

Chapter 5 MathLinks 7

Student Resource Answers

5.1 Probability, pages 163–164

3. a) $\frac{1}{4}$, 1 : 4, 25% b) $\frac{2}{5}$, 2 : 5, 40%
 c) $\frac{0}{3}$, 0 : 3, 0% d) $\frac{6}{6}$, 6 : 6, 100%
4. a) 3 b) $\frac{2}{3}$, 2 : 3, 66.7%
5. a) $\frac{3}{8}$, 3 : 8, 37.5% b) $\frac{4}{8}$, 4 : 8, 50%
 c) $\frac{7}{8}$, 7 : 8, 87.5%
6. a) $\frac{3}{9}$, 3 : 9, 33.3% b) $\frac{1}{9}$, 1 : 9, 11.1%
 c) $\frac{7}{9}$, 7 : 9, 77.8%
7. a) $\frac{3}{5}$ or 60% b) $\frac{4}{5}$ or 80%
8. a) $\frac{7}{20}$, 0.35 b) $\frac{3}{20}$, 0.15
9. a) $\frac{1}{20}$, 0.05, or 5% b) $\frac{10}{20}$, 0.5, or 50%
 c) $\frac{4}{20}$, 0.2, or 20%
10. $\frac{3}{4}$
11. $\frac{5}{60}$ or 0.08 or $8\frac{1}{3}\%$. Answers may vary.
 There are 5 s between the 12 and 1. There are 60 s in 1 min.
12. Answers may vary. In order to be guaranteed of having at least 1 of each colour, you would have to select all the marbles.

5.2 Organize Outcomes, pages 169–170

4. a), b)

		Spin		
		Tiger	Bear	Monkey
Tile Choice	Hungry	hungry, tiger	hungry, bear	hungry, monkey
	Sleepy	sleepy, tiger	sleepy, bear	sleepy, monkey
	Playful	playful, tiger	playful, bear	playful, monkey
	Angry	angry, tiger	angry, bear	angry, monkey

c) Yes. Choosing a tile has no effect on the spin.

5. a), b)

		Card				
		Moon	Sun	Cloud	Star	Rainbow
Colour	Black (B)	B, Moon	B, Sun	B, Cloud	B, Star	B, Rainbow
	White (W)	W, Moon	W, Sun	W, Cloud	W, Star	W, Rainbow

6. a), b)

Coin	Marble Colour	Outcome
H	B	(H, B)
	Y	(H, Y)
	R	(H, R)
T	B	(T, B)
	Y	(T, Y)
	R	(T, R)

7. a), b)

Spin 1	Spin 2	Outcome		
Lose	Lose	(Lose, Lose)		
	Try Again	(Lose, Try Again)		
	Win	(Lose, Win)		
	Bonus	(Lose, Bonus)		
	Try Again	Lose	(Try Again, Lose)	
		Try Again	(Try Again, Try Again)	
		Win	(Try Again, Win)	
		Bonus	(Try Again, Bonus)	
		Win	Lose	(Win, Lose)
			Try Again	(Win, Try Again)
			Win	(Win, Win)
			Bonus	(Win, Bonus)
Bonus			Lose	(Bonus, Lose)
			Try Again	(Bonus, Try Again)
			Win	(Bonus, Win)
			Bonus	(Bonus, Bonus)

c) Answers may vary.

8. a), b)

Spinner	Die	Outcome	Sum
1	1	(1, 1)	2
	2	(1, 2)	3
	3	(1, 3)	4
	4	(1, 4)	5
2	1	(2, 1)	3
	2	(2, 2)	4
	3	(2, 3)	5
	4	(2, 4)	6
3	1	(3, 1)	4
	2	(3, 2)	5
	3	(3, 3)	6
	4	(3, 4)	7
4	1	(4, 1)	5
	2	(4, 2)	6
	3	(4, 3)	7
	4	(4, 4)	8

c) 5

9. a)

Dart 1 (Points)	Dart 2 (Points)	Outcome
2	2	(2, 2)
	5	(2, 5)
	10	(2, 10)
5	2	(5, 2)
	5	(5, 5)
	10	(5, 10)
10	2	(10, 2)
	5	(10, 5)
	10	(10, 10)

b) No. Answers may vary. The numbered areas are not equal in size.

