# WJEC Wales Physics GCSE

## 2.1 - Distance, Speed and Acceleration

### Flashcards

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State the equation linking distance, speed and time. Give appropriate units.


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State the equation linking distance, speed and time. Give appropriate units.

Distance = Speed x Time

Distance (m), Speed (m/s), Time (s)



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# How can speed be calculated from a distance-time graph?



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# How can speed be calculated from a distance-time graph?

The speed is equal to the gradient of the graph.



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What must be done to calculate speed at a given time from a distance-time graph for an accelerating object?



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What must be done to calculate speed at a given time from a distance-time graph for an accelerating object?

- Drawing a tangent to the curve at the required time.
- Calculating the gradient of the tangent.



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State the equation for the average acceleration of an object. Give appropriate units.


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State the equation for the average acceleration of an object. Give appropriate units.

Acceleration = (Change in Velocity)/(Time Taken)

Acceleration ($m/s^2$), Velocity (m/s), Time (s)



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How can the distance travelled by an object be calculated from a velocity-time graph? (Higher)



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How can the distance travelled by an object be calculated from a velocity-time graph? (Higher)

It is equal to the area under the graph.



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# What is the stopping distance of a vehicle equal to?



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# What is the stopping distance of a vehicle equal to?

The sum of thinking distance and braking distance.

Overall stopping distance = thinking + braking distances



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For a given braking distance, if the vehicle's speed is increased, what can be said about its stopping distance?


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For a given braking distance, if the vehicle's speed is increased, what can be said about its stopping distance?

The stopping distance is increased with an increase in speed.



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# How does the speed of the vehicle affect braking and thinking distance?



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# How does the speed of the vehicle affect braking and thinking distance?

Both thinking and braking (and hence overall stopping) distances are increased when the speed is increased (as more distance is travelled in the same reaction time, or under the same braking force).



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Give a typical range of values for human reaction time.


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Give a typical range of values for human reaction time.

0.2 seconds - 0.9 seconds



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Give three things which can affect a driver's reaction time.



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Give three things which can affect a driver's reaction time.

1. Tiredness
2. Drugs
3. Alcohol



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Give two factors which may affect braking distance.


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Give two factors which may affect braking distance.

1. Adverse (wet/icy) road conditions
2. Poor tyre/brake conditions



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