FULL MODEL ANSWERS

Q1. NON-CALCULATOR

There are 3 red beads and 1 blue bead in a jar.
A bead is taken at random from the jar.

What is the probability that the bead is blue?

$P(\text{blue}) = \frac{\text{Number of blue}}{\text{Total}}$

$= \frac{1}{3+1}$

$\frac{1}{4}$

.....

(Total for question = 1 mark)

Q2. NON-CALCULATOR

There are only 7 blue pens, 4 green pens and 6 red pens in a box.

One pen is taken at random from the box.

Write down the probability that this pen is blue.

$P(\text{blue}) = \frac{\text{Number of blue}}{\text{Total}}$

$= \frac{7}{7+4+6}$

$\frac{7}{17}$

.....

(Total for question = 2 marks)

Q3. NON-CALCULATOR

There are only blue cubes, red cubes and yellow cubes in a box.

The table shows the probability of taking at random a blue cube from the box.

Colour	blue	red x	yellow x
Probability	0.2	0.4	0.4

The number of red cubes in the box is the same as the number of yellow cubes in the box.

(a) Complete the table.

$P(\text{blue}) + P(\text{red}) + P(\text{yellow}) = 1$

$0.2 + x + x = 1$

$2x = 0.8$

$x = 0.4$

(2)

There are 12 blue cubes in the box.

(b) Work out the total number of cubes in the box.

By looking at the probabilities, we can see red = 2 x blue

Blue = 12

Red = 24

Yellow = 24 + 60

60

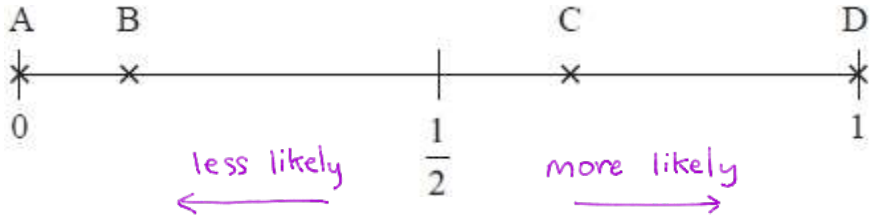
.....

(2)

(Total for question = 4 marks)

Q4. NON-CALCULATOR

Here is a probability scale.
It shows the probability of each of the events A, B, C and D.



(a) Write down the letter of the event that is certain.

D

.....

(1)

(b) Write down the letter of the event that is unlikely.

B

.....

(1)

There are 12 counters in a bag.

3 of the counters are red.
1 of the counters is blue.
2 of the counters are yellow.
The rest of the counters are green.

green = 12 - 3 - 1 - 2
= 6

Caitlin takes at random a counter from the bag.

(c) Show that the probability that this counter is yellow or green is $\frac{2}{3}$.

P(yellow or green) = $\frac{\text{Yellow + green}}{\text{Total}}$

= $\frac{2 + 6}{12}$ = $\frac{8}{12}$ ($\div 4$) = $\frac{2}{3}$

(3)

(Total for question = 5 marks)

Q5. NON-CALCULATOR

In a box there are three types of chocolates.

There are 6 plain chocolates, 8 milk chocolates and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

P(plain) = $\frac{\text{Plain}}{\text{Total}}$

= $\frac{6}{6+8+10}$

= $\frac{6}{24}$

$\frac{1}{4}$

.....

(2)

Deon takes 2 chocolates from the box. P=plain M=milk W=white

(b) Write down all the possible combinations of types of chocolates that Deon can take.

PP, PM, PW, MM, MW, WW

(2)

(Total for question = 4 marks)

Q6. NON-CALCULATOR

There are only 9 counters in a bag.
There are

2 red counters
3 green counters
4 blue counters

Lethna takes at random a counter from the bag.

(a) Write down the probability that she takes

(i) a blue counter, $P(\text{blue}) = \frac{\text{blue}}{\text{total}}$ $\frac{4}{9}$

(1)

(ii) a white counter. $P(\text{white}) = \frac{\text{white}}{\text{total}}$ 0

(1)

There are only 3 buttons in a box.
There is

1 pink button P
1 yellow button Y
1 brown button B

Indre takes a button from the box.
She also throws an ordinary dice once.

(b) List all the possible outcomes.

P1 P2 P3 P4 P5 P6
Y1 Y2 Y3 Y4 Y5 Y6
B1 B2 B3 B4 B5 B6

(2)

(Total for question = 4 marks)

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Q7. NON-CALCULATOR

There are only red counters, blue counters, green counters and yellow counters in a bag.

The table shows the probabilities of picking at random a red counter and picking at random a yellow counter.

