
GCSE Mathematics

Relative Frequency

Mark Scheme - Foundation Tier | Grades 4-5

M = method mark, A = accuracy mark (dependent on the preceding M mark), B = independent mark.

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Edexcel-style questions

Q1 Grade 4 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$18 \div 40$	M1
(a)	0.45	A1

Q2 Grade 4 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$(\frac{10}{50}) \times 300$	M1
(a)	60	A1

Q3 Grade 5 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	relative frequency = $\frac{20}{60} \approx 0.33$, theoretical probability = $\frac{1}{6} \approx 0.17$	M1
(a)	the dice appears to be biased, as the relative frequency is much higher than the theoretical probability	A1

Q4 Grade 4 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	$20 \div 50$	M1
(a)	0.4	A1

Q5 Grade 5 Edexcel style

Total: 2

Part	Mark scheme	Marks
(a)	500 is a much larger number of trials than 10	M1
(a)	a larger number of trials gives a more reliable estimate of the true probability, as relative frequency gets closer to the true probability as the number of trials increases	A1

AQA-style questions

Q6 Grade 4 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	$15 \div 60$	M1
(a)	0.25	A1

Q7 Grade 4 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	$(\frac{6}{40}) \times 200$	M1
(a)	30	A1

Q8 Grade 5 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	relative frequency = $\frac{52}{100} = 0.52$, theoretical probability = 0.5	M1
(a)	the coin appears to be fair, as the relative frequency is close to the theoretical probability	A1

Q9 Grade 4 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	$18 \div 40$	M1
(a)	0.45	A1

Q10 Grade 5 AQA style

Total: 2

Part	Mark scheme	Marks
(a)	2000 is a much larger number of trials than 20	M1
(a)	a larger number of trials gives a more reliable estimate of the true probability, as relative frequency gets closer to the true probability as the number of trials increases	A1

OCR-style questions

Q11 Grade 4 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	$9 \div 50$	M1
(a)	0.18	A1

Q12 Grade 5 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	$(\frac{20}{80}) \times 600$	M1
(a)	150	A1

Q13 Grade 5 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	relative frequency = $\frac{40}{100} = 0.4$, theoretical probability = $\frac{1}{5} = 0.2$	M1
(a)	the spinner appears to be biased, as the relative frequency is much higher than the theoretical probability	A1

Q14 Grade 4 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	$24 \div 50$	M1
(a)	0.48	A1

Q15 Grade 5 OCR style**Total: 2**

Part	Mark scheme	Marks
(a)	1500 is a much larger number of trials than 15	M1
(a)	a larger number of trials gives a more reliable estimate of the true probability, as relative frequency gets closer to the true probability as the number of trials increases	A1

Teachably-style questions

Q16 Grade 4 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	$12 \div 80$	M1
(a)	0.15	A1

Q17 Grade 5 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	$(\frac{4}{25}) \times 500$	M1
(a)	80	A1

Q18 Grade 5 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	relative frequency = $\frac{18}{120} = 0.15$, theoretical probability = $\frac{1}{6} \approx 0.17$	M1
(a)	the dice appears to be fair, as the relative frequency is close to the theoretical probability	A1

Q19 Grade 4 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	$14 \div 40$	M1
(a)	0.35	A1

Q20 Grade 5 Teachably style

Total: 2

Part	Mark scheme	Marks
(a)	1200 is a much larger number of trials than 12	M1
(a)	a larger number of trials gives a more reliable estimate of the true probability, as relative frequency gets closer to the true probability as the number of trials increases	A1

END OF PAPER

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