3.19 Frequency Trees: 1-hour Pack

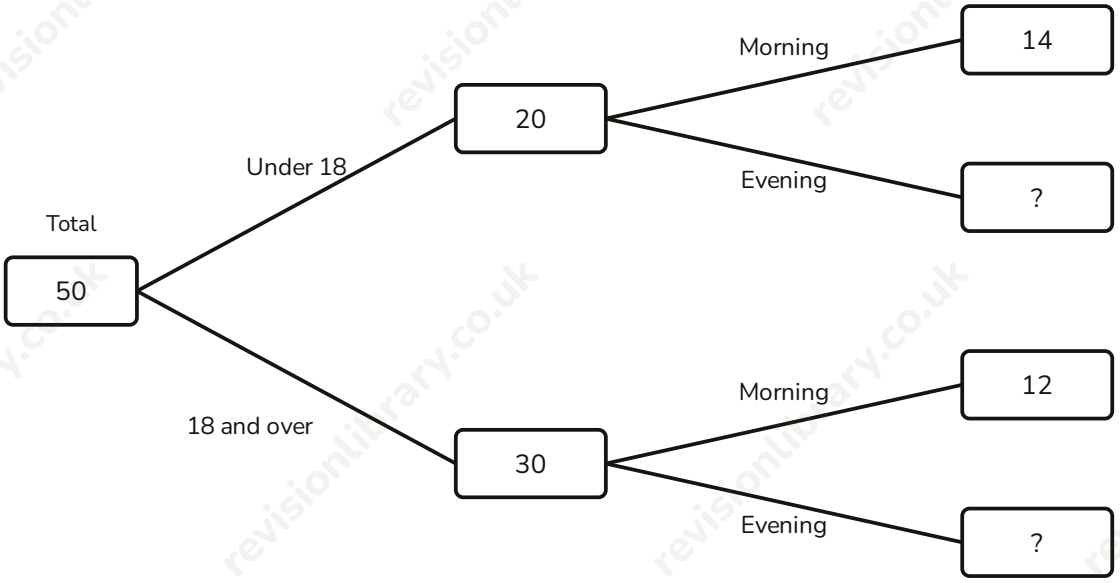
EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 At a gym, 50 members were asked whether they are under 18 or 18 and over, and whether they attend morning or evening classes. 20 members are under 18. Of the under-18 members, 14 attend morning classes. Of the members who are 18 and over, 12 attend morning classes.



(a) Complete the frequency tree by working out the two missing numbers of members who attend evening classes. **(2)**

(b) Work out the total number of members who attend evening classes. **(1)**

.....

(Total for Question 1 is 3 marks)

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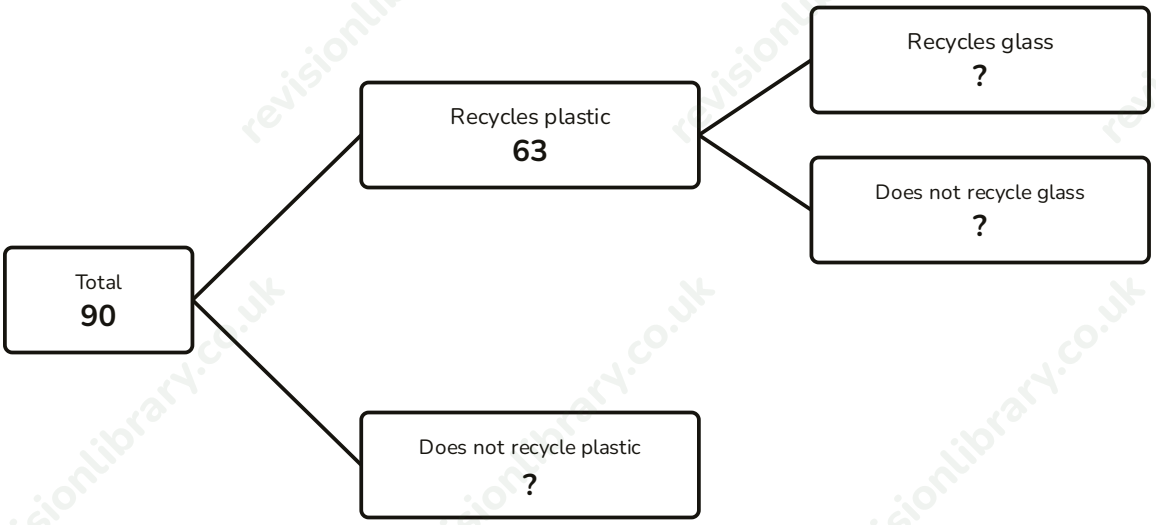
2 A class of 30 students is surveyed about how they travel to school. The frequency tree shows:
First branch: Cycles to school: Yes 12, No 18.
For those who cycle: Left-handed 4, Right-handed ___.
Complete the missing number in the tree.

