

7K Forces and their effects

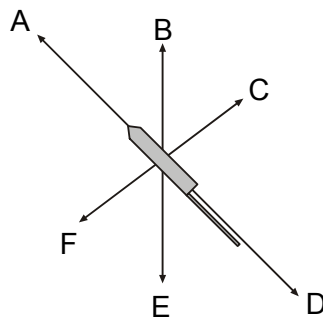
Assessment for learning...year 7 (level 3-6)

Answer all questions:

Total marks	24
Time allowed	25 mins.

Question 1:

The diagram shows a firework rocket.



(a) Three forces act as the rocket flies through the air.
Which arrows show the directions of these three forces?

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3 marks

(b) When there is no fuel left, the rocket falls to the ground.

(i) Give the name of the force which pulls it down.

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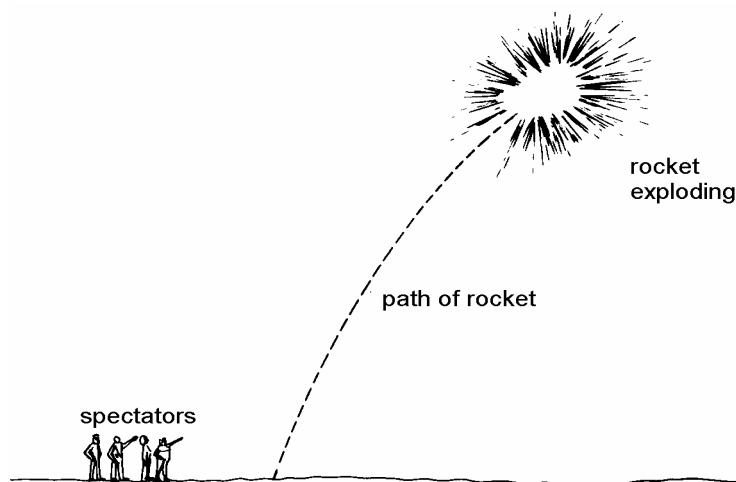
1 mark

(ii) Give the name of the force which acts against the motion of the rocket.

.....

1 mark

(c) Another rocket was sent high into the air. It exploded with a loud bang and a bright flash of light.



Put a tick in the box by the correct statement.

the bright flash of light was seen first

the loud bang was heard first

the flash of light was seen and the bang was heard at the same time

1 mark

Give a reason for your answer.

.....

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1 mark

Maximum 7 marks

Question 2:

(a) The diagram shows two bar magnets.



The north pole and south pole are shown on magnet A. The poles are not shown on magnet B.

Describe an experiment you could do, using magnet A, to find which end of magnet B is the north pole **and** which is the south pole.

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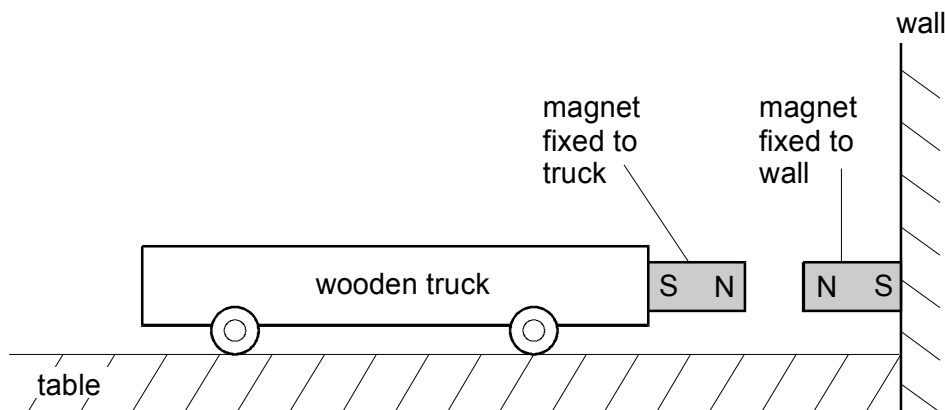
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3 marks

(b) The diagram shows a wooden truck near a wall. There is a strong magnet fixed to the wall and a strong magnet fixed to the front of the wooden truck.



James holds the wooden truck so that it does not move.
Then he lets go of the wooden truck. In which direction will it move?

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1 mark

(c) James removes the magnet from the wooden truck. He gives the truck a push so that it rolls along the table.

What effect will friction have on the speed of the truck as it rolls along?

