

Probability and ratio

ANSWERS

1

Red and blue counters in a bag are in the ratio 3 : 5. A counter is taken at random. Find the probability that it is blue.

$$\begin{array}{l} \text{Total parts } 3 + 5 = 8 \\ \text{Parts wanted } 5 \\ \text{Probability } \frac{5}{8} \end{array}$$

Answer $\frac{5}{8}$

2

Lemon and orange sweets in a jar are in the ratio 2 : 7. A sweet is taken at random. Find the probability that it is lemon.

$$\begin{array}{l} \text{Total parts } 2 + 7 = 9 \\ \text{Parts wanted } 2 \\ \text{Probability } \frac{2}{9} \end{array}$$

Answer $\frac{2}{9}$

3

Red, green and yellow beads in a box are in the ratio 1 : 3 : 4. A bead is taken at random. Find the probability that it is not green.

$$\begin{array}{l} \text{Total parts } 1 + 3 + 4 = 8 \\ \text{Parts wanted } 5 \\ \text{Probability } \frac{5}{8} \end{array}$$

Answer $\frac{5}{8}$

4

The ratio of cats to dogs at an animal shelter is 5 : 4. An animal is chosen at random. Find the probability that it is a dog.

$$\begin{array}{l} \text{Probability } \frac{4}{9} \end{array}$$

Answer $\frac{4}{9}$

5

The probability that a counter taken from a bag is red is $\frac{2}{7}$. The rest are blue. Write the ratio of red to blue counters.

2 parts out of 7 are red, so 5 parts are blue

Answer $2 : 5$

6

A bag holds 24 counters, red and blue in the ratio 3 : 5. Then 4 more red counters are put in. Find the probability that a counter taken at random now is red.

9 red and 15 blue, then 13 red out of 28

Answer $\frac{13}{28}$

7

A spinner lands on red with probability 0.3 and on blue with probability 0.5. Otherwise it lands on green. Write the ratio red : blue : green in its simplest form.

green $1 - 0.8 = 0.2$, then $0.3 : 0.5 : 0.2$

Answer $3 : 5 : 2$

8

A club has 36 members, boys and girls in the ratio 4 : 5. Then 3 boys leave. A member is chosen at random. Find the probability that it is a girl.

16 boys and 20 girls, then 20 out of 33

Answer $\frac{20}{33}$

Probability and ratio further practice

ANSWERS

9

Milk and dark chocolates in a box are in the ratio 7 : 3. A chocolate is taken at random. Find the probability that it is dark.

3 parts out of 10

Answer $\frac{3}{10}$

10

Red, white and blue flags are in the ratio 2 : 3 : 5. A flag is chosen at random. Find the probability that it is not white.

$2 + 5 = 7$ parts out of 10

Answer $\frac{7}{10}$

11

The probability of taking a green pen from a pot is $\frac{3}{8}$. There are 15 green pens. Write the ratio of green pens to other pens, and find how many other pens there are.

3 parts are 15 pens, so one part is 5

Answer $3 : 5$, 25 pens

12

Blue and yellow beads are in the ratio 4 : 1. A bead is taken at random. Write the probability that it is blue as a decimal.

4 out of 5

Answer 0.8

13

Red and black buttons in a tin are in the ratio 2 : 3. When 10 red buttons are added, a button taken at random is equally likely to be red or black. How many black buttons are there?

$2k + 10 = 3k$, $k = 10$

Answer 30

14

A game cannot be drawn. The ratio $P(\text{win}) : P(\text{lose})$ is 2 : 3. Find the probability of a win.

the two probabilities add to 1: 2 parts out of 5

Answer $\frac{2}{5}$

15

A spinner lands on A, B or C. $P(A) = \frac{1}{4}$ and $P(B) = \frac{1}{3}$. Write $P(A) : P(B) : P(C)$ in its simplest form.

$P(C) = \frac{5}{12}$, then multiply by 12

Answer $3 : 4 : 5$

16

Red and blue counters are in the ratio 2 : 3. Sam says the probability of taking a red counter is $\frac{2}{3}$. Explain his mistake and give the right probability.

he compared red with blue; red is 2 parts out of 5 altogether

Answer $\frac{2}{5}$