

Probability Equation Questions

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NAME _____

DATE _____

- 1 A bag contains red, blue and green counters.

⌂ EITHER PAPER 5 MARKS

The number of red counters is $x + 4$.

The number of blue counters is $3x - 3$.

The number of green counters is $3x + 4$.

A counter is taken from the bag at random. The probability that it is blue is $\frac{6}{17}$.

(a) Find the value of x .

(b) Work out how many counters of each colour are in the bag.

- 2 A spinner can land on blue, purple, orange or red.

⌂ EITHER PAPER 4 MARKS

The table shows the probability of each colour.

Colour	Blue	Purple	Orange	Red
Probability	x	$3x$	$2x$	0.1

(a) Find the value of x .

(b) The spinner is spun 400 times.

Work out an estimate for the number of times it lands on purple.

- 3 A bag contains 24 chips. Some of them are blue and the rest are yellow.

 EITHER PAPER 4 MARKS

Omar takes a chip at random from the bag, records its colour, and puts it back.

He then takes a second chip at random from the bag.

The probability that both chips are blue is $\frac{289}{576}$.

- (a) Calculate how many of the chips in the bag are blue.
(b) Calculate the probability that neither chip is blue.

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- 4 A bag contains only red counters and green counters.

 EITHER PAPER 4 MARKS

A counter is taken from the bag at random. The probability that it is red is $\frac{1}{3}$.

The counter is put back, and then 8 more red counters are put into the bag.

A counter is now taken from the bag at random. The probability that it is red is $\frac{1}{2}$.

Calculate how many counters were in the bag to start with.

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- 5 There are only blue buttons and red buttons in a tin.

 EITHER PAPER 2 MARKS

The number of blue buttons to the number of red buttons is in the ratio 3 : 5.

Nadia takes at random one button from the tin. She records the colour of the button and then replaces it in the tin.

Nadia does this n times, where $n \geq 2$.

Write down an expression, in terms of n , for the probability that Nadia gets at least one blue button and at least one red button.

- 6 There are only u red counters and g green counters in a bag.

EITHER PAPER 5 MARKS

A counter is taken at random from the bag. The probability that the counter is green is $\frac{3}{7}$.

The counter is put back in the bag. 4 more red counters and 5 more green counters are put in the bag.

A counter is taken at random from the bag. The probability that the counter is green is $\frac{7}{15}$.

Find the number of red counters and the number of green counters that were in the bag originally.

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- 7 A bag contains red, blue and green counters.

EITHER PAPER 5 MARKS

The number of red counters is $x + 6$.

The number of blue counters is $3x + 6$.

The number of green counters is $3x + 6$.

A counter is taken from the bag at random. The probability that it is blue is $\frac{9}{22}$.

(a) Calculate the value of x .

(b) Calculate how many counters of each colour are in the bag.

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- 8 A spinner can land on red, blue, green or yellow.

EITHER PAPER 4 MARKS

The table gives the probability of each colour.

Colour	Red	Blue	Green	Yellow
Probability	x	$3x$	$2x$	0.4

(a) Calculate the value of x .

(b) The spinner is spun 300 times.

Work out an estimate for the number of times it lands on blue.

- 9 A bag contains 15 cubes. Some of them are green and the rest are white.

⌂ EITHER PAPER 4 MARKS

Zainab takes a cube at random from the bag, records its colour, and puts it back.

She then takes a second cube at random from the bag.

The probability that both cubes are green is $\frac{169}{225}$.

- (a) Calculate how many of the cubes in the bag are green.
(b) Find the probability that neither cube is green.

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- 10 A bag contains only red counters and green counters.

⌂ EITHER PAPER 4 MARKS

A counter is taken from the bag at random. The probability that it is red is $\frac{1}{4}$.

The counter is put back, and then 6 more red counters are put into the bag.

A counter is now taken from the bag at random. The probability that it is red is $\frac{2}{5}$.

Work out how many counters were in the bag to start with.

1	(a) 9 (b) 13 red, 24 blue and 31 green	2	(a) 0.15 (b) 180
3	(a) 17 chips (b) $\frac{49}{576}$	4	24
5	$1 - \left(\frac{3}{8}\right)^n - \left(\frac{5}{8}\right)^n$	6	12redcountersand9greencounters
7	(a) 10 (b) 16 red, 36 blue and 36 green	8	(a) 0.1 (b) 90
9	(a) 13 cubes (b) $\frac{4}{225}$	10	24