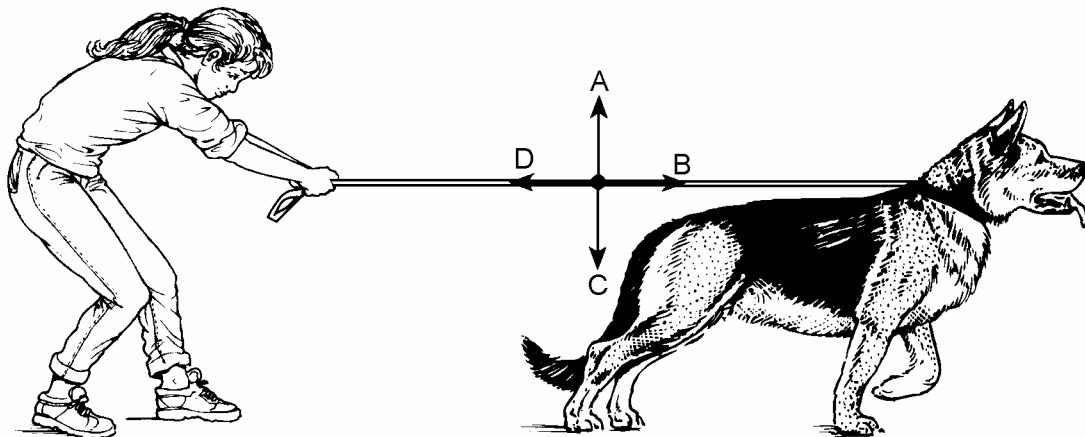
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1 mark

Maximum 5 marks

Question 3:



(a) Megan's dog is pulling on his lead.
Which arrow, A, B, C or D, shows the direction of this force?
Give the letter.

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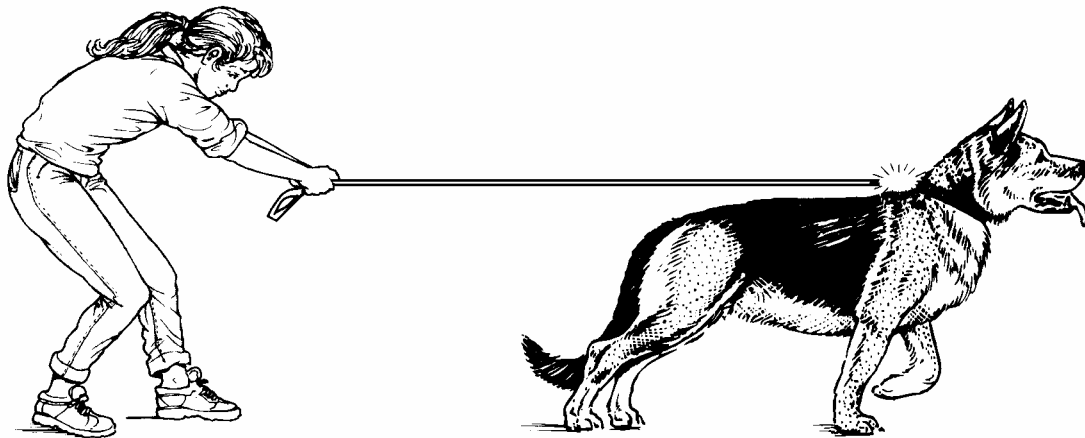
1 mark

(b) Megan has to pull to keep the dog still.
Which arrow shows the direction of this force? Give the letter.

.....

1 mark

(c) Suddenly the dog's collar breaks.



(i) When the collar breaks, the lead moves.
Draw an arrow on the diagram to show which way the lead starts to move.

1 mark

(ii) Why does the lead move when the collar breaks?

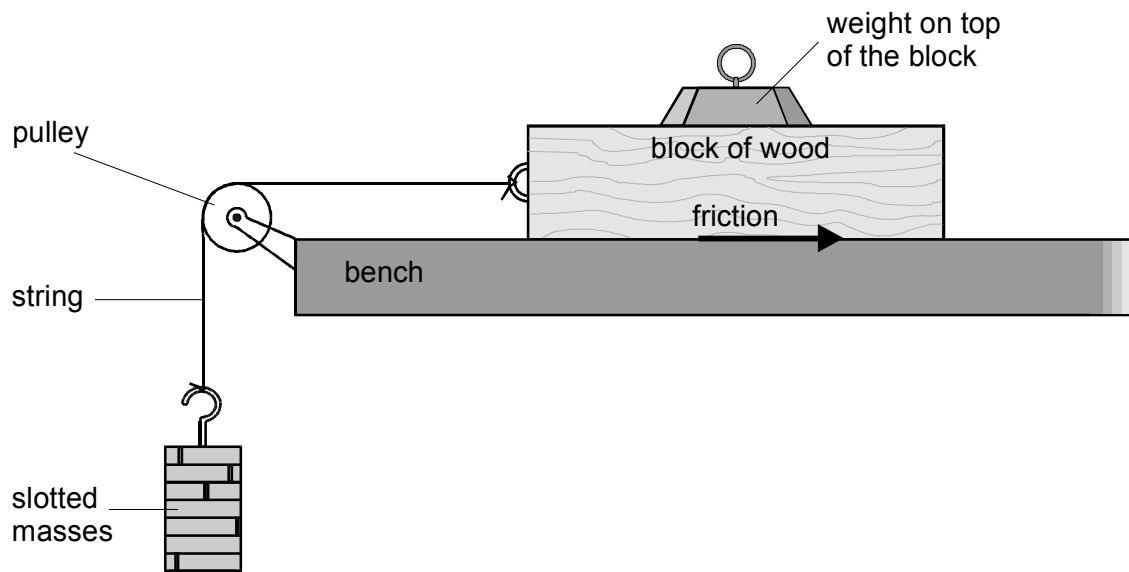
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1 mark

Maximum 4 marks

Question 4:

Nazia is investigating how easily a block of wood slides along a wooden bench.
The diagram shows her experiment.



