



1. The probability of obtaining tails on a biased coin is 0.32. The coin is tossed 9 times.
- (a) Find the probability of obtaining exactly 3 tails. (3 marks)
  - (b) Find the probability of obtaining at least 3 tails. (3 marks)

Mark scheme:

(a) Evidence of using binomial probability (M1)

$$P(X = 3) = \binom{9}{2} (0.32)^3 (0.68)^6 \quad (A1)$$

$$P(X = 3) = 0.272 \quad (A1)$$

(b) Evidence of using the complement or finding the sum of the probabilities (M1)

$$1 - P(X \leq 2) \text{ or } P(X = 3, 4, 5, 6, 7, 8, 9) \quad (A1)$$

$$P(X \geq 3) = 0.589 \quad (A1)$$