1. The table below shows the number of left and right handed tennis players in a sample of 50 males and females.

	Left handed	Right handed	Total
Male	3	29	32
Female	2	16	18
Total	5	45	50

If a tennis player was selected at random from the group, find the probability that the player is

(a) male and left handed;

(b) right handed;

(c) right handed, given that the player selected is female.

Working:

Answers:

(a) ……..

(b) ……..

(c) ……..

(Total 4 marks)

2. ***Note**: For this question, it is important that you show your working and explain your method clearly.*

A box contains 10 coloured light bulbs, 5 green, 3 red and 2 yellow. One light bulb is selected at random and put into the light fitting of room A.

(a) What is the probability that the light bulb selected is

(i) green?

(1)

(ii) not green?

(1)

A second light bulb is selected at random and put into the light fitting in room B.

(b) What is the probability that

(i) the second light bulb is green given the first light bulb was green?

(l)

(ii) both light bulbs are not green?

(2)

(iii) one room has a green light bulb and the other room does not have a green light bulb?

(3)

A third light bulb is selected at random and put in the light fitting of room C.

(c) What is the probability that

(i) all three rooms have green light bulbs?

(2)

(ii) only one room has a green light bulb?

(3)

(iii) at least one room has a green light bulb?

(2)

(Total 15 marks)

3. A bag contains 2 red, 3 yellow and 5 green sweets.

Without looking, Mary takes one sweet out of the bag and eats it. She then takes out a second sweet.

(a) If the first sweet is green, what is the probability that the second sweet is also green?

(b) If the first sweet is not red, what is the probability that the second sweet is red?

Working:

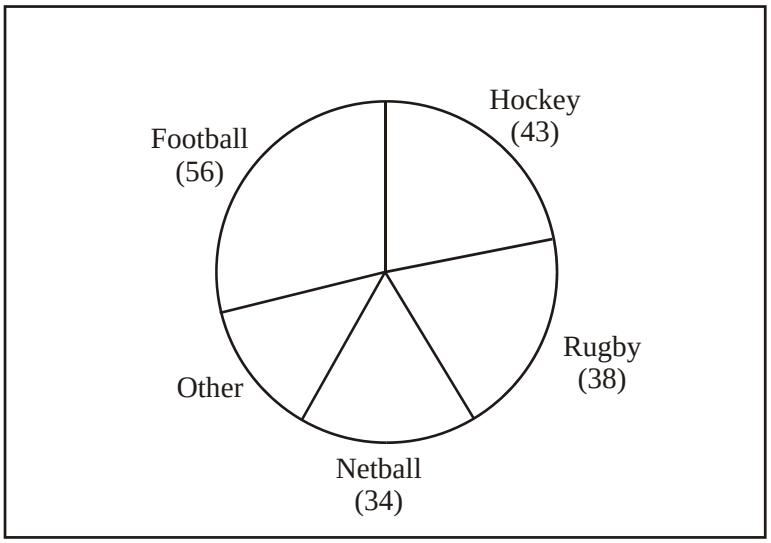
Answers:

(a) ……..

(b) ……..

(Total 4 marks)

4. In a school, 180 pupils are asked which is their favourite outdoor sport in winter. The pie chart shows the result of the survey. The diagram is **not** accurately drawn.



(a) Calculate the angle of the sector representing rugby.

(b) Estimate the probability that a pupil's favourite outdoor sport in winter will be hockey.

Working:

Answers:

(a) ……..

(b) ……..

(Total 4 marks)

5. Nene and Deka both play netball. The probability that Nene will score a goal on her first attempt is 0.75. The probability that Deka will score a goal on her first attempt is 0.82.

Calculate the probability that

(a) Nene and Deka will both score a goal on their first attempts;

(b) neither Nene nor Deka will score a goal on their first attempts.

Working:

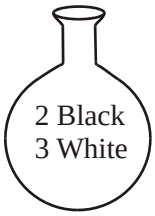
Answers:

(a) ……..

(b) ……..

(Total 4 marks)

6. Two jars contain a number of coloured balls as indicated in the diagrams below.



Jar One

Jar Two

Two experiments are carried out.

First Experiment: A jar is first chosen at random and then a ball is drawn from that jar.

(a) Draw, **and label fully**, a tree diagram to show **all** possible outcomes of this experiment.

(2)

(b) What is the probability that a white ball is drawn?

(3)

Second Experiment: The ball drawn in the first experiment is not replaced. A second ball is then drawn from the same jar.

(c) What is the probability that both balls are white?

