



S28-test Tree Diagrams: Test Pack

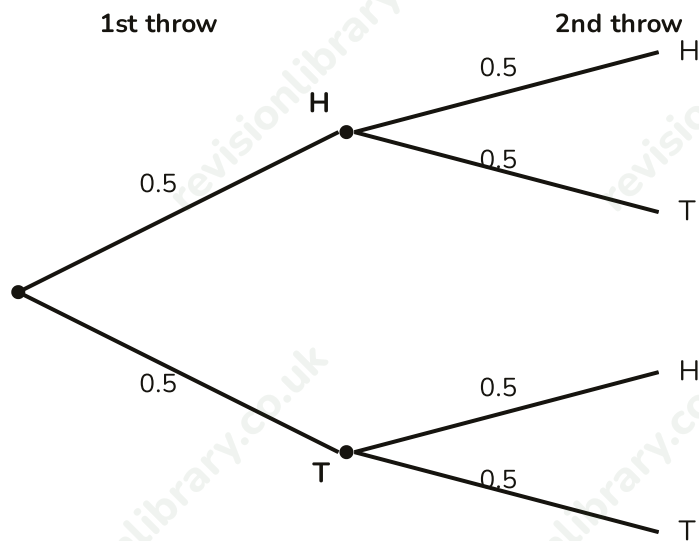
EDEXCEL 1ST0 · Calculator allowed · about 25 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A fair coin is thrown twice. The tree diagram shows all the possible outcomes.



- (a) Write down the probability that the first throw is a Head. (1)

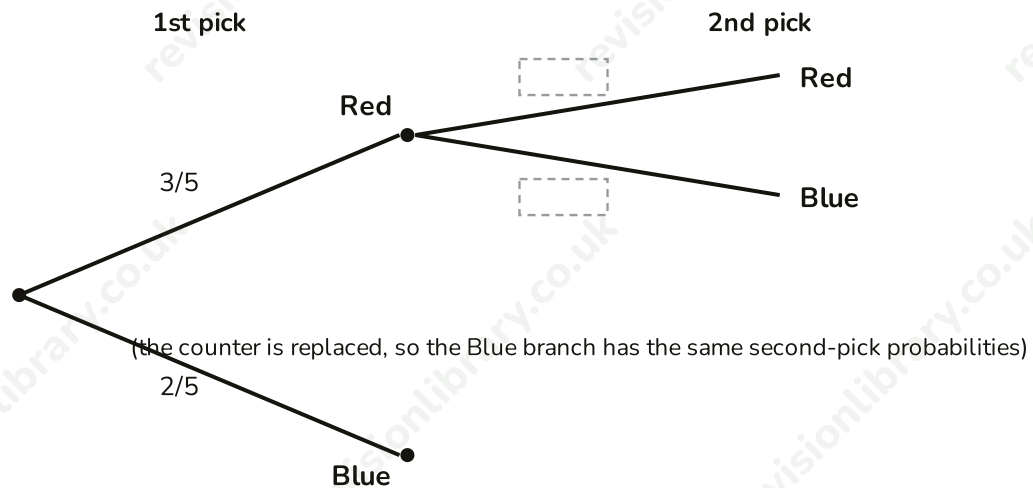
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- (b) Find the probability that both throws are Heads. (2)

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(Total for Question 1 is 3 marks)

- 2 A bag contains 5 counters: 3 red and 2 blue. Sara takes a counter at random from the bag, notes its colour, and replaces it in the bag. She then takes a second counter at random from the bag. The tree diagram shows the first pick, and part of the second pick.



- (a) Write down the missing probability for Blue on the first pick. (1)

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- (b) Complete the tree diagram by writing the two missing probabilities in the dashed boxes for the second pick, following the Red outcome. (2)

- (c) Find the probability that Sara takes two red counters. (2)

