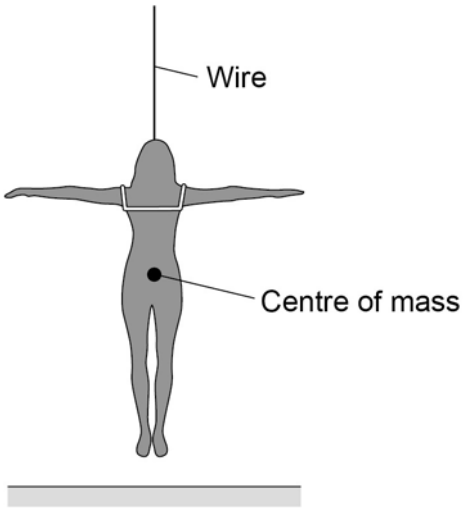
0 5 An actor is attached to a wire so that she can hang above the stage.

Look at **Figure 10.**

Figure 10



0 5 . 1 On **Figure 10** draw **two** arrows to show the forces acting on the actor.

[2 marks]

0 5 . 2 Which **two** forces are acting on the actor?

[2 marks]

Tick **two** boxes.

- Air resistance force ☐
- Electrostatic force ☐
- Gravitational force ☐
- Magnetic force ☐
- Tension force ☐

0 5 . 3 The actor hangs above the stage in a stationary position.

What is the resultant force on the actor?

[1 mark]

Resultant force = _____ N

0 5 . 4 The actor has a mass of 70 kg.

Gravitational field strength = 9.8 N/kg

Use the following equation to calculate the weight of the actor.

Weight = mass × gravitational field strength

Give your answer to 2 significant figures.

[2 marks]

Weight of actor = _____ N

0 5 . 5 A motor pulls vertically upwards on the wire with a force of 720 N.

Calculate the resultant force on the actor.

[1 mark]

Resultant force = _____ N

Question 5 continues on the next page

Another actor has a mass of 65 kg.

This actor is attached to the wire and the motor pulls her vertically upwards.

The resultant force on the actor is 25 N.

0 5 . 6 Write down the equation that links acceleration, mass and resultant force.

[1 mark]

Equation _____

0 5 . 7 Calculate the acceleration of the actor.

[3 marks]

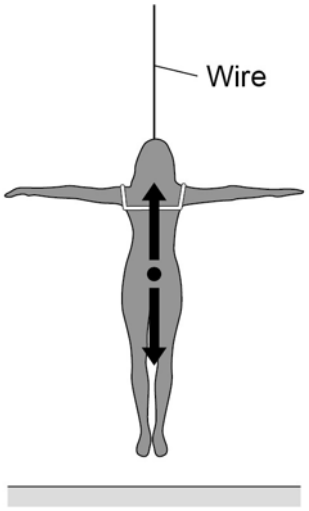
_____

_____

_____

Acceleration of actor = _____ m/s^2

Question 5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.1		arrow pointing vertically upwards arrow pointing vertically downwards	1 1	AO1/1 6.5.1.4
05.2	Gravitational force Tension force	if more than **two** boxes ticked apply list principle	1 1	AO1/1 6.5.1.2
05.3	0 (N)		1	AO1/1 6.5.4.2.1 WS1.2
05.4	weight = 70 × 9.8 (= 686) weight = 690 (N)	allow 690 (N) with no working shown for **2** marks allow 686 (N) with no working shown for **1** mark	1 1	AO2/1 6.5.1.3
05.5	34 (N) / 30 (N)	allow ecf from 05.4 correctly calculated	1	AO2/1 6.5.1.4

Question	Answers	Extra information	Mark	AO / Spec. Ref.
05.6	resultant force = mass × acceleration	accept F = ma accept equation correctly rearranged for a	1	AO1/1 6.5.4.2.2
05.7	25 = 65 × a a = 25 / 65 a = 0.38(4615…) (m/s^2)	allow 0.38 (m/s^2) with no working for **3** marks	1 1 1	AO2/1 6.5.4.2.2 WS3.3
Total			**12**	