- 10. a)** (juice, chicken), (juice, beef), (juice, vegetarian), (milk, chicken), (milk, beef), (milk, vegetarian)
b) Answers may vary.

		Taco		
		Chicken (C)	Beef (B)	Vegetarian (V)
Drink	Juice (J)	J, C	J, B	J, V
	Milk (M)	M, C	M, B	M, V

- 11.** Answers may vary. Spin a spinner that is divided into 3 sections labelled A, B, and C, and then roll a 4-sided die numbered 1, 2, 3, and 4.

12. a), b)

Spin 1	Spin 2	Outcome	Product
2	2	(2, 2)	4
	3	(2, 3)	6
	4	(2, 4)	8
3	2	(3, 2)	6
	3	(3, 3)	9
	4	(3, 4)	12
4	2	(4, 2)	8
	3	(4, 3)	12
	4	(4, 4)	16

c) $\frac{1}{9}$ or 11.1%

13. a), b)

Flip 1	Flip 2	Flip 3	Outcome
H	H	H	(H, H, H)
	T	H	(H, H, T)
T	H	T	(H, T, H)
	T	H	(H, T, T)
H	H	T	(T, H, H)
	T	H	(T, H, T)
T	H	T	(T, T, H)
	T	T	(T, T, T)

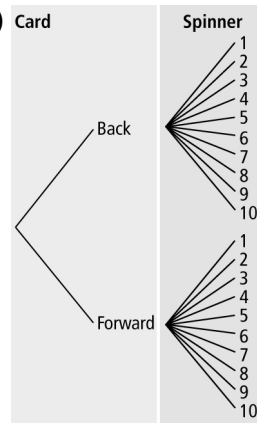
14. a) and c)

Spinner 1	Spinner 2	Spinner 3	Outcome
T	E	P	TEP
		N	TEN
	O	P	TOP
		N	TON
	A	P	TAP
		N	TAN
H	E	P	HEP
		N	HEN
	O	P	HOP
		N	HON
	A	P	HAP
		N	HAN

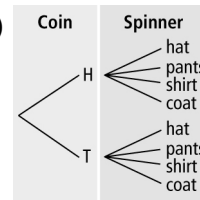
b) Answers will vary.

5.3 Probabilities of Simple Independent Events, pages 175-176

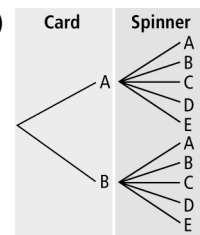
- 3. a)** Card Spinner **b)** $\frac{1}{20}$ or 5%



- 4. a)** Coin Spinner **b)** $\frac{2}{8}$ or 25%



- 5. a)** Card Spinner **b)** 10 **c)** $\frac{1}{10}$ or 10%



- 6. a)**

		Spinner				
		1	2	3	4	5
Marble	Purple	purple, 1	purple, 2	purple, 3	purple, 4	purple, 5
	Black	black, 1	black, 2	black, 3	black, 4	black, 5
	Yellow	yellow, 1	yellow, 2	yellow, 3	yellow, 4	yellow, 5
	Green	green, 1	green, 2	green, 3	green, 4	green, 5
	Red	red, 1	red, 2	red, 3	red, 4	red, 5

- b)** $\frac{1}{25}$ or 4% **c)** $\frac{2}{25}$ or 8% **d)** $\frac{2}{25}$ or 8%

- 7. a)**

		Spinner			
		Glass	Feather	Mirror	Stone
Marble	Red	red, glass	red, feather	red, mirror	red, stone
	Green	green, glass	green, feather	green, mirror	green, stone
	Yellow	yellow, glass	yellow, feather	yellow, mirror	yellow, stone
	Black	black, glass	black, feather	black, mirror	black, stone
	Blue	blue, glass	blue, feather	blue, mirror	blue, stone

b) $\frac{1}{20}$ or 5% c) $\frac{4}{20}$ or 20%

8. a) Answers will vary. For example, make a tree diagram or draw a table.

b) $\frac{1}{10}$ or 10%

9. a)

		Die					
		1	2	3	4	5	6
Coin Flip	Heads (H)	H, 1	H, 2	H, 3	H, 4	H, 5	H, 6
	Tails (T)	T, 1	T, 2	T, 3	T, 4	T, 5	T, 6

b) $\frac{1}{12}$ or 8.3% c) $\frac{4}{12}$ or 33.3%

10. Answers may vary. For example: i) Flip a coin, then roll a 4-sided die. ii) Flip a coin, then select a tile from a bag where there are 4 tiles, numbered 1, 2, 3, and 4.

