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| **Topic 1: Number and Algebra** | **Geometric Sequences and Series** | |
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| * 1. When a ball bounces, it reaches 90% of the height reached on the previous bounce. If the ball is initially dropped at 5 meters, find the height the ball reaches after the 5th bounce.   2. Find the number of bounces it would take to no longer reach a height of 2 meters.   3. Find the total distance the ball travels | | (2 marks)  (2 marks)  (3 marks) |
| Mark scheme:   1. height   height meters   1. Method 1: Recognizing this as a geometric series to infinity   First term of  Common ratio  Recognizing the need to double the distance and add  Total Distance: meters  Method 2:  Recognizing this as a geometric series to infinity  First term of  Common Ratio  Recognizing the need to double the distance and subtract  Total Distance: meters | | (A1)  (A1)  (M1)  (A1)  (A1)  (M1)  (M1)  (A1)  (M1)  (M1)  (A1) |