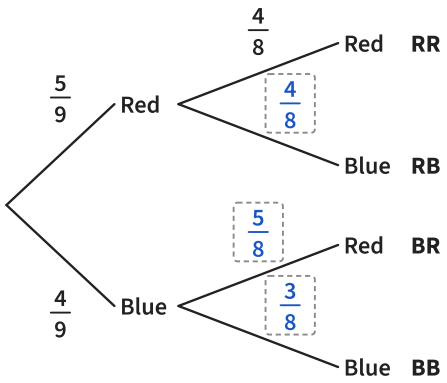
Conditional probability: tree diagrams

ANSWERS

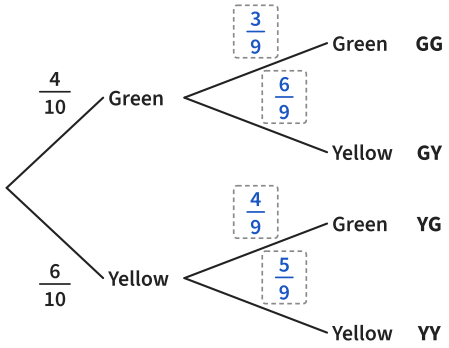
1

A bag has 5 red and 4 blue counters.
Two are taken without replacement.
Fill in the tree diagram.



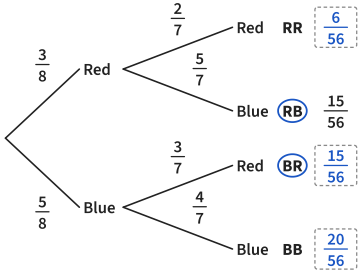
2

A bag has 4 green and 6 yellow counters.
Two are taken without replacement.
Fill in the tree diagram.



3

A bag has 3 red and 5 blue counters.
Two are taken without replacement.
Find the probability of one counter of each colour.

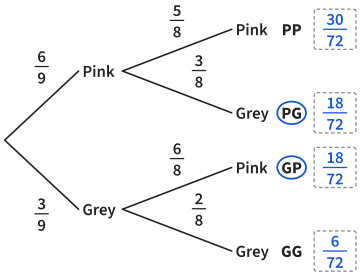


$\frac{15}{56} + \frac{15}{56} = \frac{30}{56}$

Answer $\frac{30}{56} = \frac{15}{28}$

4

A bag has 6 pink and 3 grey counters.
Two are taken without replacement.
Find the probability of one counter of each colour.

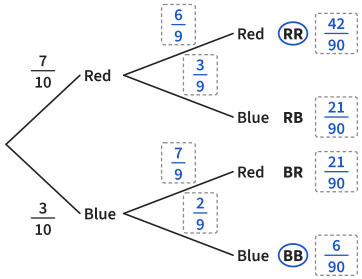


$\frac{18}{72} + \frac{18}{72} = \frac{36}{72}$

Answer $\frac{36}{72} = \frac{1}{2}$

5 *Notice the change!*

A bag has 7 red and 3 blue counters.
Two are taken without replacement.
Find the probability that both counters are the same colour.

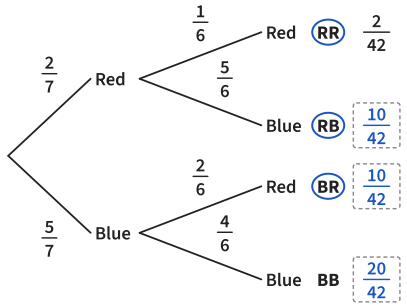


$\frac{42}{90} + \frac{6}{90} = \frac{48}{90}$

Answer $\frac{48}{90} = \frac{8}{15}$

6

A bag has 2 red and 5 blue counters.
Two are taken without replacement.
Find the probability that at least one is red.

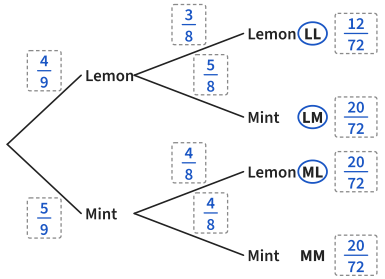


$\frac{2}{42} + \frac{10}{42} + \frac{10}{42} = \frac{22}{42}$

Answer $\frac{22}{42} = \frac{11}{21}$

7

A tin has 4 lemon and 5 mint sweets.
Ali eats two at random.
Find the probability that at least one is lemon.