(a) Complete the missing number. **(1)**

(Total for Question 2 is 1 mark)

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3 Leah surveyed 90 people to find out whether they recycle plastic. 63 of them said yes.



(a) Complete the frequency tree by working out the number of people who do not recycle plastic. **(1)**

(b) Of the people who recycle plastic, 5/9 also recycle glass. Work out the number of people who recycle both plastic and glass. **(2)**

.....

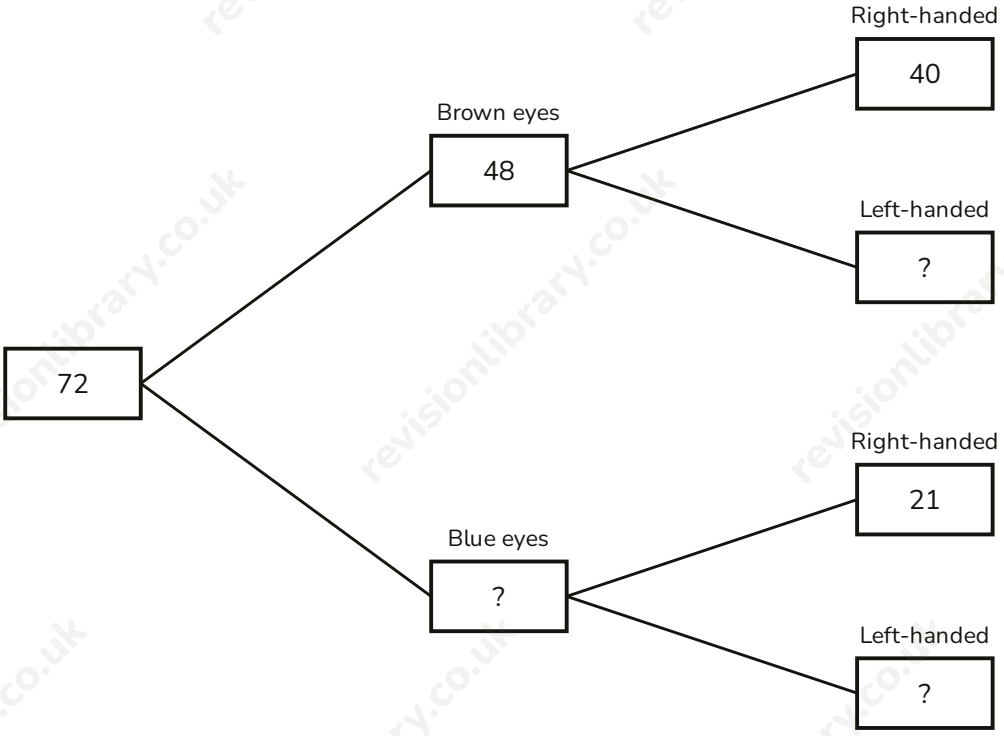
(c) One person is chosen at random from all 90 people. Work out the probability that this person recycles plastic but not glass. Give your answer as a fraction in its simplest form. **(2)**

.....

(Total for Question 3 is 5 marks)

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4 72 pupils were asked their eye colour and whether they are left-handed or right-handed. 48 pupils have brown eyes. Of the brown-eyed pupils, 40 are right-handed. Of the blue-eyed pupils, 21 are right-handed.



(a) Complete the frequency tree by working out the number of pupils with blue eyes. **(1)**

(b) Work out the total number of pupils who are left-handed. **(2)**

.....

