FOUNDATION & HIGHER

SAME AT BOTH TIERS

Name ..... Class .....

P1: Recording outcomes

Reason with frequency tables, two-way tables and frequency trees

20 marks · 25 minutes · Non-calculator

1) In a frequency tree, 40 of 100 people are adults. Explain why the two branches from "Adults" must add up to 40.

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[Question 1: 1 marks]

2) In a class of 50, there are 30 girls and 12 of the girls like art. Kim says $\frac{12}{50}$ of the girls like art. Explain her mistake.

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[Question 2: 2 marks]

3) Explain why a relative frequency is always between 0 and 1.

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[Question 3: 1 marks]

4) A dice is rolled 60 times and lands on 6 a total of 18 times. Sam says the dice is biased. Is there evidence for this? Explain.

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[Question 4: 2 marks]

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5) A frequency tree shows 80 people: 30 adults and 50 children. 12 adults and 20 children wear glasses. Show that 32 people wear glasses and 48 do not.

[Question 5: 2 marks]

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6) Explain why a frequency tree is useful for showing information about two events.

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[Question 6: 2 marks]

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7) A spinner with two equal sections lands on red 23 times and blue 27 times in 50 spins. Does this suggest the spinner is unfair? Explain.

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[Question 7: 2 marks]

8) The results of 60 trials are 12, 18 and 30. Show that the relative frequencies add up to 1.

[Question 8: 2 marks]

9) 45% of 200 students are boys. 30 of the boys walk to school. Show that 60 boys do not walk.

[Question 9: 2 marks]

10) Explain the difference between frequency and relative frequency.

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[Question 10: 2 marks]

11) A coin lands on heads 5 times in 10 flips. Does this prove the coin is fair? Explain.

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[Question 11: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	Every adult is in exactly one branch (C1).
2	$\frac{12}{30}$	The denominator should be the number of girls (C1); B1.
3	Explanation	Frequency cannot be negative or more than the number of trials (C1).
4	Some evidence	Expected 10 (M1); 18 is much higher, but more trials would help (C1).
5	Shown	12 + 20 = 32 (M1); 80 − 32 = 48 (C1).
6	Explanation	Shows how a total splits by one event and then another (C2).
7	No	23 and 27 are close to 25 each (M1); variation is expected (C1).
8	Shown	0.2, 0.3, 0.5 (M1); sum 1 (C1).
9	Shown	90 boys (M1); 90 − 30 (C1).
10	Explanation	Frequency is a count (C1); relative frequency is that count divided by the total (C1).
11	No	Results vary; a biased coin could also give 5 heads (C2).