(2)

(Total 7 marks)

1. (a) $\frac{3}{50}$ or 6% or 0.06 (A1) (C1)

(b) $\frac{45}{50}$ or $\frac{9}{10}$ or 90% or 0.9 (A1) (C1)

(c) $\frac{16}{18}$ or $\frac{8}{9}$ or 0.889 (3 s.f.) (A2) (C2)

Note: *Award (A1) for 16 and (A1) for 18*

[4]

2. (a) (i) $p(\text{green}) = \frac{5}{10}$ (A1)

(ii) $p(\text{not green}) = \frac{5}{10}$ (A1)

Note: *Accept* $\frac{1}{2}$*, 0.5 or 50% for either answer*

(b) (i) $p(\text{G} \mid \text{G}) = \frac{4}{9}$ or 0.444 (3 s.f.) (A1)

(ii) p(not green then not green)

$= \frac{5}{10} \times \frac{4}{9}$ (M1)

$= \frac{20}{90}$ or $\frac{2}{9}$ or 0.222 (3 s.f.) (A1)

(iii) p(one green and one not green)

$= \frac{5}{10} \times \frac{5}{9} + \frac{5}{10} \times \frac{5}{9}$ (M2)

Note: *Award (M1) for* $\frac{5}{10} \times \frac{5}{9}$*, (M1) for (×2)*

$= \frac{50}{90}$ or $\frac{5}{9}$ or 0.556 (3 s.f.) (A1)

(c) (i) $p(3 \text{ green}) = \frac{5}{10} \times \frac{4}{9} \times \frac{3}{8}$ (M1)

$= \frac{60}{720}$ or $\frac{1}{12}$ or 0.0833 (3 s.f.) (A1)

(ii) p(only one green) = $3 \times \frac{5}{10} \times \frac{5}{9} \times \frac{4}{8}$ (M2)

Note: *Award (M1) for* $\frac{5}{10} \times \frac{5}{9} \times \frac{4}{8}$, *(M1) for (×3)*

= $\frac{300}{720}$ or 0.417 (3 s.f.) or $\frac{10}{24}$ or $\frac{5}{12}$ (A1)

(iii) p(at least one green) = 1 – p(no green)

= $1 - \frac{5}{10} \times \frac{4}{9} \times \frac{3}{8}$ (M1)

= $1 - \frac{60}{720}$

= $\frac{660}{720}$ or $\frac{11}{12}$ or 0.917 (3 s.f.) (A1)

[15]

3. (a) $\frac{4}{9}$ (A2)

(b) $\frac{2}{9}$ (A2)

[4]

4. (a) Rugby: sector angle = $\frac{38}{180} \times 360°$ (M1)

= 76° (A1)

(b) p(Hockey) = $\frac{43}{180}$ or 0.239 (3 s.f.) (A2)

[4]

5. (a) 0.75 × 0.82 (M1)

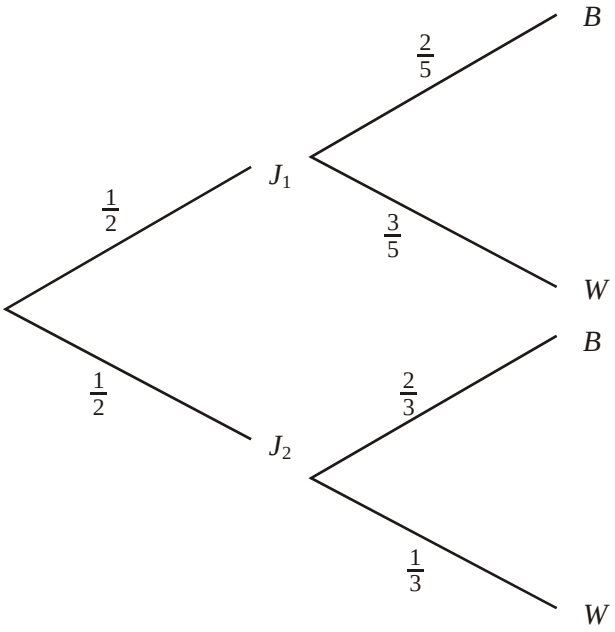
= 0.615 $\left(\text{accept } 61.5\,\% \text{ or } \frac{123}{200}\right)$ (A1)

(b) 0.25×0.18 (M1)

$= 0.045 \left(\text{accept } 4.5\,\% \text{ or } \frac{9}{200} \right)$ (A1)

[4]

6. (a)



(A1)

(A1) 2

(b) $P(J_1 \cap W) = \left(\frac{1}{2}\right)\left(\frac{3}{5}\right)$, $P(J_2 \cap W) = \left(\frac{1}{2}\right)\left(\frac{1}{3}\right)$ (M1)

Note: *Award (M1) for either correct.*

$P(W) = \frac{3}{10} + \frac{1}{6}$ (M1)

$= \frac{7}{15}$ ***or*** 0.467 (3 s.f.) ***or*** 46.7% (3 s.f.) (A1) 3

(c) $P(J_1 \cap W \cap W) = \left(\frac{1}{2}\right)\left(\frac{3}{5}\right)\left(\frac{2}{4}\right)$, $P(J_2 \cap W \cap W) = 0$ (M1)

$P(W \cap W) = \frac{3}{20} + 0$

$= \frac{3}{20}$ ***or*** 0.15 ***or*** 15% (A1) 2

[7]