UNIT 10 *Probability - Two Events* Extra Exercises 10.1

1. A packet contains 15 orange sweets and 10 lemon sweets. One sweet is taken from the packet at random. What is the probability that the sweet is:
   (a) orange,
   (b) lemon ?

2. 20 balls are each marked with a different number from 1 to 20, and then placed in a bag. One ball is taken at random from the bag. What is the probability that the number on the ball is:
   (a) 17,
   (b) an even number,
   (c) a multiple of 3,
   (d) a multiple of 5,
   (e) less than 2,
   (f) greater than 2,
   (g) a prime number ?

3. A card is taken at random from a standard 52-card pack of playing cards. What is the probability that the card is:
   (a a seven,
   (b) a Diamond,
   (c) not a Spade,
   (d) a red King,
   (e) a King, a Queen or a Jack,
   (f) a black Jack ?

UNIT 10 *Probability - Two Events* Extra Exercises 10.2

1. Two fair dice are each renumbered so that they have the numbers 1, 3, 5, 7, 9 and 11 instead of the usual numbers.

   (a) Draw a table to show the possible outcomes when these two dice are thrown and their scores are added together.

   (b) How many ways are there of scoring a total of:

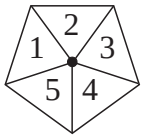
   (i) 6,

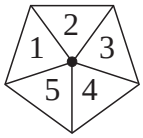
   (ii) 12,

   (iii) 16,

   (iv) 11 ?

2. Two spinners, each marked 1 - 5, are spun together.





   (a) Draw a table to show the possible outcomes.

   (b) How many ways are there of scoring a total:

   (i) of 10,

   (ii) of 6,

   (iii) that is greater than 3,

   (iv) that is less than 3,

   (v) that is greater than 6 but less than 9,

   (vi) that is an even number,

   (vii) that is an odd number,

   (viii) that is a prime number,

   (ix) that is a multiple of 5 ?

3. In a jar there are blue sweets and red sweets. Draw a tree diagram to show the possible outcomes when 2 sweets are taken out of the jar at random.

UNIT 10 *Probability - Two Events* Extra Exercises 10.3

1. The following table shows the possible outcomes when two fair dice are thrown and their scores are added together:

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Determine the probability that the total score on the two dice is:

(a) 5,

(b) 7,

(c) an even number,

(d) a prime number,

(e) a square number,

(f) greater than 3 but less than 9.

2. A calculator can be used to produce random digits between 1 and 9. Pairs of random digits are added together to give a total score.

(a) Draw up a table to show the possible outcomes.

(b) Determine the probability that the total score is:

(i) 10,

(ii) 8,

(iii) less than 15,

(iv) greater than 9,

(v) an even number,

(vi) a prime number,

(vii) a multiple of 3,

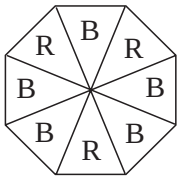
(viii) a multiple of 5.

UNIT 10 *Probability - Two Events* Extra Exercises 10.4

1. Two fair dice are rolled together. Use a tree diagram to determine the probability of getting:
   (a) 2 prime numbers,
   (b) 1 prime number,
   (c) no prime numbers.

2. For a biased coin, the probability of getting a head is $\frac{3}{5}$. Use a tree diagram to determine the probability of getting:
   (a) 2 heads,
   (b) 2 tails,
   (c) a head and a tail.

3. A spinner has blue and red sections as shown in the diagram.
   The spinner is spun twice. Determine the probability of getting:
   (a) 2 reds,
   (b) 2 blues,
   (c) a blue and a red.



UNIT 10 *Probability - Two Events* Extra Exercises 10.5

1. A bag contains 10 red balls and 5 blue balls. One ball is taken at random, from the bag. A second ball is then taken out.
   Determine the probability that:
   (a) both balls are red,
   (b) both balls are the same colour,
   (c) the two balls are different colours.

