There is a tin of 10 biscuits in the maths office. Inside the tin there are 3 Digestive Biscuits and 7 Hobnobs. Andrea takes two biscuits at random from the tin to eat. Complete the probability tree diagram.

```
1st Choice
  Digestive
  Hobnob

2nd Choice
  Digestive
  Hobnob

Work out the probability the two biscuits were not the same type.
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There are 4 black pens, 4 blue pens and 2 red pens in a pack.

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Maria takes at random a pen from the pack notes the colour and gives it to a student.

Work out the probability she selects two pens the same colour.
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There are \( n \) chocolates in a bag. 4 of the chocolates are mint chocolate and the rest are plain chocolate.

```
a) Work out the probability of selecting a mint chocolate.
b) Work out the probability of selecting a plain chocolate.
c) Calculate the probability of randomly selecting two mint chocolates from the bag to eat.
```
There is a tin of 10 biscuits in the maths office. Inside the tin there are 3 Digestive Biscuits and 7 Hobnobs. Andrea takes two biscuits at random from the tin to eat. Complete the probability tree diagram.

1st Choice
\[ \frac{3}{10} \quad \text{Digestive} \quad \frac{7}{10} \quad \text{Hobnob} \]

2nd Choice
\[ \frac{2}{9} \quad \text{Digestive} \quad \frac{7}{9} \quad \text{Hobnob} \]

Work out the probability the two biscuits were not the same type.
\[ P(D, H) = \frac{3}{10} \times \frac{7}{9} = \frac{21}{90} \]
\[ P(H, D) = \frac{7}{10} \times \frac{3}{9} = \frac{21}{90} \]
\[ P(Not \ Same) = \frac{21}{90} + \frac{21}{90} = \frac{42}{90} = \frac{7}{15} \]

There are 4 black pens, 4 blue pens and 2 red pens in a pack. Maria takes at random a pen from the pack notes the colour and gives it to a student. Work out the probability she selects two pens the same colour.
\[ P(Black, Black) = \frac{4}{10} \times \frac{3}{9} = \frac{12}{90} \]
\[ P(Blue, Blue) = \frac{4}{10} \times \frac{3}{9} = \frac{12}{90} \]
\[ P(Red, Red) = \frac{2}{10} \times \frac{1}{9} = \frac{2}{90} \]
\[ P(Same \ Colour) = \frac{12}{90} + \frac{12}{90} + \frac{2}{90} = \frac{26}{90} = \frac{13}{45} \]

There are \( n \) chocolates in a bag. 4 of the chocolates are mint chocolate and the rest are plain chocolate.

a) Work out the probability of selecting a mint chocolate.
\[ P(Mint) = \frac{4}{n} \]
b) Work out the probability of selecting a plain chocolate.
\[ P(Plain) = \frac{n - 4}{n} \]
c) Calculate the probability of randomly selecting two mint chocolates from the bag to eat.
\[ P(M, M) = \frac{4}{n} \times \frac{3}{n - 1} = \frac{12}{n(n - 1)} \]