# Year 9 Probability – Challenge

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Year 9 · Maths · Probability · Level 3 Challenge · 8 questions

**Name** _____ **Date** _____

## A. Think like a mathematician

**1.** Are these two events independent: taking a counter from a bag, putting it back, then taking another counter? Explain.

Answer _____

**2.** Are these two events independent: a student revising for a test and the same student passing it? Explain.

Answer _____

**3.** Eli drops a drawing pin 20 times and it lands point up 8 times. Bella drops the same drawing pin 500 times and it lands point up 172 times. Whose results give the better estimate of the probability of landing point up? Give that estimate.

Answer _____

**4.** Bella rolls a dice 10 times and it shows a six 6 times. Hana rolls the same dice 400 times and it shows a six 179 times. Whose results give the better estimate of the probability of a six? Give that estimate.

Answer _____

**5.** A tin holds 5 plain and 6 chocolate biscuits. Two biscuits are taken without replacement. Farah says P(both plain) = 5/11 × 5/11 = 25/121. Explain the mistake and find the correct probability.

Answer _____

**6.** Hana says the probability of rolling two sixes with two fair dice is 1/12. Is Hana right? Explain.

Answer _____

**7.** A jar holds 4 lemon and 5 orange sweets. Two sweets are taken at random, one after the other, without replacement. Find the probability that one is lemon and one is orange. Are the two choices independent?

Answer _____

**8.** The table shows the probabilities of the scores on a biased four-sided spinner. Find the value of x and the probability of scoring 4.

| Score | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Probability | 0.05 | 3x | 0.15 | x |

Answer _____