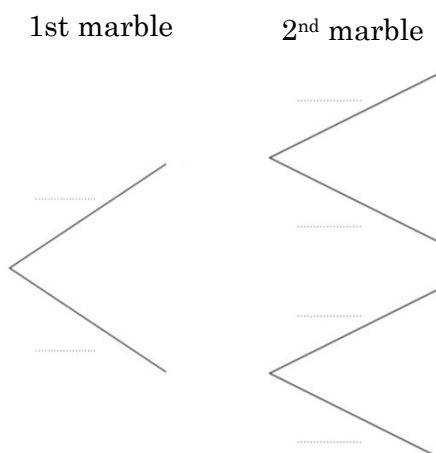# Probability Trees Exam Practice

Q1. A bag contains 4 red marbles and 8 green marbles. Mike choses one marble at random from the bag, and then chooses a second marble after replacing the first.

a) Complete the tree diagram **[2]**

1st marble   2nd marble

b) Find the probability that the two marbles of different colours **[2]**

Q2. Bob always takes an umbrella and his wallet to work each day when he remembers them. The probability that Bob forgets his umbrella is $\frac{5}{12}$ whilst the probability he remembers his wallet is $\frac{2}{3}$
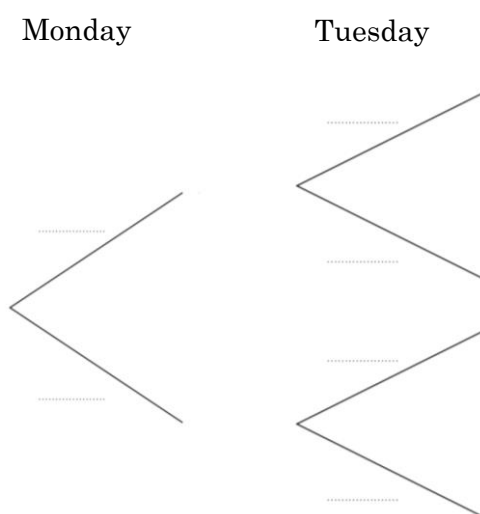
a) Draw a tree diagram to show this situation. **[2]**

b) Find the probability that he forgets both his umbrella and his wallet. **[2]**

c) During a 30 day period, estimate the number of days he forgets both items **[2]**

Q3. The probability it snows on Monday is 0.4, and 0.15 on Tuesday.

a) Complete the tree diagram **[2]**

Monday   Tuesday

b) Find the probability that it doesn't snow on either day. **[2]**

Q4. Tara plays a card game which has either red or black cards being drawn from a pack of 20 cards. Using the diagram, find the prob--ability that she gets a red & a black card if she chooses 2 cards with replacement. **[3]**

1st Card   2nd Card   red

red

black

re'd

0.28

black

black
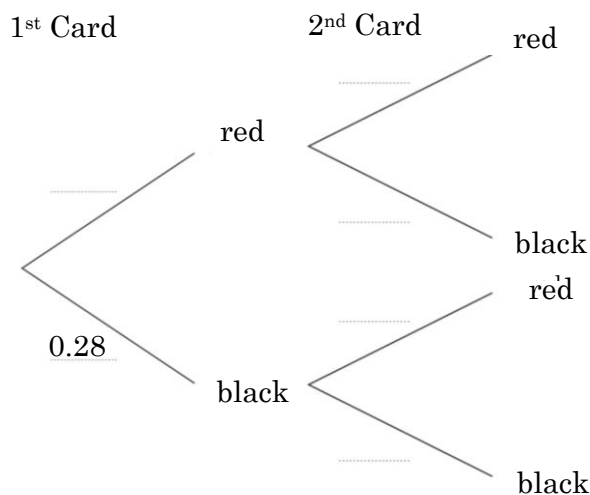
Q5. A bag contains 5 green balls, 3 yellow balls and 7 red balls. Tim selects two balls from the bag where he replaces the first after.

a) Complete the tree diagram **[3]**
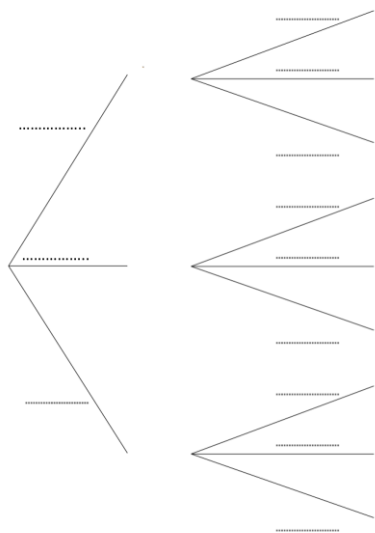
b) Find the probability that Tim selects 1 yellow ball only **[3]**

Q6. In a driving test, a student has unlimited attempts to pass. The probability of passing each time is $\frac{3}{5}$.

a) Draw a tree diagram showing all the possible outcomes up to and including the third attempt. **[3]**

b) Sam eventually passes his test, with the probability of this event being $\frac{384}{390625}$.
Work out the number of times he failed his driving test. **[2]**

Q7. Ben spins the spinner below twice, and records each score, before adding them together.
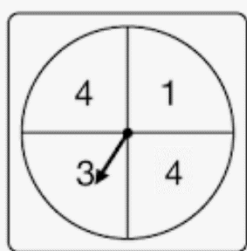
a) Draw a tree diagram to show this situation. **[2]**

b) Hence find the probability that Ben obtains a score more than 3. **[2]**

Q8. Amy is playing a game involving throwing balls at a target. The probability that she wins on her first attempt is 0.3. The chance of her wining on her second attempt is ½ the chance of her winning on her first attempt, and the chance of her winning on her third attempt is ½ of the chance of her winning on her second attempt.

a) Find the probability that she hits the target every time on three goes. **[2]**

b) Find the probability that she wins on her third go, and just once in her first two attempts. **[3]**