AQA - Force and elasticity – GCSE Combined Science Physics

1. June/2021/Paper_2F/No.5(5.1_5.2)

0 5 Scientists are developing a rocket aeroplane designed to travel much faster than jet aeroplanes.

0 5 . 1 The rocket aeroplane must accelerate along a runway to take off.

What would happen to the air resistance acting on the rocket aeroplane as it accelerates?

[1 mark]

_____

_____

0 5 . 2 An upward force called lift will act on the wings of the rocket aeroplane when it moves.

Complete the sentence.

Choose the answer from the box.

[1 mark]

less than	**the same as**	**greater than**

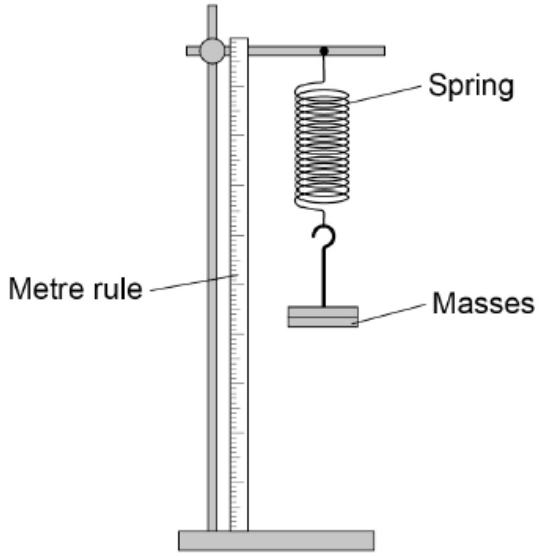
As the rocket aeroplane starts to accelerate along the runway, the lift force on the wings will be _____ the weight of the rocket aeroplane.

2. June/2021/Paper_2F/No.6

0 6 **Figure 8** shows a stretched spring.

The spring is elastically deformed.

Figure 8



0 6 . 1 What is meant by 'elastically deformed'?

[1 mark]

Tick (✓) **one** box.

As the force on the spring increases the length of the spring increases. ☐

Only a very small force is needed to stretch the spring. ☐

The force on the spring causes it to change shape. ☐

The spring will return to its original length when the force is removed. ☐

0 6 . 2 Describe a method to determine the extension of the spring.

[2 marks]

0 6 . 3 The extension of the spring is 80 mm.

spring constant = 40 N/m

Calculate the elastic potential energy of the spring.

Use the Physics Equations Sheet.

[3 marks]

Elastic potential energy = _____ J

0 6 . 4 Write down the equation which links extension (e), force (F) and spring constant (k).

[1 mark]

0 6 . 5 A force of 300 N acts on a different spring.

The force causes the spring to extend by 0.40 m.

Calculate the spring constant of the spring.

[3 marks]

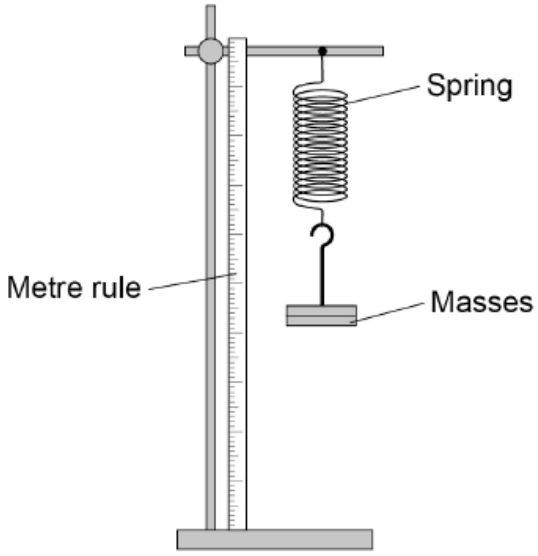
Spring constant = _____ N/m

3. June/2021/Paper_2H/No.1

0 1 **Figure 1** shows a stretched spring.

The spring is elastically deformed.

Figure 1



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[1 mark]

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