Probability Laws and tree diagrams – Answers

Combining Probabilities

1) (a) $\frac{1}{3}$ (b) $\frac{1}{6}$ (c) $\frac{1}{18}$

2) (a) $\frac{3}{5}$ (b) $\frac{2}{5}$ (c) $\frac{6}{25}$ (d) $\frac{9}{25}$

3) (a) $\frac{1}{12}$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) $\frac{1}{6}$
(e) Total is 1, as expected because one of these 4 possibilities is certain to happen

4) (a) 0.008 (b) 0.32768 (c) 0.67232 (d) 0.00124

5) (a) 0.61 (b) 0.39 (c) 253 people

6) (a) 0.1 (b) 0.7

7) (a) Total = 1, as expected (b) 1 over 4 (c) 1 over 3

8) (a) $\frac{1}{4}$ (b) $\frac{1}{13}$ (c) $\frac{17}{52}$ (d) $\frac{16}{52}$ or $\frac{4}{13}$
(e) We cannot add the probability because the events are not mutually exclusive – the card could be a Heart and an Ace.

9) (a) $\frac{1}{8}$ (b) $\frac{1}{16}$ (c) $\frac{12}{169}$ (d) $\frac{1}{169}$

10) (a) $\frac{3}{7}$ (b) $\frac{1}{7}$ (c) $\frac{2}{7}$ (d) $\frac{4}{7}$ (e) $\frac{4}{7}$
(e) Yes because these events are mutually exclusive.
(f) No because the events are not mutually exclusive (the bead could be blue AND numbered 2)

11) (a) $\frac{5}{9}$ (b) $\frac{1}{2}$ (c) $\frac{3}{8}$ (d) $\frac{5}{24}$ (e) $\frac{1}{6}$

12) (a) $\frac{25}{204}$ (b) $\frac{1}{17}$ (c) $\frac{16}{221}$ (d) $\frac{1}{221}$

13) (a) 0.4 (b) 0.85 (c) 0.45

Probability Trees

1) (a) $\frac{17}{32}$ (b) $\frac{15}{32}$

2) (a) $\frac{7}{12}$ (b) $\frac{5}{6}$

3) (a) $\frac{125}{216}$ (b) $\frac{75}{216}$

4) (a) $\frac{1}{2}$ (b) $\frac{5}{12}$

5) (a) 0.36 (b) 0.648

6) (a) $\frac{13}{28}$ (b) $\frac{15}{28}$

7) (a) $\frac{1}{11}$ (b) $\frac{19}{33}$

8) $\frac{5}{8}$

Probability Revision Questions

1) (a) 0.7 (b) 0.28

2) (b) $\frac{20}{39}$ (c) $\frac{70}{143}$ (d) $\frac{115}{143}$

3) (a)

	3	**4**	**5**	**6**
1	L	L	W	W
2	W	W	L	L
3	W	L	L	L
4	L	L	L	L

(b) $\frac{5}{16}$

(c) $\frac{1}{2}$

(d) 0

4) (a) 0.056
(b) 0.188