

The AND and OR Rules

ANSWERS

1

A fair spinner with four equal colours is spun. A card is picked from cards 1 to 5. Find the probability of a blue and a 3.

	1	2	3	4	5
Red					
Blue					
Green					
Yellow					

1 out of 20 outcomes

A 3 is what fraction of the blues, and so of the grid?

$$\frac{1}{5} \text{ of } \frac{1}{4} = \frac{1}{4} \times \frac{1}{5}$$

Answer $\frac{1}{20}$

2

A card is picked at random from ten cards numbered 1 to 10. Find the probability of a 2 or a 7.

1	2	3	4	5	6	7	8	9	10
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$$\frac{1}{10} + \frac{1}{10} = \frac{2}{10}$$

Answer $\frac{1}{5}$

3

Two fair dice are rolled. Find the probability of a six on the first and a six on the second.

$$\frac{1}{6} \times \frac{1}{6}$$

Answer $\frac{1}{36}$

4

A bag holds 3 red, 5 blue and 2 green counters. One is taken. Find the probability that it is red or green.

$$\frac{3}{10} + \frac{2}{10}$$

Answer $\frac{1}{2}$

5

A spinner lands on red with probability $\frac{1}{4}$. It is spun twice. Find the probability of red both times.

$$\frac{1}{4} \times \frac{1}{4}$$

Answer $\frac{1}{16}$

6

A bag holds 4 red, 1 blue and 5 yellow counters. One is taken. Find the probability that it is blue or yellow.

$$\frac{1}{10} + \frac{5}{10}$$

Answer $\frac{3}{5}$

7

The probability that Ali is late is $\frac{1}{5}$. The probability that Bea is late is $\frac{1}{3}$. Find the probability that both are late.

$$\frac{1}{5} \times \frac{1}{3}$$

Answer $\frac{1}{15}$

8

A letter is picked at random from PROBABILITY. Find the probability that it is a B or an I.

$$\frac{2}{11} + \frac{2}{11}$$

Answer $\frac{4}{11}$

The AND and OR Rules *further practice*

ANSWERS

9

The probability that Ella's bus is full is $\frac{2}{5}$. The probability that it rains is $\frac{1}{4}$. The two events are independent. Find the probability that the bus is full and it rains.

$$\frac{2}{5} \times \frac{1}{4} = \frac{2}{20}$$

Answer $\frac{1}{10}$

10

A biased spinner is spun once. Find the probability that it lands on B or D.

Outcome	A	B	C	D
Probability	0.15	0.3	0.2	0.35

$$0.3 + 0.35$$

Answer 0.65

11

The probability that a seed grows is 0.8. Two seeds are planted and grow independently. Find the probability that the first seed grows and the second seed does not grow.

$$0.8 \times 0.2 = 0.16$$

Answer 0.16

12

A fair coin is flipped, a fair dice is rolled and a fair spinner numbered 1 to 4 is spun. Find the probability of getting a head, a 6 and a 4.

$$\frac{1}{2} \times \frac{1}{6} \times \frac{1}{4}$$

Answer $\frac{1}{48}$

13

Zara takes a bus and then a train. The probability that the bus is late is 0.2. The probability that the train is late is 0.1. They are late independently. Complete the table. Find the probability that exactly one of them is late.

	Train late 0.1	Train on time 0.9
Bus late 0.2	0.02	0.18
Bus on time 0.8	0.08	0.72

Answer $0.18 + 0.08 = 0.26$

14

Leo buys a ticket in two different raffles. The probability that he wins the first raffle is 0.1. The probability that he wins the second is 0.05. The raffles are independent. Find the probability that he wins at least one of them.

$$1 - 0.9 \times 0.95 = 1 - 0.855$$

Answer 0.145

15

A shop has two smoke alarms that work independently. The probability that the first alarm sounds in a fire is 0.9. The probability that both alarms sound is 0.72. Find the probability that the second alarm sounds.

$$0.9 \times ? = 0.72, \text{ and } 0.72 \div 0.9$$

Answer 0.8

16

Theo rolls a fair dice twice. He says the probability of at least one six is $\frac{1}{6} + \frac{1}{6} = \frac{1}{3}$. Is Theo right? Explain and find the correct probability.

	1	2	3	4	5	6
1						✓
2						✓
3						✓
4						✓
5						✓
6	✓	✓	✓	✓	✓	✓

6 and 6 is counted twice: 11 out of 36

Answer No, it is $\frac{11}{36}$