Mark scheme   H   UNIT 10

This is a non-calculator test (50 minutes).

The following marks are awarded for each question.

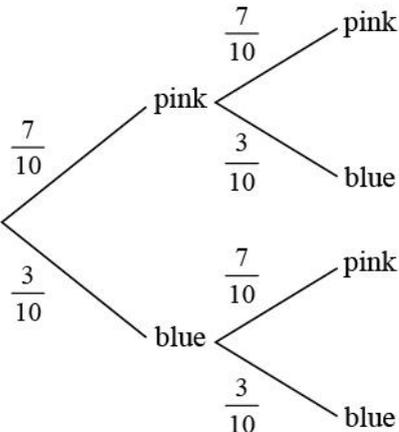| B	Unconditional accuracy mark.
M	Method mark – the correct method must be shown but there may be an arithmetic error; the sight of the value given in brackets implies the award of the method mark.
A	Accuracy mark – unless the question specifies that working **must** be shown then the sight of the correct answer implies the award of full marks (unless the answer clearly comes from incorrect working).
C	Communication mark.
P	Process mark to show correct process for problem solving. Any other process of a similar standard to achieve an accurate result is acceptable to achieve this mark.
FT	Incorrect values may be **followed through** from one step to the next **provided** that the correct method is seen in each step and the only errors are arithmetic. This is shown in mark schemes by putting a number in inverted commas.
OE	Or equivalent answer mark.

NOTE: For all probability answers, only accept fractions or decimals or percentages and no other notation such as 2 in 3, 2 out of 3, 2:3, etc.

NOTE: Fractions do not need to be cancelled but it is acceptable if they are.

Q	Answer	Mark	Comment
1a		B3	for all four values correct; B2 for two or three correct; B1 for one correct
1b	$\dfrac{6}{40}$	B1	FT for $\dfrac{"6"}{40}$ OE

3	Pete, with reason	C1	Pete, and reason such as 'he spins the spinner more times'
5	$\dfrac{3}{10}$	M1	for $\dfrac{3}{2+3+5}$ or 3 in 10, 3 out of 10,
		A1	3:10
7a		B2	B1 for three or four correct
7b	$\dfrac{8}{30}$ OE	M1	for $\dfrac{k}{30}$, $k < 30$
		A1	for $\dfrac{"8"}{30}$ OE

9	0.51	M1	for $P(T) = 0.69 - 0.2\ (= 0.49)$
		A1	
11	$\dfrac{7}{20}$	M1	for listing outcomes in a table or listing the outcomes that are multiples of 3
		M1	for $\dfrac{k}{20}$, $k < 20$ or $\dfrac{7}{c}$, $c > 7$
		A1	

13a	first bead second bead $\frac{7}{10}$ — pink pink $<$ $\frac{3}{10}$ — blue $\frac{7}{10}$ — pink $\frac{3}{10}$ — pink blue $<$ $\frac{7}{10}$ — pink $\frac{3}{10}$ — blue	B2	B1 for $\frac{3}{10}$ in a correct position
13b	$\frac{42}{100}$	P1	for $\frac{7}{10}\times\frac{3}{10}$ or $\frac{3}{10}\times\frac{7}{10}$ OE
		P1	for $\frac{7}{10}\times\frac{3}{10}+\frac{3}{10}\times\frac{7}{10}$ OE
		A1	

15	$\frac{132}{210}$	P1	for evidence of 14 used as a denominator
		P1	for one correct product, e.g. $\frac{8}{15}\times\frac{7}{14},\frac{2}{15}\times\frac{1}{14},\frac{5}{15}\times\frac{4}{14}$ OE, $\frac{8}{15}\times\frac{1}{14}$, etc.
		P1	for a fully correct process, e.g. $1-\left(\frac{8}{15}\times\frac{7}{14},\frac{2}{15}\times\frac{1}{14},\frac{5}{15}\times\frac{4}{14}\right)$
		A1	

Question	Topic	Step	Mark
1a	Use Venn diagrams to calculate simple probabilities	7th	3
1b	Use Venn diagrams to calculate simple probabilities	7th	1
3	Find the probability of an event happening using relative frequency	5th	1
5	Solve a ratio problem in context	8th	2
7a	Draw a frequency tree based on given information and use this to find probability and expected outcome	6th	2
7b	Draw a frequency tree based on given information and use this to find probability and expected outcome	6th	2
9	Understand and use P(A and B) = P(A) × P(B) for independent events	7th	2
11	Understand and use P(A and B) = P(A) × P(B) for independent events	7th	3
13a	Complete a probability tree diagram for independent events	6th	2
13b	Complete a probability tree diagram for independent events	6th	3
15	Understand selection with or without replacement	10th	4