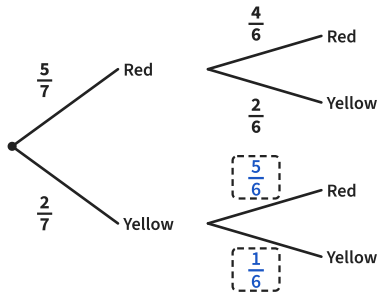
Tree Diagrams: Without Replacement

ANSWERS

1

A bag holds 5 red and 2 yellow sweets.
Two sweets are taken without replacement.
Complete the tree diagram.
Find P(both red).

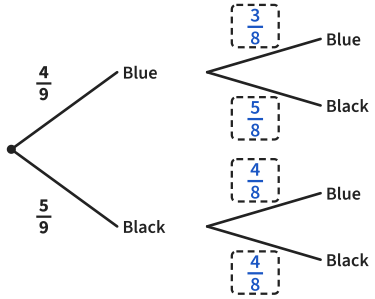


$\frac{5}{7} \times \frac{4}{6} = \frac{20}{42} = \frac{10}{21}$

multiply along the branches

2

A pencil case holds 4 blue and 5 black pens.
Two pens are taken without replacement.
Complete the tree diagram.
Find P(both black).

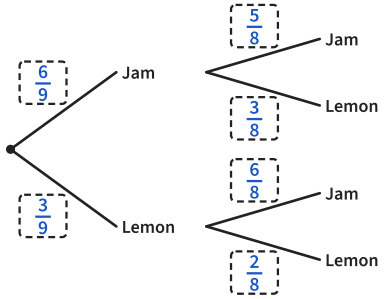


$\frac{5}{9} \times \frac{4}{8} = \frac{20}{72} = \frac{5}{18}$

multiply along the branches

3

A tray has 6 jam tarts and 3 lemon tarts.
Two tarts are eaten at random.
Complete the tree diagram. Find P(both the same flavour).

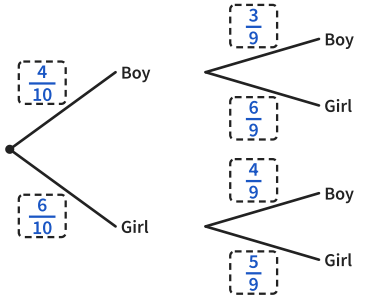


$\frac{6}{9} \times \frac{5}{8} + \frac{3}{9} \times \frac{2}{8} = \frac{36}{72} = \frac{1}{2}$

add the two paths

4

A team has 4 boys and 6 girls.
Two are picked at random to be captains.
Complete the tree diagram. Find P(at least one boy).

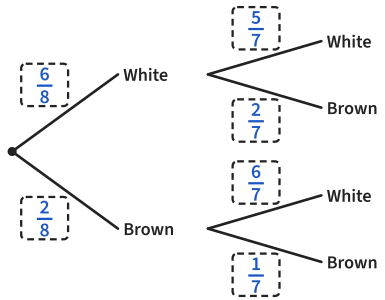


$1 - \frac{6}{10} \times \frac{5}{9} = \frac{60}{90} = \frac{2}{3}$

1 take away the path with none

5

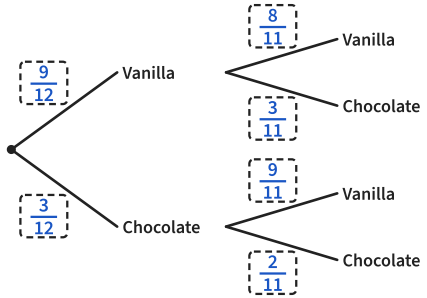
A box has 6 white eggs and 2 brown eggs.
Two eggs are taken at random,
without replacement.
Complete the tree diagram.
Find the probability of one egg of each colour.



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

6

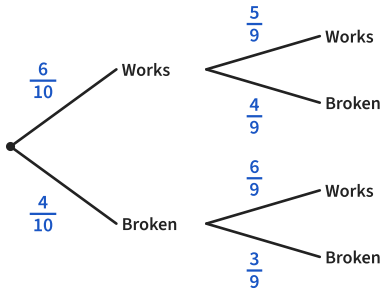
A plate has 12 cupcakes: 9 vanilla and
3 chocolate. Two are eaten at random.
Complete the tree diagram.
Find the probability that both are chocolate.



Answer $\frac{6}{132} = \frac{1}{22}$

7

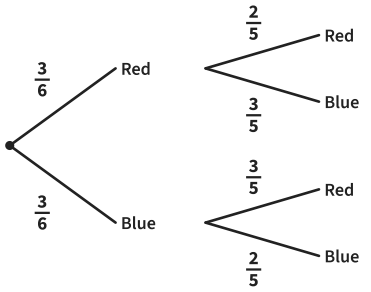
A box holds 10 pens, and 4 of them do
not work. Two pens are taken at random,
without replacement. Draw a tree diagram.
Find the probability that both pens work.



