GCSE HIGHER · REVISION MAT 1

Relative frequency and expected outcomes

1 A fair dice is rolled 120 times.

How many 4s would you expect?

2 A drawing pin lands point up 36 times in 80 throws.

Find the relative frequency of landing point up.

3 Explain why the relative frequency may be different from the theoretical probability.

4 At a stall, P(win) = 0.15.

It costs £1 to play and the prize is £5.

The game is played 200 times.

How much profit should the stall expect?

5 A spinner was spun 80 times.

Colour	Red	Blue	Green
Frequency	24	31	25

Show that the relative frequency of red is 0.3.

6 A spinner was spun 80 times.

Colour	Red	Blue	Green
Frequency	24	31	25

Estimate how many times it lands on blue in 400 spins.

7 P(head) = 0.5 for a fair coin.

Explain why 100 flips do not always give exactly 50 heads.

8 A bag has 20 counters.

A counter is taken and replaced 100 times; 35 are red.

Estimate the number of red counters.

Why is this only an estimate?

Mr&Mrs MATHS

ANSWERS · REVISION MAT 1

Relative frequency and expected outcomes

1 $\frac{1}{6} \times 120$

20

2 $\frac{36}{80}$

0.45

3 **Results vary by chance, especially with a small number of trials.**

4 Expected wins: 30, paying £150

Takings £200

£50

5 $\frac{24}{80} = 0.3$

6 $\frac{31}{80} \times 400$

155

7 **Each flip is random; 0.5 tells you what happens on average in the long run.**

8 0.35×20

About 7

Relative frequency is not exact.