GCSE HIGHER · REVISION MAT 3

Sample size and reliability

1 A team wins 9 of 25 games.

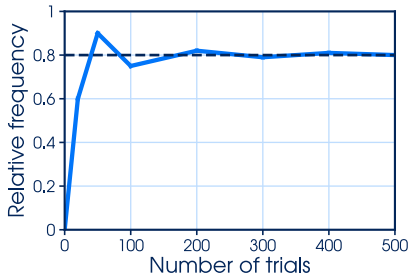
Find the relative frequency of winning.

2 Which value is the best estimate?

Trials	10	50	100	500
Relative frequency	0.1	0.18	0.15	0.16

3 Explain why 5 trials are not enough to decide if a dice is biased.

4 The graph shows the relative frequency of a seed growing.



Estimate how many seeds would grow from 250.

5 Show that 9 sixes in 60 rolls gives a relative frequency of 0.15.

6 Kim: 40 heads in 100 flips.

Lee: 260 heads in 500 flips.

Combine to estimate P(head).

7 Explain why theoretical probability and relative frequency should get closer as trials increase.

8 After 50 trials the relative frequency of success is 0.4.

How many successes are needed in the next 50 trials to make it 0.5 overall?

ANSWERS · REVISION MAT 3

Sample size and reliability

1 0.36

2 0.16 (from 500 trials)

3 Results from so few trials can be very uneven by chance.

4 $P \approx 0.8$

About 200

5 $\frac{9}{60} = 0.15$

6 $\frac{300}{600}$

0.5

7 In the long run, the proportion of successes approaches the true probability.

8 Need 50 out of 100

Have 20

30