		Card 2	
		Black (B)	White (W)
Card 1	Black (B)	B, B	B, W
	White (W)	W, B	W, W

b) $\frac{1}{4}$ or 25% c) $\frac{1}{2}$ or 50%

12. a), b)

		Die 2					
		Raven (r)	Osprey (o)	Eagle (e)	Hawk (h)	Falcon (f)	Crow (c)
Die	Raven (r)	r, r	r, o	r, e	r, h	r, f	r, c
	Osprey (o)	o, r	o, o	o, e	o, h	o, f	o, c
	Eagle (e)	e, r	e, o	e, e	e, h	e, f	e, c
	Hawk (h)	h, r	h, o	h, e	h, h	h, f	h, c
	Falcon (f)	f, r	f, o	f, e	f, h	f, f	f, c
	Crow (c)	c, r	c, o	c, e	c, h	c, f	c, c

c) $\frac{2}{36}$ or 5.6% d) $\frac{1}{36}$ or 2.8%

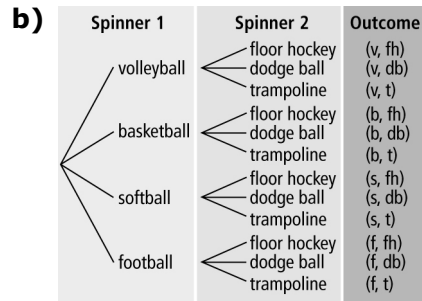
e) $\frac{36}{36}$ or 100%

13. a) $\frac{1}{2}$ or 50% b) $\frac{1}{4}$ or 25%

Path	Door	Outcome
A	1	(A, 1)
	2	(A, 2)
B	3	(B, 3)
	4	(B, 4)

d) 0 or 0%. The mouse cannot reach door 3 from path A.

14. a) Answers will vary. One of the spinners has 4 equal divisions with the following sections: volleyball, basketball, softball, and football. The other spinner has 3 equal divisions with the following sections: floor hockey, dodge ball, and trampoline.



c) $\frac{1}{12}$ or 8.3% d) $\frac{12}{12}$ or 100%

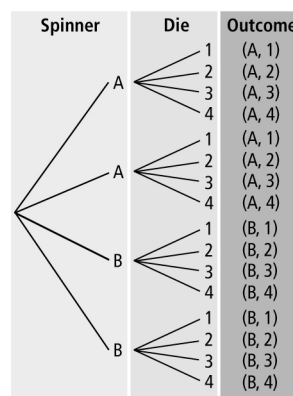
e) $\frac{4}{12}$ or 33.3%

15. a) (0, 1), (0, 3), (0, 5), (0, 7), (0, 9), (2, 1), (2, 3), (2, 5), (2, 7), (2, 9), (4, 1), (4, 3), (4, 5), (4, 7), (4, 9), (6, 1), (6, 3), (6, 5), (6, 7), (6, 9), (8, 1), (8, 3), (8, 5), (8, 7), (8, 9)

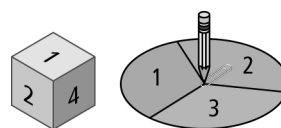
b) $\frac{1}{25}$ or 4% c) (6, 1), (6, 3), (6, 5), (6, 7), (6, 9), (8, 1), (8, 3), (8, 5), (8, 7), (8, 9); $\frac{1}{10}$ or 10%

5.4 Applications of Independent Events, pages 181-182

3. a) $\frac{2}{16}$ or 12.5%



4. a)



b) $\frac{1}{18}$ or 5.6%

5. a)

		Die			
		Eat	Work	Play	Sleep
Spinner	Morning (M)	M, eat	M, work	M, play	M, sleep
	Afternoon (A)	A, eat	A, work	A, play	A, sleep
	Evening (E)	E, eat	E, work	E, play	E, sleep

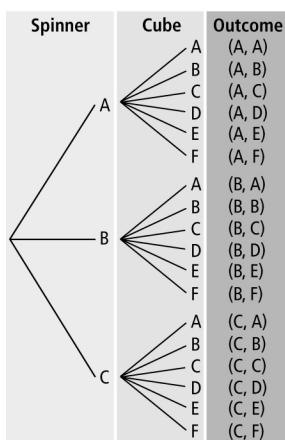
b) $\frac{1}{12}$ or 8.3% c) $\frac{2}{12}$ or 16.7%