2. A drawer contains 8 green socks and 10 blue socks. One sock is taken out of the drawer at random. A second sock is then taken out. Determine the probability that two socks of the same colour have been taken out of the drawer.

3. 7 cards are each marked with a different number from 1 to 7, and then placed face down on a table. One card is selected at random and not replaced. A second card is then taken, at random.
   Determine the probability that:
   (a) both cards have odd numbers on them,
   (b) both cards have even numbers on them,
   (c) one card has an odd number on it.

Extra Exercises 10.1 Answers

1. (a) $\frac{3}{5}$ (b) $\frac{2}{5}$

2. (a) $\frac{1}{20}$ (b) $\frac{1}{2}$ (c) $\frac{3}{10}$ (d) $\frac{1}{5}$
   (e) $\frac{1}{20}$ (f) $\frac{9}{10}$ (g) $\frac{2}{5}$

3. (a) $\frac{1}{13}$ (b) $\frac{1}{4}$ (c) $\frac{3}{4}$
   (d) $\frac{1}{26}$ (e) $\frac{3}{13}$ (f) $\frac{1}{26}$

Extra Exercises 10.2 Answers

1. (a)

	1	3	5	7	9	11
1	2	4	6	8	10	12
3	4	6	8	10	12	14
5	6	8	10	12	14	16
7	8	10	12	14	16	18
9	10	12	14	16	18	20
11	12	14	16	18	20	22

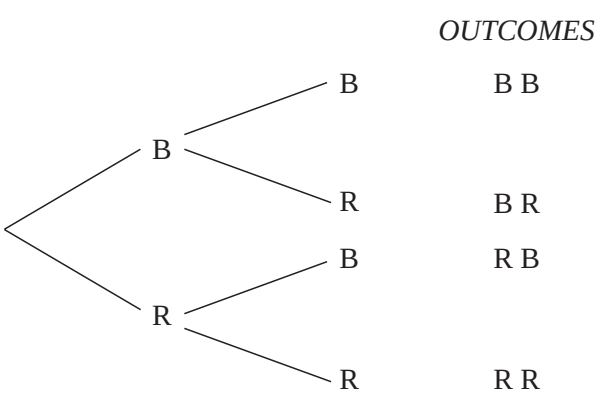
(b) (i) 3 (ii) 6 (iii) 4 (iv) 0

2. (a)

	1	2	3	4	5
1	2	3	4	5	6
2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10

(b) (i) 1 (ii) 5 (iii) 22
(iv) 1 (v) 7 (vi) 13
(vii) 12 (viii) 11 (ix) 5

3.



Extra Exercises 10.3 Answers

1. (a) $\frac{1}{9}$ (b) $\frac{1}{6}$ (c) $\frac{1}{2}$

   (d) $\frac{5}{12}$ (e) $\frac{7}{36}$ (f) $\frac{23}{36}$

2. (a)

	1	2	3	4	5	6	7	8	9
1	2	3	4	5	6	7	8	9	10
2	3	4	5	6	7	8	9	10	11
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	18

   (b) (i) $\frac{1}{9}$ (ii) $\frac{7}{81}$

   (iii) $\frac{71}{81}$ (iv) $\frac{5}{9}$

   (v) $\frac{41}{81}$ (vi) $\frac{29}{81}$

   (vii) $\frac{1}{3}$ (viii) $\frac{17}{81}$

Extra Exercises 10.4 Answers

1. (a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$

2. (a) $\frac{9}{25}$ (b) $\frac{4}{25}$ (c) $\frac{12}{25}$

3. (a) $\frac{9}{64}$ (b) $\frac{25}{64}$ (c) $\frac{30}{64}$

Extra Exercises 10.5 Answers

1. (a) $\frac{18}{42} = \frac{3}{7}$ (b) $\frac{22}{42} = \frac{11}{21}$ (c) $\frac{20}{42} = \frac{10}{21}$

2. $\frac{73}{153}$

3. (a) $\frac{2}{7}$ (b) $\frac{1}{7}$ (c) $\frac{4}{7}$