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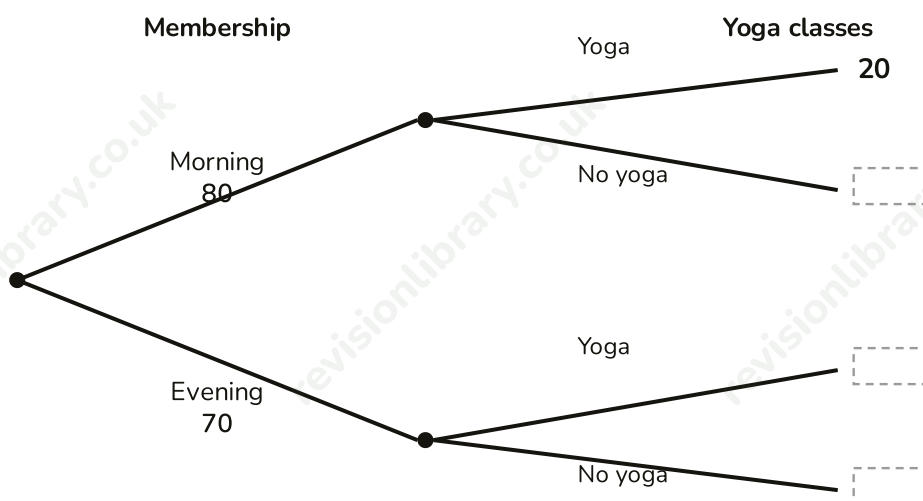
- (d) Find the probability that Sara takes one counter of each colour (in either order). (3)

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(Total for Question 2 is 8 marks)

- 3** 150 people at a gym were asked whether they attend Yoga classes, split by whether they are Morning members or Evening members. The frequency tree shows some of the results.

Of the 150 people, 80 are Morning members and 70 are Evening members. Of the Morning members, 20 attend Yoga classes. In total (Morning and Evening members combined), 55 people attend Yoga classes.



- (a) Work out the number of Morning members who do not attend Yoga classes. (2)
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- (b) Given that a total of 55 people at the gym attend Yoga classes, work out the number of Evening members who attend Yoga classes. (2)
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- (c) One person is chosen at random from all 150 people. Find the probability that this person is an Evening member who does not attend Yoga classes. (2)
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(Total for Question 3 is 6 marks)

- 4** A bag contains counters that are either red or yellow. Ben takes a counter at random from the bag, notes its colour, and replaces it. He then takes a second counter at random. The probability that a counter taken from the bag is red is p . The probability that Ben takes two red counters is $\frac{4}{25}$.

(a) Show that p satisfies the equation $25p^2 = 4$, and find the value of p . **(3)**

(b) Using your value of p , find the probability that Ben takes exactly one red counter from his two picks. **(3)**

(Total for Question 4 is 6 marks)

Mark scheme · S28-test Tree Diagrams: Test Pack

Question 1

- (a) **B1** 0.5 oe cao
- (a) **Answer: 0.5**
- (b) **M1** 0.5×0.5 , oe
- (b) **A1** 0.25 oe cao
- (b) **Answer: 0.25**

Question 2

- (a) **B1** $\frac{2}{5}$ oe cao
- (a) **Answer: $\frac{2}{5}$**
- (b) **B1** Red = $\frac{3}{5}$
- (b) **B1** Blue = $\frac{2}{5}$
- (b) **Answer: Red = $\frac{3}{5}$, Blue = $\frac{2}{5}$**
- (c) **M1** $\frac{3}{5} \times \frac{3}{5}$, oe
- (c) **A1** $\frac{9}{25}$ oe cao
- (c) **Answer: $\frac{9}{25}$**
- (d) **M1** $\frac{3}{5} \times \frac{2}{5}$, oe
- (d) **M1** $\frac{2}{5} \times \frac{3}{5}$, oe
- (d) **A1** $\frac{12}{25}$ oe cao
- (d) **Answer: $\frac{12}{25}$**

Question 3

- (a) **M1** $80 - 20$, oe
- (a) **A1** 60 cao
- (a) **Answer: 60**
- (b) **M1** $55 - 20$, oe
- (b) **A1** 35 cao
- (b) **Answer: 35**
- (c) **M1** $70 - 35$ (= 35 evening, no yoga), then $\frac{35}{150}$, oe, ft from part (b)
- (c) **A1** $\frac{7}{30}$ oe cao
- (c) **Answer: $\frac{7}{30}$**

Question 4

- (a) **M1** $p \times p = \frac{4}{25}$, oe (probability of red on both picks)
- (a) **M1** rearranges to $25p^2 = 4$
- (a) **A1** $p = \frac{2}{5}$, rejecting the negative root since p is a probability
- (a) **Answer: $p = \frac{2}{5}$**
- (b) **M1** $1 - p = \frac{3}{5}$
- (b) **M1** $2 \times (\frac{2}{5} \times \frac{3}{5})$, oe
- (b) **A1** $\frac{12}{25}$ oe cao
- (b) **Answer: $\frac{12}{25}$**