Comparing variation

6 questions | 9 marks

Equivalent correct methods earn the corresponding marks.

1. Using the supplied table, how many more heads did B record than A? [1 mark]

Practice data: three groups each toss a fair coin ten times

Group	Heads	Tails
A	4	6
B	7	3
C	5	5

$7 - 4 = 3$.

Answer: 3.

2. Check the total trials for Group C in the table. [1 mark]

Practice data: three groups each toss a fair coin ten times

Group	Heads	Tails
A	4	6
B	7	3
C	5	5

5 heads + 5 tails = 10.

Answer: 10.

3. Group D records nine heads in ten tosses. Is ten heads impossible in another batch? [1 mark]

Every toss can land heads even though that batch is unusual.

Answer: No. Ten heads is possible.

4. A bag trial gives red 8 times in 20 draws; another gives red 12 times in 20 draws. Describe the difference. [2 marks]

$12 - 8 = 4$; the counts vary between batches.

Answer: The second batch has 4 more red outcomes.

5. Why is comparing “6 heads from 10 tosses” with “8 heads from 20 tosses” using the head counts alone unfair? [2 marks]

More trials give more opportunities for heads; compare like-sized batches or state both totals.

Answer: The groups used different trial totals.

6. A student says a fair coin is broken because ten tosses gave 6 heads and 4 tails. Is this enough evidence? Explain. [2 marks]

Repeat the experiment and examine the method rather than expecting every short batch to be equal.

Answer: No. That result can occur by chance with a fair coin.