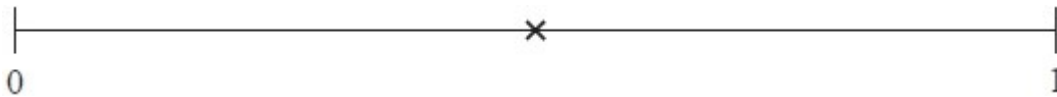# FULL MODEL ANSWERS

Q1. CALCULATOR ALLOWED

The probability of an event is shown by the cross (×) on the probability scale.

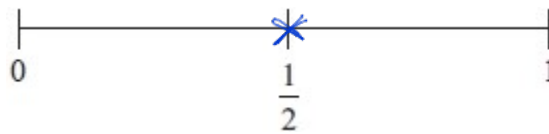Write down an estimate for the probability of the event.

0.5

(Total for question = 1 mark)

Q2. CALCULATOR ALLOWED

odd : 1, 3, 5

An ordinary fair dice is thrown once.

even : 2, 4, 6

(a) On the probability scale below, mark with a cross (x) the probability that the dice lands on an odd number.

(1)

(b) Write down the probability that the dice lands on a number greater than 4 → 5 or 6

$\frac{2}{6}$

$\frac{1}{3}$

(1)

(Total for question = 2 marks)

Q3. CALCULATOR ALLOWED

There are some boys and girls in a classroom.

The probability of picking at random a boy is $\frac{1}{3}$

$P(girl) + P(boy) = 1$

What is the probability of picking a girl?

$P(girl) + \frac{1}{3} = 1$

$\frac{2}{3}$

(Total for question = 1 mark)

Q4. CALCULATOR ALLOWED

There are 49 counters in a bag. 20 of the counters are red. The rest of the counters are blue.

One of the counters is taken at random. Find the probability that the counter is blue.

Blue = 49 − 20

= 29

$P(blue) = \frac{blue}{total}$

$\frac{29}{49}$

$\begin{array}{r} 49 \\ -20 \\ \hline 29 \end{array}$

(Total for question = 2 marks)

Q5. CALCULATOR ALLOWED

The probability that a new fridge has a fault is 0.015

What is the probability that a new fridge does **not** have a fault?

$$P(fault) + P(no\ fault) = 1$$

$$0.015 + P(no\ fault) = 1$$

$$P(no\ fault) = 1 - 0.015$$

.... 0.085 ....

(Total for question = 1 mark)

Q6. CALCULATOR ALLOWED

There are 29 children in a class. 13 of the children are girls.
One of the children is chosen at random. Write down the probability that the child is a boy.

$$P(boy) = \frac{boys}{total}$$

$$= \frac{29 - 13}{29}$$

$$\frac{16}{29}$$

(Total for question = 2 marks)

Q7. CALCULATOR ALLOWED

There are 25 boys and 32 girls in a club.

$\frac{2}{5}$ of the boys and $\frac{1}{2}$ of the girls walk to the club.

① Find number of boys who walk.

② Find number of girls who walk

③ Find total who walk

The club leader picks at random a child from the children who walk to the club.

Work out the probability that this child is a boy.

① $\frac{2}{5} \times 25$ ② $\frac{1}{2} \times 32$

$= \frac{2 \times 25}{5}$ $= \frac{1 \times 32}{2}$

$= 10$ $= 16$

③ total = 10 + 16

= 26

$$P(boy) = \frac{boys\ who\ walk}{total\ who\ walk}$$

$$= \frac{10}{26} \begin{matrix} \div 2 \\ \div 2 \end{matrix}$$
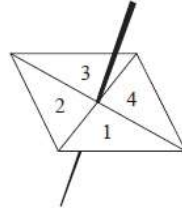
↓ simplify

$$\frac{5}{13}$$

(Total for question = 3 marks)

Q8. CALCULATOR ALLOWED

Here is a 4-sided spinner.

The table shows the probabilities that when the spinner is spun it will land on 1, on 3 and on 4

Number	1	2	3	4
Probability	0.2	0.3	0.4	0.1

The spinner is spun once.

