8 Listing outcomes – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	**Write it 3 times** (English)
sample space	
tree diagram	

Recall

When two things happen, we can list all the outcomes to find a probability.

New ideas

Read these first, then do the Practice.

■ 1 Sample space

A **sample space** lists every possible outcome. For two dice, a grid shows all 36 sums:

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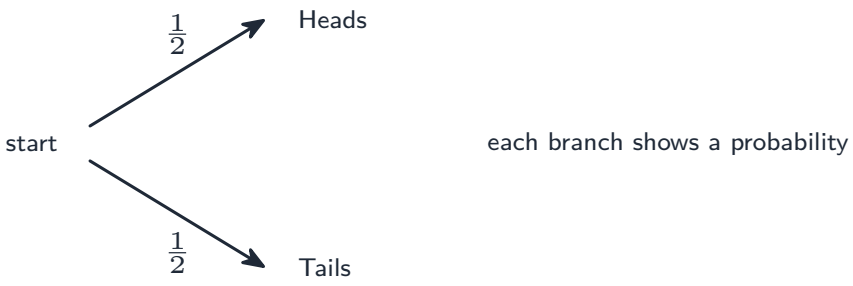
dice 2 \ dice 1	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

sums of two dice

You can count outcomes from the grid (for example, there are 6 ways to score a sum of 7).

2 Tree diagrams

A **tree diagram** shows the outcomes as branches, each with its probability:



Watch out: a **sample space** lists *every* outcome – count from it carefully (two dice have $6 \times 6 = 36$ outcomes, not 12). On a **tree diagram** the numbers on the branches are the probabilities.

Practice

Try these in order.

8.6 How many outcomes are there when two dice are rolled? [1]

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8.7 Using the grid, how many ways are there to get a sum of 7? [1]

8.8 What is the probability of a sum of 7 with two dice? [2]

8.9 On a tree diagram, what do the numbers on the branches show? [1]

8.10 Two coins are flipped. List all the possible outcomes. [2]

8.11 Challenge. Two dice are rolled. Using the sample space, find the probability that the two numbers add up to 9. [3]