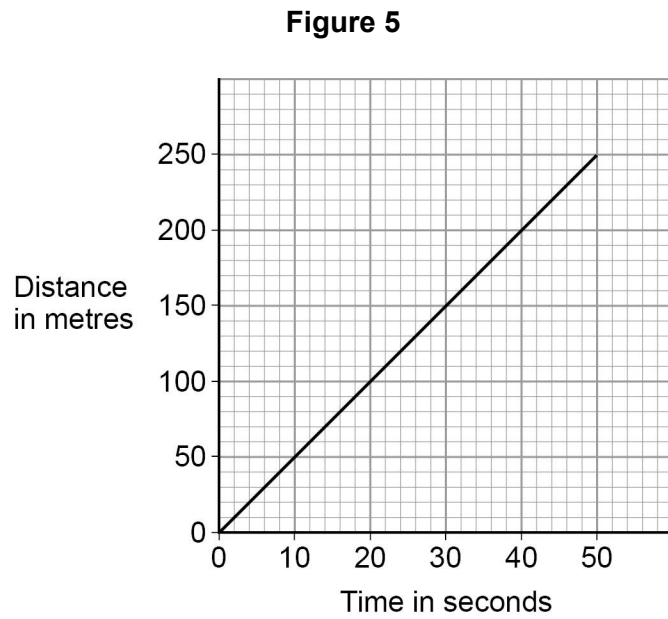


0 4

**Figure 5** shows a distance-time graph for 50 seconds of a bicycle ride.



0 4 . 1

The gradient of the distance-time graph gives the speed of the bicycle.

Determine the speed of the bicycle.

**[2 marks]**

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Speed = \_\_\_\_\_ m/s



**0 4 . 2** Which force acting on the moving bicycle is a non-contact force?

**[1 mark]**

Tick (✓) **one** box.

Air resistance

Friction

Gravitational force

Normal contact force

**0 4 . 3** The bicycle travels a distance of 250 m

The bicycle exerts a constant horizontal force of 30 N on the ground.

Calculate the work done.

Use the equation:

$$\text{work done} = \text{force} \times \text{distance}$$

Choose the unit from the box.

**[3 marks]**

**J**

**kg**

**m**

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Work done = \_\_\_\_\_ Unit \_\_\_\_\_

**Turn over ►**



0 4 . 4

The bicycle travels at a constant speed.

Complete the sentences.

Choose answers from the box.

**[3 marks]**

<b>chemical</b>	<b>frictional</b>	<b>kinetic</b>
<b>magnetic</b>		<b>tension</b>

As the bicycle moves, work is done against \_\_\_\_\_ forces.

There is no change in the cyclist's \_\_\_\_\_ store of energy.

There is a decrease in the cyclist's \_\_\_\_\_ store of energy.

---

9

Question	Answers	Extra information	Mark	AO / Spec. Ref.
<b>04.1</b>	gradient = $\frac{250 - 0}{50 - 0}$  speed = 5.0 m/s	allow any correct pair of values substituted  allow 5 (m/)  allow the use of $s = v t$	1	AO2 6.5.4.1.4
			1	
<b>04.2</b>	gravitational force		1	AO1 6.5.1.2
<b>04.3</b>	W = 30 × 250  W = 7500  J		1	AO2
			1	AO2
			1	AO1 6.5.2
<b>04.4</b>	frictional  kinetic  chemical		1	AO1 6.5.2
			1	
			1	
<b>Total</b>			<b>9</b>	