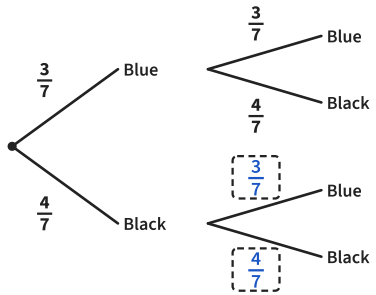
# Tree Diagrams

ANSWERS

**1**

A pot holds 3 blue and 4 black pens. A pen is taken and put back, then another is taken. Complete the tree diagram.
Find P(both blue).

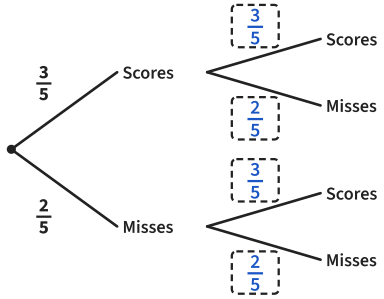



$\frac{3}{7} \times \frac{3}{7} = \frac{9}{49}$

multiply along the branches

**2**

Ola scores a free throw with probability $\frac{3}{5}$. She takes two. Complete the tree diagram. Find P(she scores both).

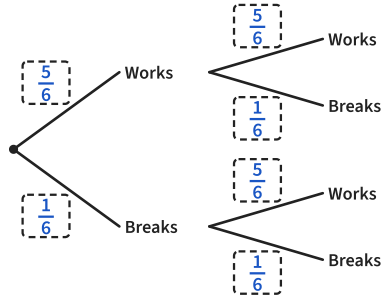



$\frac{3}{5} \times \frac{3}{5} = \frac{9}{25}$

multiply along the branches

**3**

A coffee machine works on any day with probability $\frac{5}{6}$. Complete the tree diagram for two days. Find P(it works on exactly one day).

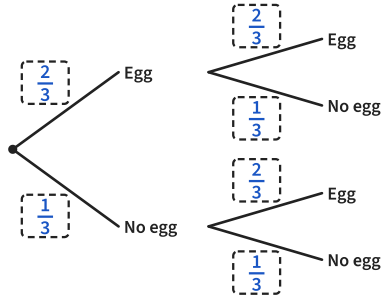



$\frac{5}{6} \times \frac{1}{6} + \frac{1}{6} \times \frac{5}{6} = \frac{10}{36} = \frac{5}{18}$

add the two paths

**4**

A hen lays an egg on any morning with probability $\frac{2}{3}$. Complete the tree diagram for two mornings. Find P(at least one egg).

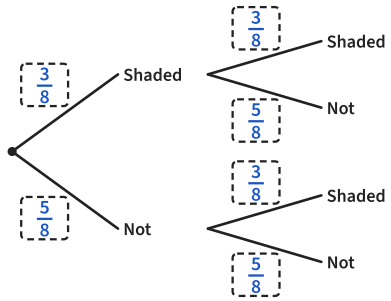



$1 - \frac{1}{3} \times \frac{1}{3} = \frac{8}{9}$

1 take away the path with none

**5**

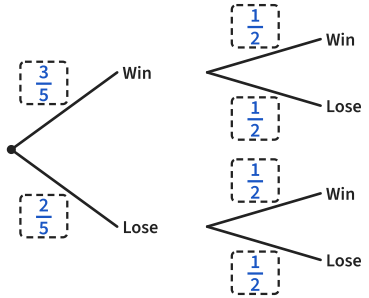
A fair spinner has 8 equal parts, and 3 of them are shaded. It is spun twice.
Complete the tree diagram.
Find the probability that neither spin lands on a shaded part.




**Answer** $\frac{25}{64}$

**6**

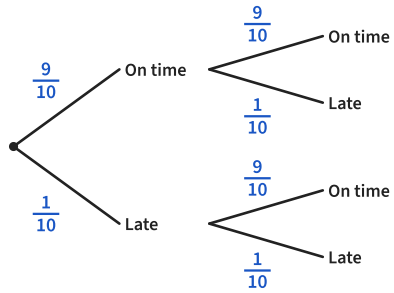
A school wins its football match with probability $\frac{3}{5}$ and its netball match with probability $\frac{1}{2}$. Complete the tree diagram, football first. Find the probability that the school wins exactly one match.




**Answer** $\frac{5}{10} = \frac{1}{2}$

**7**

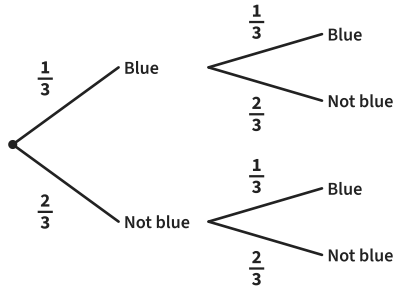
A parcel arrives on time with probability $\frac{9}{10}$. Two parcels are sent.
Draw a tree diagram. Find the probability that at least one parcel is late.