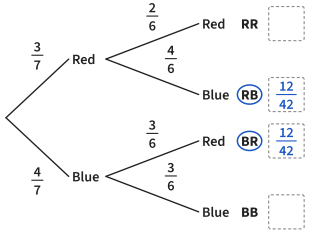


$\frac{12}{72} + \frac{20}{72} + \frac{20}{72} = \frac{52}{72}$

Answer $\frac{52}{72} = \frac{13}{18}$

8

A bag has 3 red and 4 blue counters.
Two are taken without replacement.
Jo says the probability of one of each colour is $\frac{3}{7} \times \frac{4}{6} = \frac{12}{42}$.
Explain Jo's mistake. Find the right answer.



only one route: blue then red is missing

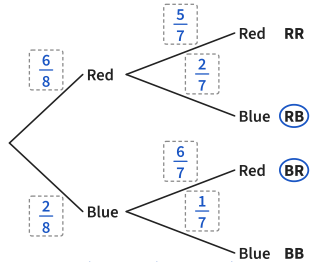
Answer $\frac{24}{42} = \frac{4}{7}$

Conditional probability: tree diagrams *further practice*

ANSWERS

9

A bag has 6 red and 2 blue counters.
Two are taken without replacement.
Fill in the tree diagram.
Find the probability of one counter of each colour.

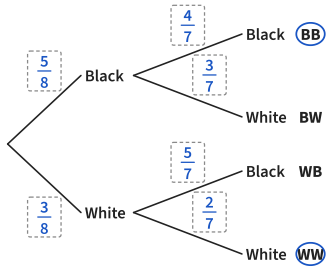


$\frac{12}{56} + \frac{12}{56} = \frac{24}{56}$

Answer $\frac{24}{56} = \frac{3}{7}$

10

A drawer has 5 black and 3 white socks. Two are taken at random. Find the probability that they are the same colour.



$\frac{20}{56} + \frac{6}{56} = \frac{26}{56}$

Answer $\frac{26}{56} = \frac{13}{28}$

11

A box has 9 milk and 3 dark chocolates.
Sam eats two at random.
Find the probability that at least one is dark.

$1 - \frac{9}{12} \times \frac{8}{11} = 1 - \frac{72}{132}$

Answer $\frac{60}{132} = \frac{5}{11}$

12

A bag has 4 red and 4 blue counters.
Two are taken without replacement.
Are they more likely to be the same colour or different colours?
Show how you decide.

same: $\frac{24}{56}$, different: $\frac{32}{56}$

Answer Different colours

13

A bag has 3 red and 2 blue counters.
Two are taken without replacement.
Ella says the probability that both are red is $\frac{3}{5} \times \frac{3}{5} = \frac{9}{25}$.
Explain her mistake.
Find the right answer.

only 2 red are left out of 4

$\frac{3}{5} \times \frac{2}{4} = \frac{6}{20}$

Answer $\frac{6}{20} = \frac{3}{10}$

14

A bag has 5 green and 5 yellow counters. Two are taken without replacement. Show that the probability that both are green is $\frac{2}{9}$.

$\frac{5}{10} \times \frac{4}{9} = \frac{20}{90}$

Answer $\frac{20}{90} = \frac{2}{9}$

15

A group has 5 girls and 3 boys.
Two are picked at random to hand out books. Find the probability that at least one boy is picked.

$1 - \frac{5}{8} \times \frac{4}{7} = 1 - \frac{20}{56}$

Answer $\frac{36}{56} = \frac{9}{14}$

16

A bag has 4 red, 3 blue and 2 green counters. Two are taken without replacement. Show that the probability that they are the same colour is $\frac{5}{18}$.

$\frac{12}{72} + \frac{6}{72} + \frac{2}{72} = \frac{20}{72}$

Answer $\frac{20}{72} = \frac{5}{18}$