

KS3 – Tree Diagrams – Answers

Section A – Tree Diagrams

Q1

a-b) First toss H/T each $1/2$; from each branch second toss H/T each $1/2$.

c) $1/2 \times 1/2 = 1/4$.

d) HT or TH: $1/4 + 1/4 = 1/2$.

Q2

a-b) On both choices: $P(R)=3/5$, $P(B)=2/5$ because the counter is replaced.

c) $9/25$.

d) $6/25$.

e) RB or BR = $6/25 + 6/25 = 12/25$.

Q3

a) Each stage has $A = 0.7$ and $B = 0.3$.

b) 0.49 .

c) 0.21 .

d) AB or BA = $0.21 + 0.21 = 0.42$.

e) $1 - P(BB) = 1 - 0.09 = 0.91$.

Q4

a) 0.4 .

b) Each stage: $H = 0.6$, $T = 0.4$.

c) 0.36 .

d) 0.16 .

e) HT or TH = $0.24 + 0.24 = 0.48$.

Q5

a-b) First choice: $G=4/10=2/5$, $Y=6/10=3/5$.

c) After G: $G=3/9=1/3$, $Y=6/9=2/3$.

d) After Y: $G=4/9$, $Y=5/9$.

e) $4/10 \times 3/9 = 12/90 = 2/15$.

Q6

a-b) Coin: $H=0.4$, $T=0.6$. From either: Even= $1/2$, Odd= $1/2$.

c) $0.4 \times 1/2 = 0.2$.

d) $1 - 0.2 = 0.8$.

e) They are complementary outcomes: every result is either a win or not a win.

Section B – Frequency Trees

Q7

- a) Start 120 → French 70 / Not French 50. French → Girls 42 / Boys 28.
- b) 28.
- c) 19.
- d) Not French → Boys 31 / Girls 19.

Q8

- a) 200 → Yes 130 / No 70. Yes → Adults 75 / Children 55. No → Adults 40 / Children 30.
- b) 70.
- c) 55.
- d) 30.
- e) 85.

Q9

- a) 72.
- b) $108 - 63 = 45$.
- c) $72 - 24 = 48$.
- d) $63 + 24 = 87$.
- e) 180 → Popcorn 108 / No popcorn 72; Popcorn → Drink 63 / No drink 45; No popcorn → Drink 24 / No drink 48.

Q10

- a) 150 → KS3 90 / KS4 60; KS3 → Wed 54 / Not Wed 36; KS4 → Wed 39 / Not Wed 21.
- b) 36.
- c) 21.
- d) 93.
- e) 57.

Q11

- a) 105.
- b) 54.
- c) $132 - 81 = 51$.
- d) $105 - 51 = 54$.
- e) 240 → A 135 / B 105; A → X 81 / Not X 54; B → X 51 / Not X 54.
- f) $81 + 54 + 51 + 54 = 240$.