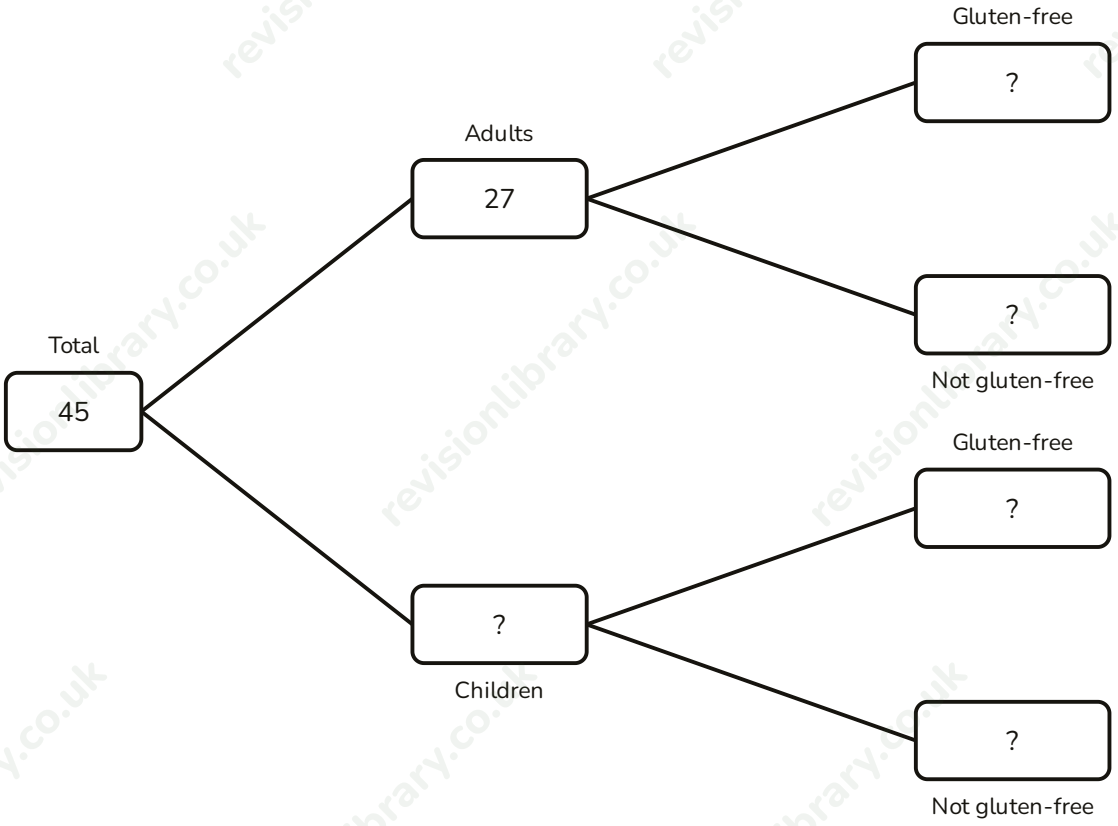
(c) A pupil is chosen at random. Work out the probability that this pupil has brown eyes and is right-handed. Give your answer as a decimal, correct to 3 significant figures. **(2)**

.....

(Total for Question 4 is 5 marks)

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5 A charity bake sale sold 45 cakes. 27 of the cakes were sold to adults. Of the cakes sold to adults, 1/3 were gluten-free. Of the cakes sold to children, 2/9 were gluten-free.



(a) Work out the number of cakes sold to children. **(1)**

.....

(b) Work out the number of gluten-free cakes sold to adults. **(2)**

.....

(c) Given that 4 of the cakes sold to children were gluten-free, work out the total number of gluten-free cakes sold. **(1)**

.....

(Total for Question 5 is 4 marks)

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6 A leisure centre has 40 members. 20 of them are adults and the rest are children.
60% of the adults and half of the children have a season ticket.
How many of the members do not have a season ticket?

(Total for Question 6 is 4 marks)

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7 There are 240 students in Year 11. 50 of them are boys.
20% of the boys and 50% of the girls own a pet.
Work out the total number of students who own a pet.

(Total for Question 7 is 4 marks)

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8 There are 360 members in a club. 1/3 of the members are male.
1/4 of the males and 1/3 of the females are glasses wearers.
Work out the number of female members who are not glasses wearers.

