

4. A sports club offers its members squash, tennis and a multi-gym.

The club secretary carries out a census to discover how many members play squash, play tennis or use the multi-gym.

- (a) Explain what you understand by a census in this context.

(1)

For a randomly selected member of the club, the events S , T and G are defined as

S , the club member plays squash

T , the club member plays tennis

G , the club member uses the multi-gym

The club secretary finds that S and G are independent events.

Given that

$$P(S) = \frac{3}{4} \qquad P(T) = \frac{3}{10} \qquad P(G) = \frac{1}{5}$$

- (b) show that for a randomly selected member of the club

$$P(S \text{ and } G) = 0.15$$

(2)

The club secretary also finds that

- all club members take part in at least one of these three activities
- T and G are mutually exclusive events

- (c) (i) Showing your working clearly, find the probability that a randomly selected member of the club plays squash but does **not** play tennis and does **not** use the multi-gym.

(2)

- (ii) Draw a Venn diagram to display the three events S , T and G and all of their associated probabilities.

(4)