GCSE Questions on...
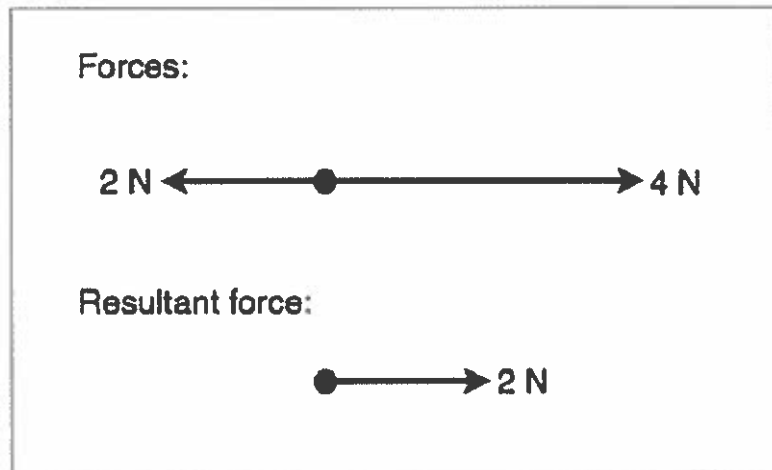
Resultant Forces

Forces:

2 N ⟵———•———⟶ 4 N

Resultant force:

•———⟶ 2 N

My name:

This booklet is to ensure that, as we move through Y11 Physics P2 (GCSE Additional Science), you become confident at answering GCSE questions based on what we have learnt in the lesson.

We will not always have time for you to just sit and do these questions in lessons, **so some of the time the will be set as homework, and will be marked the following lesson. You must stay on top of this!**

You must attempt every question during the lesson and/or homework.

You must annotate/correct/improve in **red pen** from the mark-schemes and hints I will produce. Your confidence will grow and grow!

If you get stuck, I am always available, but NOT the day of the lesson. Be organised and see me on a Wednesday, Thursday or Friday please.
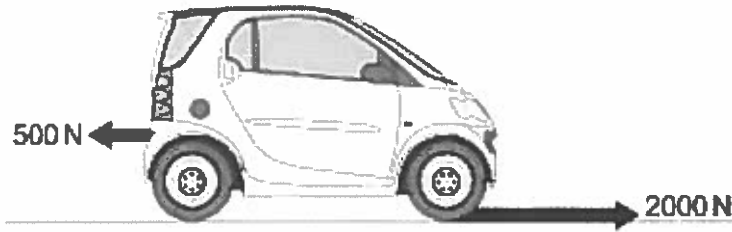
Good Luck!

Mr W

P2 Booklet A

Make sure you get the full set during the year!

5 (a) The diagram shows the horizontal forces acting on a car travelling along a straight road.

500 N ← [car] → 2000 N

5 (a) (i) Calculate the size of the resultant force acting on the car.
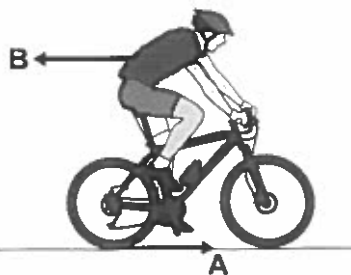
Show clearly how you work out your answer.

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Resultant force = ...N

(2 marks)

5 (a) (ii) Describe the motion of the car when the forces shown in the diagram act on it.

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C-G (F) specimen.   *(2 marks)*

8 (a) **Figure 13** shows the horizontal forces acting on a moving bicycle and cyclist.

Figure 13

B ←   → A

8 (a) (i) What causes force A?

Draw a ring around the correct answer.

[1 mark]

      friction   gravity   weight

8 (a) (ii) What causes force B?

[1 mark]

....

June 14 P2F/H (E)(H) C-D

①

3   The diagram shows a worker using a constant force of 60 N to push a crate across the floor.
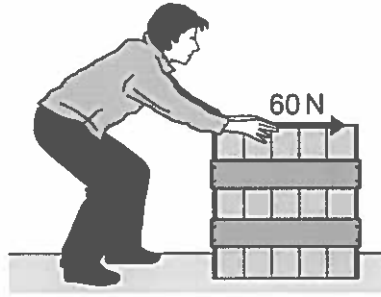
3 (a)   The crate moves at a constant speed in a straight line.

3 (a) (i)   Draw an arrow on the diagram to show the direction of the friction force acting on the moving crate.

(1 mark)

3 (a) (ii)   State the size of the friction force acting on the moving crate.
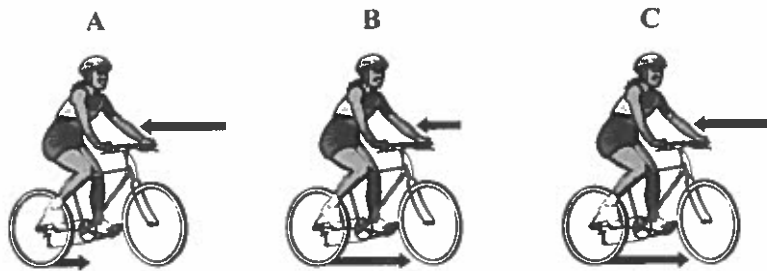
.... N

Give the reason for your answer.