(a) Nazia does the experiment with different weights on top of the block. She counts how many slotted masses she needs to hang from the string to make the block of wood slide. Her results are shown in the table.

weight on top of the block in N	number of slotted masses needed
0	5
1	7
2	9
3	1
4	13

(i) Describe how the number of slotted masses needed to move the block varies with the weight on top of the block.

.....

1 mark

(ii) Nazia does the experiment with a weight of 3.5 N on top of the block of wood.

How many slotted masses would she need to make the block slide?

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1 mark

(b) Nazia does her experiment again. This time she slides the block of wood over a sheet of glass instead of the bench top.

(i) Suggest how her results would be different this time.

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1 mark

(ii) Using the same sheet of glass and block of wood, and keeping the same weight on top, suggest **one** way Nazia could reduce the force of friction.

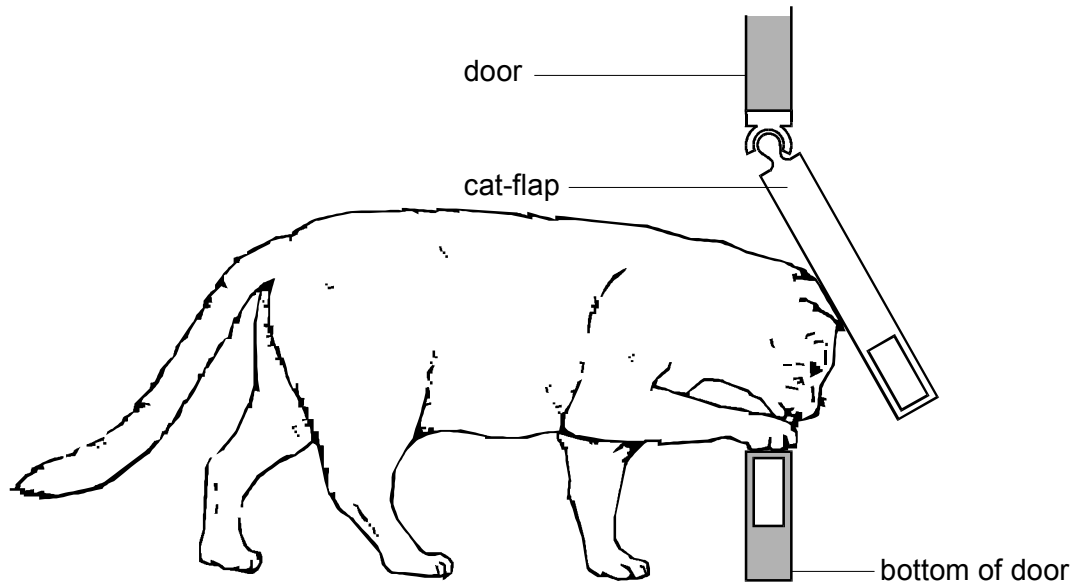
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1 mark

Maximum 4 marks

Question 5:

Ali made a cat-flap to fit into a door.



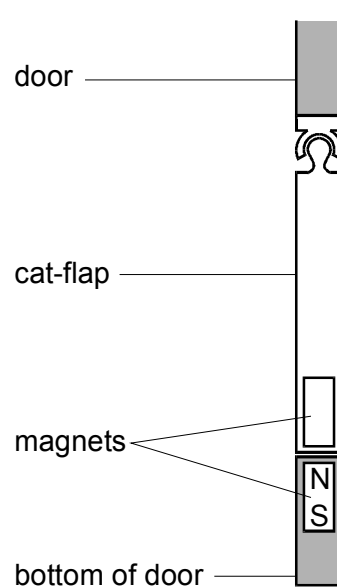
(a) (i) On the diagram above, draw an arrow to show the direction of the force of the cat's head on the cat-flap.

1 mark

(ii) Add a label to the diagram to show the pivot of the cat-flap. Label it P.

1 mark

When the cat has gone through the cat-flap, the weight of the cat-flap makes the flap close.



(b)Ali used two bar magnets to keep the cat-flap closed, so that it does **not** blow open in the wind.

On the diagram above, label **both** the North and South poles on the magnet in the cat-flap.

1 mark

(c) Friction at the pivot made the cat-flap squeak. What could Ali put on the pivot to make the friction less?

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1 mark

Maximum 4 marks