

Probability outcomes: lists, trees and fair comparisons

Name: _____ Date: _____

Show your calculations, diagrams and explanations. Start with questions 1–2, then build toward the final challenge.

Public practice with published answers. This is not a full-topic readiness assessment.

1. A fair standard die has faces 1 to 6. List the outcomes greater than 4 and find their probability.

Show your work:

2. A bag contains 3 orange, 2 purple and 1 white counter, identical except for colour. Mix well and choose one without looking. Find the probability of purple. Are the three colours equally likely? Explain.

Show your work:

3. Toss a fair coin and independently spin a fair three-sector spinner labelled 1, 2, 3. List all ordered outcomes and find the probability of heads with an odd spinner number.

Show your work:

4. A bag has 4 green and 2 yellow identical counters. Draw one at random, replace it, mix, then draw again. Draw a probability tree and find the probability of two green counters.

Show your work:

5. Repeat the experiment with 4 green and 2 yellow counters, now WITHOUT replacement. Draw the green-first branches, find the probability of two greens, and compare it with $\frac{4}{9}$ for replacement.

Show your work:

6. Draw two counters without replacement from the same bag of 4 green and 2 yellow counters. Find the probability of one of each colour in either order. A class records one of each in 31 of 60 repeated trials, resetting the bag each trial. Compare the experimental proportion with the theoretical probability. Does a difference prove the model is wrong?

Show your work: