to gravity and is measured in newtons.

mass is the amount of matter in an object. It is measured using kilograms.

A magnet has a north and a south pole.

Like magnetic poles will repel while unlike magnetic poles will attract.

An object that loses ~~pro~~ electrons becomes positively charged.

An object that gains electrons becomes negatively charged.

An object that has the same number of electrons and protons is neutral.

The region around an object in which a non-contact force can be experienced is called a field.

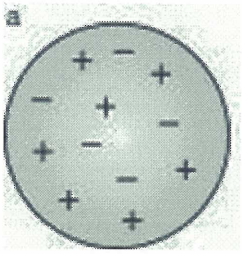
A force can change an object's motion by making an object start moving, stop moving, change direction, change shape, speed up or slow down.

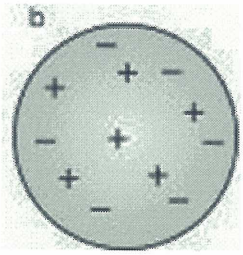
A force can be a push, a pull or a twist.

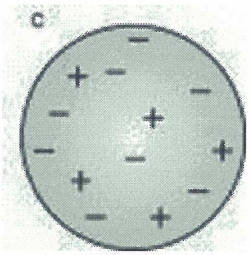
0.5 for each

4. Atoms have small pieces inside called protons and electrons. The charge an atom has depends on how many electrons and protons it has.

Write down the correct charge (negative, positive or neutral) under each atom. (3 marks)







a: positive (1)

b: neutral (1)

c: negative (1)

5. Here are two pairs of magnets. Under each picture, write down whether the magnets attract each other or repel each other. (2 marks)

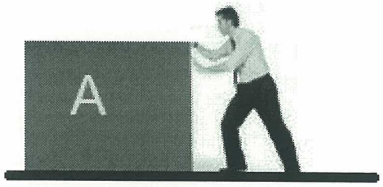
attract (1)

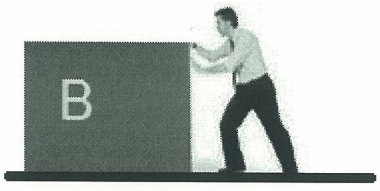
repel (1)

6. Box A has a mass of 200kg. Box B has a mass of 20kg. (3 marks)

Which would have the greater friction? A

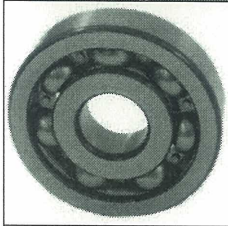
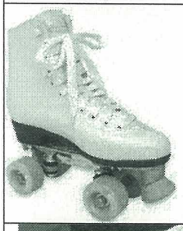
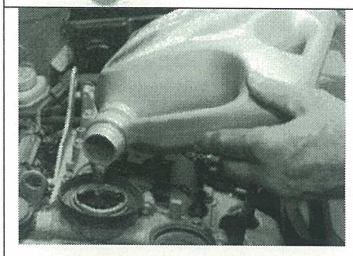
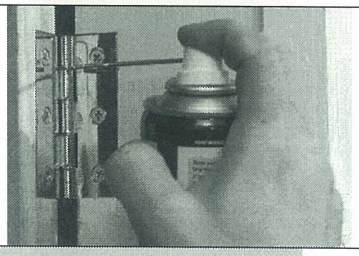
Friction exists between the bottom surface of the box and the ground.





7. Fill in the table below with the correct method of friction reduction. Choose from the methods below. (7 marks)

Lubricant, wheels, ball bearings, smooth surface

SITUATION	Method of friction reduction.
	wheels (1)
	lubricant / smooth surface (1)
	ball bearings (1)
	wheels / ball bearings (1)
	lubricant (1)
	lubricant (1)
	smooth surface (1)