**Answer** $\frac{19}{100}$

**8**

A spinner lands on blue with probability $\frac{1}{3}$. It is spun twice. Ben says P(blue both times) = $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$. Explain Ben's mistake. Then find P(blue both times).




he added along the branches

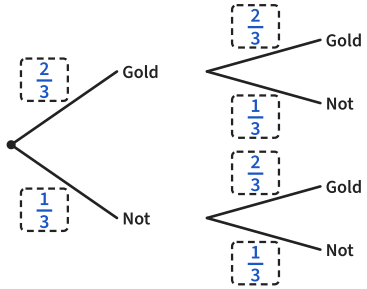
**Answer** $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

# Tree Diagrams *further practice*

ANSWERS

**9**

An archer hits the gold with probability $\frac{2}{3}$ with each arrow. She shoots two arrows. Find P(exactly one hits the gold).

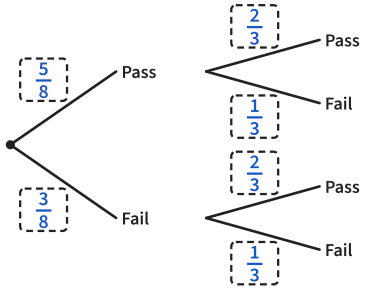



$\frac{2}{9} + \frac{2}{9}$

**Answer** $\frac{4}{9}$

**10**

Maya passes maths with probability $\frac{5}{8}$ and science with probability $\frac{2}{3}$. Find P(she fails both).

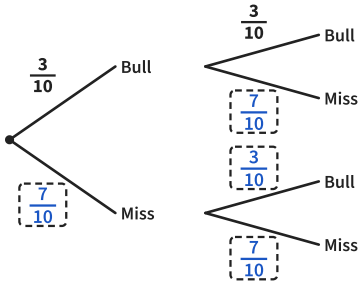



$\frac{3}{8} \times \frac{1}{3}$

**Answer** $\frac{3}{24} = \frac{1}{8}$

**11**

A darts player hits the bull with probability $\frac{3}{10}$ with each dart. Fill in the missing probabilities. Find P(she misses with both darts).

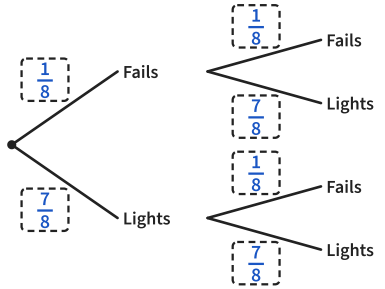



$1 - \frac{3}{10} = \frac{7}{10}$

**Answer** $\frac{49}{100}$

**12**

A firework fails to light with probability $\frac{1}{8}$. Two fireworks are lit. Find the probability that at least one fails to light.

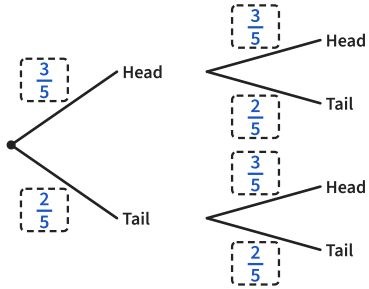



$1 - \frac{7}{8} \times \frac{7}{8} = 1 - \frac{49}{64}$

**Answer** $\frac{15}{64}$

**13**

A coin is biased. It is thrown twice. The probability of two heads is $\frac{9}{25}$. Find the probability of two tails.

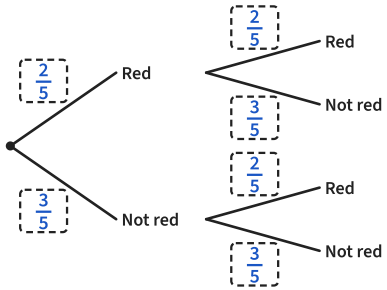



$\frac{3}{5} \times \frac{3}{5} = \frac{9}{25}$, so tails is $\frac{2}{5}$

**Answer** $\frac{4}{25}$

**14**

A spinner lands on red with probability $\frac{2}{5}$. It is spun twice. Is it more likely to land on red exactly once, or not at all? Show how you know.

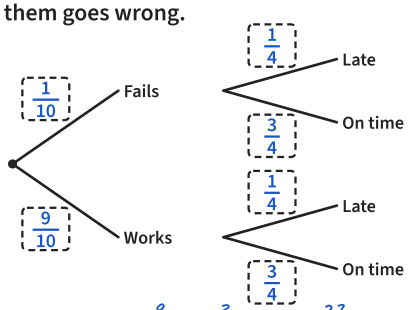



$\frac{12}{25}$ *is more than* $\frac{9}{25}$

**Answer** *exactly once*

**15**

Ruby's alarm fails with probability $\frac{1}{10}$. Her bus is late with probability $\frac{1}{4}$. Find the probability that at least one of them goes wrong.

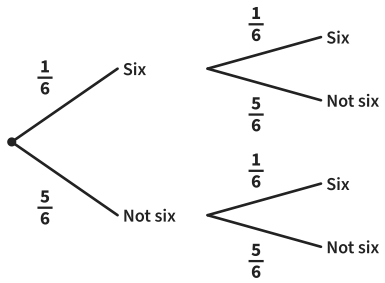



$1 - \frac{9}{10} \times \frac{3}{4} = 1 - \frac{27}{40}$

**Answer** $\frac{13}{40}$

**16**

A fair dice is rolled twice. Sam says P(at least one six) = $\frac{1}{6} + \frac{1}{6} = \frac{1}{3}$. Is Sam right? Explain.




$1 - \frac{25}{36} = \frac{11}{36}$

**Answer** *No, it is* $\frac{11}{36}$