(a) Work out the probability that the spinner will land on 2

$$P(1) + P(2) + P(3) + P(4) = 1$$
$$0.2 + P(2) + 0.4 + 0.1 = 1$$
$$P(2) + 0.7 = 1$$

$$P(2) = 1 - 0.7$$

............................0.3............................

(1)

(b) Which number is the spinner <u>least likely</u> to land on?

number with smallest probability

............................4............................

(1)

Jake is going to spin the spinner 60 times.

(c) Work out an estimate for the number of times the spinner will land on 1

Number of times will land on 1 $= P(1) \times$ number of spins

$$= 0.2 \times 60$$

............................12............................

(2)

(Total for question = 4 marks)

Q9. CALCULATOR ALLOWED

A scout group has a raffle to raise money for charity. There is 1 prize to be won in the raffle.

Laura buys 12 raffle tickets.   A total of 350 raffle tickets are sold.

Find the probability that Laura does **not** win the prize.

$$P\left(\begin{array}{c}not \\ win\end{array}\right) = \frac{number\ of\ tickets\ not\ owned}{total\ tickets}$$

$$= \frac{350 - 12}{350}$$

$$= \frac{338}{350} \begin{array}{c}\div 2 \\ \div 2\end{array}$$

) simplify

$$\frac{169}{175}$$

............................$\frac{169}{175}$............................

(Total for question = 2 marks)

Q10. CALCULATOR ALLOWED

The table shows the probabilities that a biased dice will land on 2, on 3, on 4, on 5 and on 6

Number on dice	1	2	3	4	5	6
Probability	0.31	0.17	0.18	0.09	0.15	0.1

$P(\text{not } 1) = 0.69$

Neymar rolls the biased dice <u>200</u> times.

Work out an estimate for the total number of <u>times the dice will land on 1 or on 3</u>

$P(1) + P(\text{not } 1) = 1$

$P(1) + 0.69 = 1$

$P(1) = 1 - 0.69$

$P(1) = 0.31$

Number of times land on 1 or 3 $= P(1 \text{ or } 3) \times$ Number of spins

$= (0.31 + 0.18) \times 200$

$= 0.49 \times 200$

.... 98 ....

(Total for question = 3 marks)

Q11. CALCULATOR ALLOWED

There are only blue counters, green counters, red counters and yellow counters in a bag.
George is going to take at random a counter from the bag.

The table shows each of the probabilities that George will take a blue counter or a green counter or a yellow counter.

Colour	blue	green	red	yellow
Probability	0.5	0.2	0.05	0.25

(a) Work out the probability that George will take a red counter.

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

$0.5 + 0.2 + P(\text{red}) + 0.25 = 1$

$P(\text{red}) + 0.95 = 1$

.... 0.05 ....

(1)

There are <u>120</u> counters in the bag.

(b) Work out the <u>number of green counters in</u> the bag.

Number of green $= P(\text{green}) \times$ Total number of counters

$= 0.2 \times 120$

.... 24 ....

(2)

(Total for question = 3 marks)

Q12. CALCULATOR ALLOWED

There are only blue counters, yellow counters, green counters and red counters in a bag.
A counter is taken at random from the bag.

The table shows the probabilities of getting a blue counter or a yellow counter or a green counter.

Colour	blue	yellow	green	red
Probability	0.2	0.35	0.4	0.05

(a) Work out the probability of getting a red counter.

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

$0.2 + 0.35 + 0.4 + P(red) = 1$

$0.95 + P(red) = 1$ .... 0.05 ....

(1)

(b) What is the least possible number of counters in the bag?

You must give a reason for your answer.

Blue	Yellow	Green	Red
$\frac{1}{5}$	$\frac{7}{20}$	$\frac{2}{5}$	$\frac{1}{20}$

The least possible number of counters is 20, since
20 is the LCM of all the denominators of the
simplified fractions above.

(2)

(Total for question = 3 marks)