Colour	red	blue	green	yellow
Probability	0.24	0.22	0.22	0.32

The probability of picking a blue counter is the same as the probability of picking a green counter.

Complete the table.

$P(red) + P(blue) + P(green) + P(yellow) = 1$

$0.24 + x + x + 0.32 = 1$

$0.56 + 2x = 1$

$2x = 0.44$

$x = 0.22$

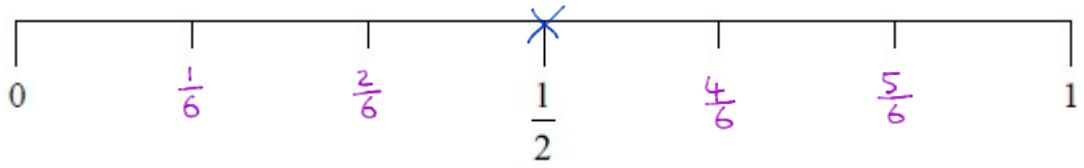
(Total for question is 2 marks)

Q8. NON-CALCULATOR 1, 2, 3, 4, 5, 6

Greg rolls a fair ordinary dice once.

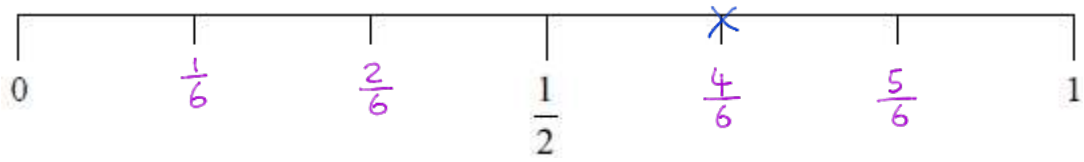
1, 3, 5

(i) On the probability scale, mark with a cross (×) the probability that the dice will land on an odd number.



(ii) On the probability scale, mark with a cross (×) the probability that the dice will land on a number less than 5

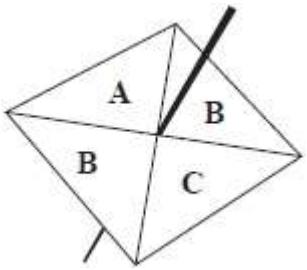
1, 2, 3, 4



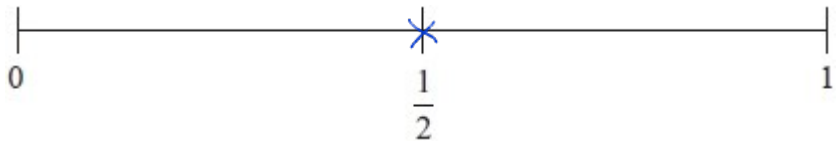
(Total for question = 2 marks)

Q9. NON-CALCULATOR

Sammy spins a fair 4-sided spinner.

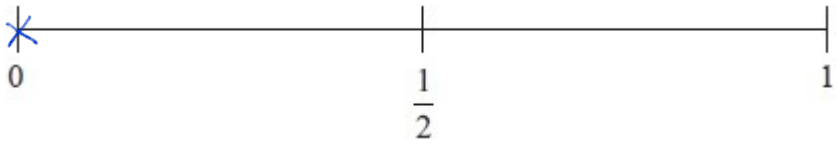


(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.



(1)

(ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on **F**.



(1)

(Total for question = 2 marks)

Q10. NON-CALCULATOR

There are only red counters, blue counters and purple counters in a bag.

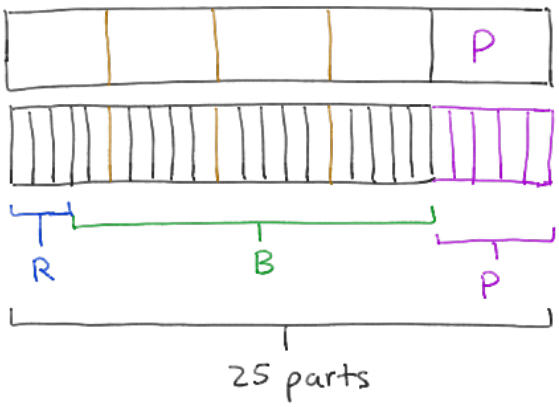
The ratio of the number of red counters to the number of blue counters is 3 : 17 ← second bar model

20 parts

Sam takes at random a counter from the bag.

The probability that the counter is purple is 0.2 = $\frac{1}{5}$ ← first bar model

Work out the probability that Sam takes a red counter.



$P(red) = \frac{3}{25}$

$P(blue) = \frac{17}{25}$

$P(purple) = \frac{5}{25}$

$\frac{3}{25}$

.....

(Total for question = 3 marks)