(Total for Question 8 is 3 marks)

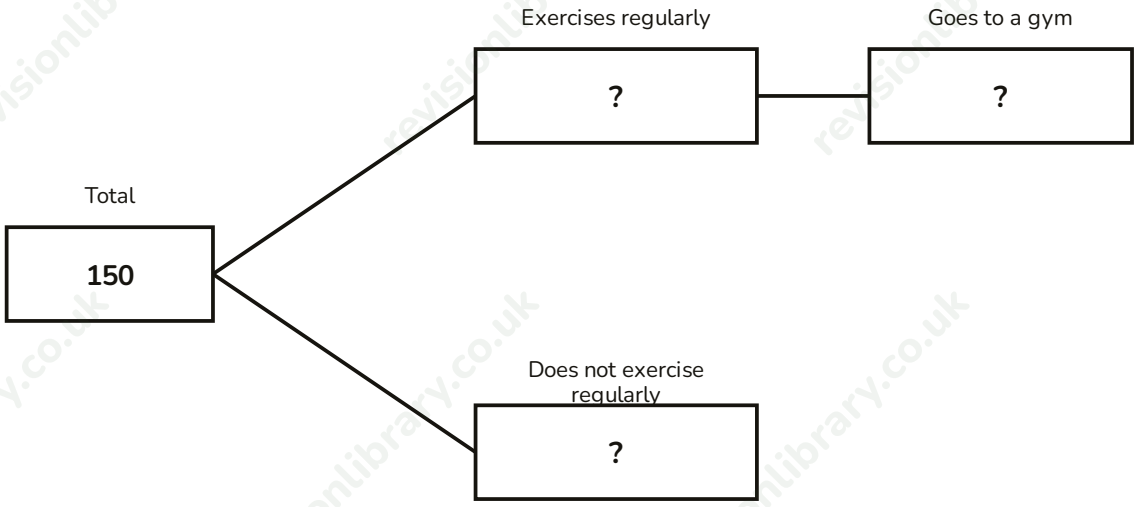
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9 There are 360 members in a club. 1/3 of the members are male.
1/3 of the males and 1/4 of the females are left-handed.
Work out the number of female members who are not left-handed.

(Total for Question 9 is 3 marks)

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10 A survey asked 150 adults whether they exercise regularly. 60% of the adults said yes.



(a) Work out the number of adults who exercise regularly. **(2)**

.....

(b) Of the adults who exercise regularly, 30% also go to a gym. Work out the number of adults who go to a gym. **(2)**

.....

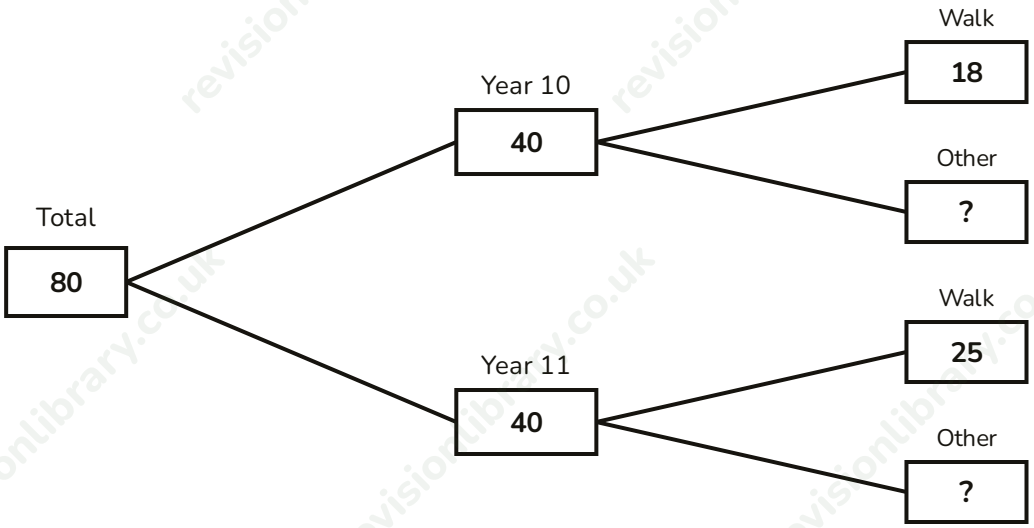
(c) Work out the number of adults who do not exercise regularly. **(1)**

.....

