

Paper 1

1.1 a State the formula for calculating the kinetic energy of a moving object. (1 mark)

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A dog is chasing a cat in a field. Both the dog and cat are running at a steady speed of 10m/s. The cat has a mass of 3kg and the dog has a mass of 8 kg.



b Calculate the energy in the kinetic store of the cat. (2 marks)

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c Calculate the energy in the kinetic store of the dog. (2 marks)

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d The dog accelerates to a new steady speed and increases the energy in its kinetic store to 576J. Calculate the dog's new speed. (4 marks)

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e The cat maintains the same speed of 10m/s. The cat is 10 metres ahead of the dog. Calculate the time it takes for the dog to catch the cat. (2 marks)

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