Forces

Physics Paper 2 | 5 questions, 6 marks each

GCSE science 6-mark questions

This topic online

Name: _____ **Date:** _____ **Score:** _____ **/ 30**

Plan before you write: jot down the 6 or more ideas you need, then put them in a sensible order. For compare questions give both sides of each point; for evaluate questions use the information and finish with a conclusion.

1 Priya sets off on her bike along a long, flat, straight road. She pushes on the pedals so that the forward driving force on the bike stays the same the whole time.

Her speed increases quickly at first, then increases more slowly, and after a while it stops changing.

Explain why her speed changes in this way. Refer to the forces acting on Priya and her bike. (6 marks)

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2 A delivery company tested one of its vans on a test track. The table shows the thinking distance and braking distance at different speeds, on a dry road with an alert driver.

Speed in m/s	Thinking distance in m	Braking distance in m
10	7	8
20	14	32
30	21	72

Use the data to describe how thinking distance and braking distance change with speed. Then explain how stopping distance would change if the van was driven on a wet road by a tired driver.

(6 marks)

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3 Tomasz hangs weights on a steel spring and on a strip of modelling clay. For each one he adds a load, measures the extension, then removes the load.

Load in N	Spring extension in cm	Clay extension in cm
1	2.0	0.6
2	4.0	1.9
3	6.0	4.1

When each load is removed, the spring goes back to its original length but the clay stays stretched.

Compare how the spring and the clay behave when they are stretched. (6 marks)

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4 **Higher tier**

Two ice skaters, Kemi (mass 50 kg) and Oliver (mass 75 kg), stand still facing each other on smooth ice. They put their hands together and push each other apart.

Explain what happens to the motion of the two skaters after the push. Use ideas about forces and momentum in your answer, and include a calculation comparing their speeds. (6 marks)

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5 A small building firm needs a crane arm to lift loads of up to 2000 N. The load hangs 3.0 m from the pivot. A counterweight is fixed on the other side of the pivot to stop the crane tipping. Two designs are suggested.

Design	Counterweight in N	Distance of counterweight from pivot in m
A	4000	1.0
B	3000	2.0

Evaluate the two designs. Use calculations of moments to support your answer and give a conclusion.

Separate science only

(6 marks)

End of questions | Total 30 marks

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