Answer $\frac{30}{90} = \frac{1}{3}$

8

A bag has 3 red and 3 blue beads.
Two are taken without replacement.
Leah says P(both red) = $\frac{3}{6} \times \frac{3}{6} = \frac{1}{4}$.
Explain Leah's mistake. Then find P(both red).



she did not take one red off

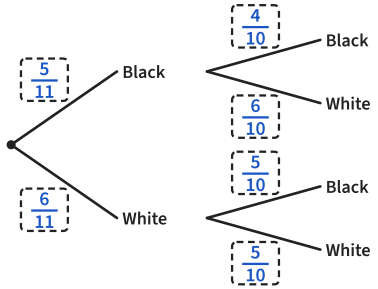
Answer $\frac{3}{6} \times \frac{2}{5} = \frac{6}{30} = \frac{1}{5}$

Tree Diagrams: Without Replacement *further practice*

ANSWERS

9

A box has 5 black and 6 white chess pieces. Two are taken at random, without replacement. Find P(both the same colour).

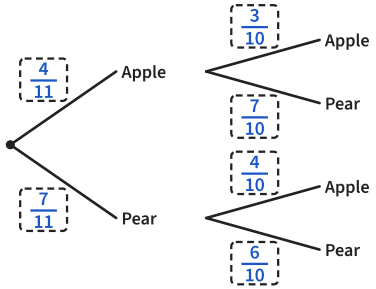


$\frac{20}{110} + \frac{30}{110}$

Answer $\frac{50}{110} = \frac{5}{11}$

10

A fruit bowl has 4 apples and 7 pears. Two pieces of fruit are taken at random. Find P(one apple and one pear).

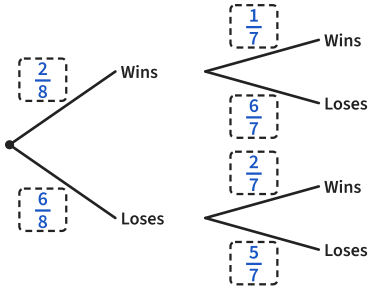


$\frac{28}{110} + \frac{28}{110}$

Answer $\frac{56}{110} = \frac{28}{55}$

11

A raffle has 8 tickets left, and 2 of them win a prize. Ella buys two of the tickets. Find P(at least one of her tickets wins).

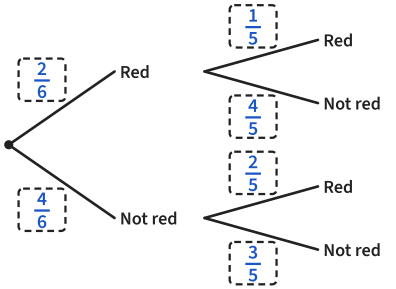


$1 - \frac{6}{8} \times \frac{5}{7} = 1 - \frac{30}{56}$

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

12

A bag has 6 counters. The probability that one counter picked at random is red is $\frac{1}{3}$. Two counters are taken without replacement. Find P(both red).

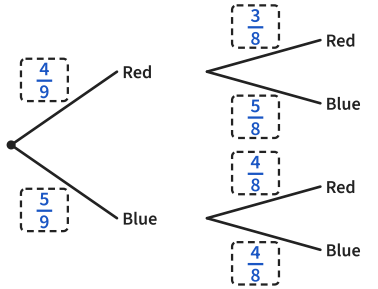


$\frac{1}{3}$ of 6 is 2 red, so $\frac{2}{6} \times \frac{1}{5}$

Answer $\frac{2}{30} = \frac{1}{15}$

13

A bag has 4 red and 5 blue counters. Two are taken without replacement. Find the probability that the second counter is red.



red, red + blue, red: $\frac{12}{72} + \frac{20}{72}$

Answer $\frac{32}{72} = \frac{4}{9}$

14

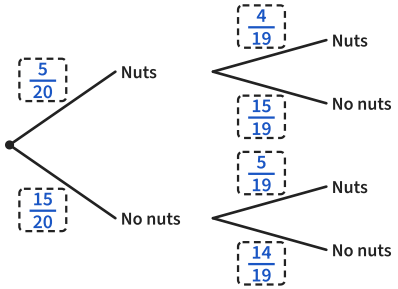
A bag has 4 green and 2 yellow marbles. Two are taken. Is P(both green) higher with replacement or without replacement? Show how you know.

$\frac{4}{9}$ is more than $\frac{2}{5}$

Answer with replacement

15

A box has 20 chocolates, and 5 of them contain nuts. Kemi eats two at random. Find the probability that neither contains nuts.

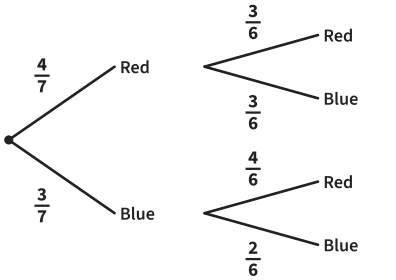


$\frac{15}{20} \times \frac{14}{19}$

Answer $\frac{210}{380} = \frac{21}{38}$

16

A bag has 4 red and 3 blue counters. Two are taken without replacement. Theo says P(one of each) = $\frac{4}{7} \times \frac{3}{6} = \frac{2}{7}$. Is Theo right? Explain.



he left out blue then red

Answer No, it is $\frac{4}{7}$