(Total for Question 10 is 5 marks)

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11 A survey of 80 pupils, 40 in Year 10 and 40 in Year 11, recorded whether they walk to school. 18 of the Year 10 pupils walk to school. 25 of the Year 11 pupils walk to school.



(a) Work out the number of Year 10 pupils who do not walk to school. **(1)**

.....

(b) Work out the number of Year 11 pupils who do not walk to school. **(1)**

.....

(c) One pupil is chosen at random from all 80 pupils. Work out the probability that this pupil walks to school. Give your answer as a fraction in its simplest form. **(2)**

.....

(Total for Question 11 is 4 marks)

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12 A charity surveyed 500 people. The tree shows: Donated before and Not donated before. Of those who donated before, 80 would donate again. Of those who had not donated before, x would donate now and 90 would not. The survey finds that the probability a randomly chosen person will donate now is 0.34.
Work out the value of x.

(a) Work out x, the number of people who had not donated before but would donate now. **(5)**

(Total for Question 12 is 5 marks)

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Mark scheme · 3.19 Frequency Trees: 1-hour Pack

Question 1

(a) 6 (20 - 14) for under-18 evening	**B1**
(a) 18 (30 - 12) for 18-and-over evening	**B1**
(a) Answer: 6 and 18	
(b) 24 (6 + 18), follow through from part a	**B1ft**
(b) Answer: 24	

Question 2

(a) 8 cao	**B1**
(a) Answer: 8	

Question 3

(a) 27 (90 - 63)	**B1**
(a) Answer: 27	
(b) 63 x 5/9	**M1**
(b) 35 cao	**A1**
(b) Answer: 35	
(c) (63 - 35)/90	**M1ft**
(c) 14/45 oe	**A1ft**
(c) Answer: 14/45	

Question 4

(a) 24 (72 - 48)	**B1**
(a) Answer: 24	
(b) (48 - 40) + (24 - 21)	**M1**
(b) 11 cao	**A1**
(b) Answer: 11	
(c) 40/72	**M1**
(c) awrt 0.556	**A1**
(c) Answer: 0.556	

Question 5

(a) 18 (45 - 27)	**B1**
(a) Answer: 18	
(b) 27 x 1/3	**M1**
(b) 9 cao	**A1**
(b) Answer: 9	
(c) 13 (9 + 4)	**B1ft**
(c) Answer: 13	

Question 6

children = 20	**M1**
adults with ticket 12 and children with ticket 10	**M1**
total with tickets	**M1**
18	**A1**
Answer: 18	

Question 7

girls = 240 - 50 = 190	**M1**
20% of 50 = 10 or 50% of 190 = 95	**M1**
both numbers found	**M1**
105	**A1**
Answer: 105	

Question 8

females = 360 - 120 = 240	**M1**
80 females are glasses wearers	**M1**
160	**A1**
Answer: 160	

Question 9

females = 360 - 120 = 240	**M1**
60 females are left-handed	**M1**
180	**A1**
Answer: 180	

Question 10

(a) 150 x 0.6	**M1**
(a) 90 cao	**A1**
(a) Answer: 90	
(b) 90 x 0.3	**M1ft**
(b) 27	**A1ft**
(b) Answer: 27	
(c) 60 (150 - 90)	**B1ft**
(c) Answer: 60	

Question 11

(a) 22 (40 - 18)	**B1**
(a) Answer: 22	
(b) 15 (40 - 25)	**B1**
(b) Answer: 15	
(c) (18 + 25)/80	**M1**
(c) 43/80 oe (does not simplify further)	**A1**
(c) Answer: 43/80	

Question 12

(a) calculate total who will donate now = 0.34 x 500 oe	**M1**
(a) evaluate 0.34 x 500 = 170 oe	**M1**
(a) write equation 80 + x = 170 oe	**M1**
(a) solve x = 90 oe	**M1**
(a) 90 cao	**A1**
(a) Answer: 90	

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