GCSE Maths: Listing outcomes and sample-space tables (Higher): worksheet

GCSE Maths - Probability - Higher - Lesson 23.4

Name: _____ Date: _____ Score: _____

16 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch23-probability/higher/listing-outcomes-and-sample-space-tables/**

Exercise 23E Listing outcomes and sample-space tables Non-calculator

1 **A fair coin is tossed and a fair die is rolled. Write the outcomes as, for example, H3 (heads and a 3). Find...**

(a) the number of possible outcomes

Answer:

(b) the probability of heads and a 6

Answer:

(c) the probability of tails and an odd number

Answer:

2 **Three fair coins are tossed. List all the possible outcomes systematically. Then find the probability of getting...**

(a) exactly two heads

Answer:

(b) at least one tail

Answer:

(c) all three coins the same

Answer:

3 **Two fair dice are rolled and the scores are added. Use the sample-space table to find the probability that the total is...**

+	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

(a) 7

Answer:

(b) 12

Answer:

(c) less than 5

Answer:

(d) an even number

Answer:

(e) a prime number

Answer:

4 Two fair dice are rolled. The **difference** is the bigger score take away the smaller score (it is 0 if the scores are equal). Find the probability that the difference is...

(a) 0

Answer:

(b) at least 4

Answer:

(c) 1

Answer:

5 Two fair dice are rolled and the scores are **multiplied**. Find the probability that the product is...

(a) 12

Answer:

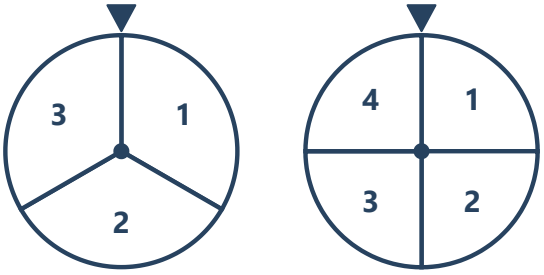
(b) an odd number

Answer:

(c) more than 20

Answer:

6 Spinner A has the numbers 1, 2, 3 and spinner B has the numbers 1, 2, 3, 4. Both are fair and are spun once. The two numbers are added. Draw a sample-space table and find the probability that the total is...



(a) 5

Answer:

(b) more than 4

Answer:

(c) an even number

Answer:

7 **A two-digit number is made by choosing the tens digit from 1, 2, 3 and the units digit from 1, 2, 3 (digits can be repeated). List all the possible numbers, then find the probability that a number chosen at random is...**

(a) even

Answer:

(b) bigger than 25

Answer:

8 **The letters A, B and C are put in a row in a random order, using each letter once. List all the possible orders. Find the probability that A is first.**

Answer:

9 **A café offers 3 sandwiches (cheese, ham, egg), 2 soups (tomato, leek) and 4 drinks.**

(a) How many different sandwich and soup combinations are there?

Answer:

(b) How many different meals of sandwich, soup and drink are there?

Answer:

(c) A customer picks a sandwich and a soup at random. Find the probability of ham and tomato.

Answer:

10 **A code has one letter chosen from A, B, C, followed by one digit chosen from 1, 2, 3, 4. A code is chosen at random. Find the probability that it is...**

(a) A followed by an even digit

Answer:

(b) B3 or C3

Answer:

11 **Ali and Beth play a game. Two fair dice are rolled and the scores are added. Ali wins if the total is 8 or more. Beth wins if the total is less than 8. Is the game fair? Show your working.**

Answer:

12 **Two fair dice, one red and one blue, are rolled. Find the probability that the red die shows a bigger score than the blue die.**

Answer:

13 **Tom says: "When I toss two coins there are three outcomes: two heads, one head, no heads. So P(two heads) = 1/3." Explain why Tom is wrong and give the correct probability.**

Answer:

14 **Two fair dice are rolled and the scores are added. Show that a total of 7 is more likely than any other total.**

Answer:

15 **How many different outcomes are there when...**

(a) two fair dice

Answer:

(b) three fair dice

Answer:

16 **Two fair 4-sided dice, numbered 1 to 4, are rolled and the scores are added. Find the probability that the total is a multiple of 3.**

Answer:

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