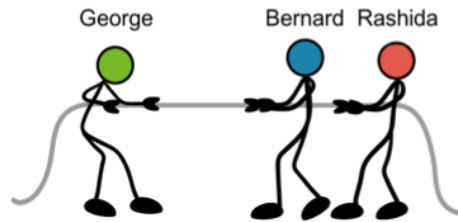| 0	1

Three friends are taking part in a charity tug-o-war competition.

0	1	.	1

In a round in which the competitors start from rest, George and Bernard are applying forces of 640 and 510 N, respectively. Calculate the force which Rashida must apply for them to remain at rest.

Force = _____ N

[2 marks]

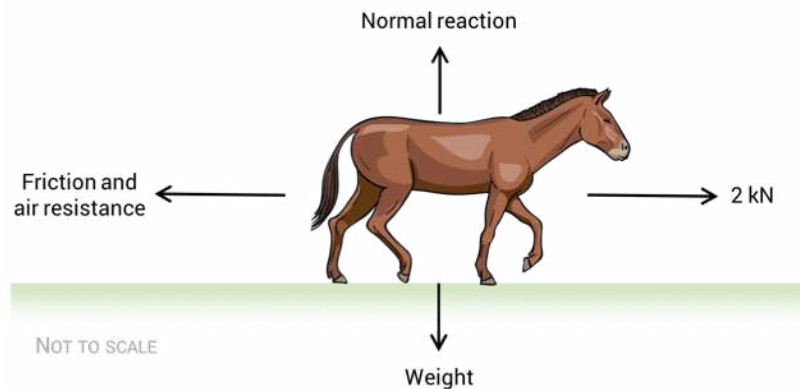| 0	1	.	2

Thanks to a sudden burst of energy, Rashida then pulls with a force of 550 N. Calculate the magnitude and direction of the resultant force exerted on the centre of the rope.

Force = _____ N   Direction = _____

[2 marks]

0	2

A horse of mass 400 kg is **accelerating** forwards at a rate of 0.5 m/s^2. The forces which are acting on the horse are as shown in the below diagram.

0	2	.	1

Which of the below mathematical statements is correct? Tick **one** box.

Friction + air resistance < 2 kN   ☐

Friction + air resistance = 2 kN   ☐

Friction + air resistance > 2 kN   ☐

[1 mark]

| 0 | 2 | . | 2 |

Explain your previous answer.

_____

_____

[2 marks]

| 0 | 2 | . | 3 |

Calculate the magnitude of the normal reaction force which is acting on the horse. Take g = 9.8 N/kg.

Normal reaction force = _____ N

[2 marks]

| 0 | 3 |

In a game of tennis, a ball is hit horizontally at a speed of 40 m/s.

After 0.5 seconds, its horizontal velocity has not changed, but it has developed a downwards component of velocity of approximately 5 m/s.

By drawing a suitable scale diagram, determine the magnitude and direction of the tennis ball after 0.5 seconds.

Magnitude = _____ m/s

Direction = _____

[6 marks]

40 m/s

5 m/s

v