

1. A bag contains only blue, red and yellow balls.

Four students each take a ball from the bag, record the colour of the ball and replace the ball back in the bag.

Each student does this a different number of times.

The students' results are shown in the tables below.

	Ellis	Freddy	Gabriella	Harmony
blue	34	1	6	14
red	17	1	5	9
yellow	49	1	4	17

One more ball is to be taken from the bag.

Which is the best estimate for the probability of taking a yellow ball?

$$\frac{1}{3} \quad \text{or} \quad \frac{4}{15} \quad \text{or} \quad \frac{17}{40} \quad \text{or} \quad \frac{49}{100} \quad \text{or} \quad \frac{71}{158}$$

Justify your answer

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2. Four students each spin a biased weekday spinner a number of times.

The table shows the frequency of each day each student got.

Abu's results	
Day	frequency
Mon	2
Tue	3
Wed	1
Thu	4
Fri	3
n = 13	

Bea's results	
Day	frequency
Mon	4
Tue	3
Wed	4
Thu	6
Fri	3
n = 20	

Dan's results	
Day	frequency
Mon	9
Tue	10
Wed	13
Thu	7
Fri	11
n = 50	

Zoe's results	
Day	frequency
Mon	67
Tue	48
Wed	59
Thu	72
Fri	54
n = 300	

The spinner will be spun one more time.

- (a) Bea says "My results give a better estimate of the probability of Thursday on the spinner than Abu, Dan or Zoe's results"

Is Bea correct?

Explain your answer.

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- (b) Use all the results to work out the best estimate for the probability that the spinner will land on Friday.

(b) .....

3. Three students each throw a biased coin a number of times.

The table shows the frequency of heads and tails that each student got.

Nicola	
side	frequency
heads	22
tails	26

Orlando	
side	frequency
heads	6
tails	6

Patrick	
side	frequency
heads	181
tails	259

The coin will be thrown one more time.

(a) Which of the students' results will give the best estimate for the probability that the coin will land heads?

Justify your answer.

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(b) Use all the results to work out a better estimate for the probability that the coin will land heads.

(b) .....

Answers

Q1:  $\frac{179}{200}$  because it is the greatest number of packets tested

Q2: (a) Yes, Dan's results are better because he has spun the spinner the most times,

Q2: (b)  $\frac{71}{383}$

Q3: (a) Patrick because he tossed the coin the most times, (b)  $\frac{209}{500}$