....

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Jun12 P2(F) C-G   *(2 marks)*

1   **(b)**   **(iii)**   The diagrams show the horizontal forces acting on the cyclist at three different speeds. The length of an arrow represents the size of the force.

A   B   C

Which **one** of the diagrams, **A, B** or **C**. represents the forces acting when the cyclist is travelling at a constant 9 m/s?

....

Explain the reason for your choice.

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②   A*-c   Jan 10 P2(H)   (3 marks)

3   The diagram shows the forces acting on a skydiver.

Draw a ring around the correct answer to complete the following sentences.

3 (a)   Force **J** is caused by

air resistance.
friction.
gravity.

(1 mark)

3 (b)   Force **K** is caused by

air resistance.
gravity.
weight.

(1 mark)

3 (c)   When the skydiver jumps from the aircraft, force **J** is

bigger than
the same as
smaller than

force **K**

and the skydiver

accelerates downwards.
accelerates upwards.
falls at a steady speed.

(2 marks)

4

③

Ⓕ C–G

Answer **all** questions in the spaces provided.

1 (a) The diagram shows two forces acting on an object.

2N ← □ → 6N

What is the resultant force acting on the object?

Tick (✓) **one** box.

8N to the right □

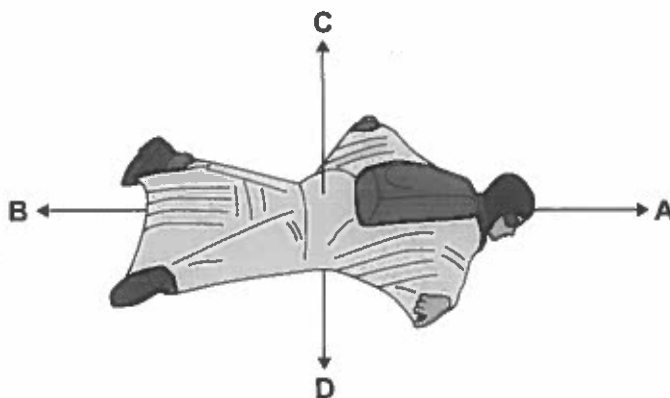8N to the left □

4N to the right □

4N to the left □

Jan 13 P2(F) C-G

(1 mark)

1 (b) BASE jumpers jump from very high buildings and mountains for sport.

The diagram shows the forces acting on a BASE jumper in flight.
The BASE jumper is wearing a wingsuit.

④

(F) C-G

1 (b) (i) Draw a ring around the correct answer in the box to complete each sentence.

The BASE jumper accelerates forwards when force **A** is

smaller than
equal to
bigger than

force **B**.

The BASE jumper falls with a constant speed when force **C** is

smaller than
equal to
bigger than

force **D**.

(2 marks)

1 (b) (ii) To land safely the BASE jumper opens a parachute.

Parachute

What effect does opening the parachute have on the speed of the falling BASE jumper?

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Give a reason for your answer.

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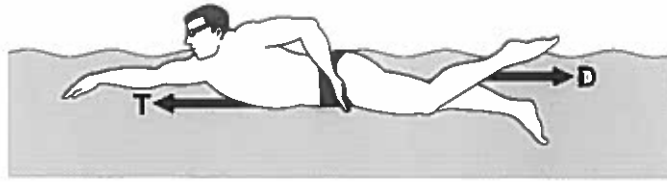*(2 marks)*

5

Turn over ▶

(F) C~G

G/K89954/Jan13/PH2FP

1 (a) The diagram shows the horizontal forces acting on a swimmer.

1 (a) (i) The swimmer is moving at constant speed.
Force T is 120 N.

What is the size of force D?

.... N

(1 mark)

1 (a) (ii) By increasing force T to 140 N, the swimmer accelerates to a higher speed.

Calculate the size of the initial resultant force acting on the swimmer.

....

....

Initial resultant force = ... N

(1 mark)

1 (a) (iii) Even though the swimmer keeps the force T constant at 140 N, the resultant force on the swimmer decreases to zero.

Explain why.

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Jan 11 P2F/H.   *(3 marks)*

F C-9

7   The diagram shows a boat pulling a water skier.
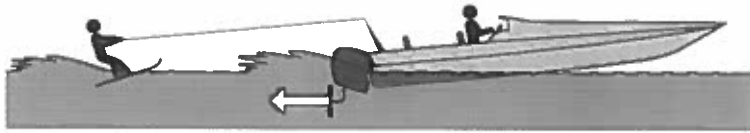
7 (a)   The arrow represents the force on the water produced by the engine propeller. This force causes the boat to move.

Explain why.

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Jan13 P2F/H   F C-G   *(2 marks)*

7 (b) (ii)   The water skier has a mass of 68 kg. He accelerates at 10 m/s²

Calculate the resultant force acting on the water skier while accelerating.

Use the correct equation from the Physics Equations Sheet.

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Resultant force = ... N

(2 marks)

7 (b) (iii) Draw a ring around the correct answer to complete the sentence.

The force from the boat pulling the water skier forwards

	less than	
will be	the same as	the answer to part **(b)(ii)**.
	greater than	

Give the reason for your answer.

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June 13 PF/H   *(2 marks)*

F C-G

(7)