6. a)

		Card			
		2	3	4	5
Die	1	1, 2	1, 3	1, 4	1, 5
	2	2, 2	2, 3	2, 4	2, 5
	3	3, 2	3, 3	3, 4	3, 5
	4	4, 2	4, 3	4, 4	4, 5
	5	5, 2	5, 3	5, 4	5, 5
	6	6, 2	6, 3	6, 4	6, 5

b) $\frac{4}{24}$ or 16.7% c) $\frac{6}{24}$ or 25%

7. a)



b) $\frac{1}{18}$ or 5.6%

c) $\frac{3}{18}$ or 16.7%

8. a)

		Throw 2				
		2	2	3	3	5
Throw 1	2	2, 2	2, 2	2, 3	2, 3	2, 5
	2	2, 2	2, 2	2, 3	2, 3	2, 5
	3	3, 2	3, 2	3, 3	3, 3	3, 5
	3	3, 2	3, 2	3, 3	3, 3	3, 5
	5	5, 2	5, 2	5, 3	5, 3	5, 5

b) $\frac{9}{25}$ or 36% c) $\frac{13}{25}$ or 52%

9. a) 100% b) 0% c) $\frac{6}{16}$ or 37.5%

10. a) $\frac{9}{36}$ or 25% b) $\frac{6}{36}$ or 16.7%

c) $\frac{21}{36}$ or 58.3%

11. a)

		Song 2				
		A	A	B	C	D
Song 1	A	A, A	A, A	A, B	A, C	A, D
	A	A, A	A, A	A, B	A, C	A, D
	B	B, A	B, A	B, B	B, C	B, D
	C	C, A	C, A	C, B	C, C	C, D
	D	D, A	D, A	D, B	D, C	D, D

b) $\frac{4}{25}$ or 16%

5.5 Conduct Probability Experiments, pages 187-189

4. a) 2 boys b) $\frac{26}{100}$ or 26% c) $\frac{1}{4}$ or 25%

5. a) $\frac{27}{100}$ or 27% b) $\frac{1}{4}$ or 25%

c) Answers will vary. The experimental probability is greater than the theoretical probability.

6. a) $\frac{7}{20}$ or 35% b) $\frac{1}{4}$ or 25%

c) Answers will vary. The experimental probability is greater than the theoretical probability.

7. a) $\frac{12}{20}$ or 60% b) $\frac{1}{2}$ or 50%

c) Answers will vary. The experimental probability is greater than the theoretical probability.

8. a), b), and d) Answers will vary.

c) $\frac{1}{2}$ or 50%

9. a) 7 b) $\frac{7}{50}$ or 14% c) $\frac{1}{10}$ or 10%

d) Answers may vary.

		Right Button	
		1	2
Left Button	S	S, 1	S, 2
	N	N, 1	N, 2
	A	A, 1	A, 2
	C	C, 1	C, 2
	K	K, 1	K, 2

10. Answers will vary.

11. a) $\frac{125}{530}$ or 23.6% b) $\frac{1}{4}$ or 25%

c) $\frac{130}{530}$ or 24.5%

12. Answers will vary. 13. Answers will vary.

Chapter 5 Review, pages 190-191

1. favourable, possible 2. experimental
3. tree diagram 4. random; an event where every outcome has an equal chance of occurring
5. $\frac{2}{5}$ or 2 : 5 or 40%
6. a) $\frac{0}{10}$ or 0:10 or 0%
 b) $\frac{2}{10}$ or 2:10 or 20%
 c) $\frac{3}{10}$ or 3:10 or 30%
 d) $\frac{6}{10}$ or 6:10 or 60%

7.

		Spinner		
		Broccoli	Beans	Carrots
Coin	Salad (S)	S, broccoli	S, beans	S, carrots
	Cooked (C)	C, broccoli	C, beans	C, carrots

8. a)

		Dessert	
		Sundae (S)	Pie (P)
Dinner	Quiche	quiche, S	quiche, P
	Burger	burger, S	burger, P
	Surprise	surprise, S	surprise, P
	Special	special, S	special, P

- b) 8
9. a)
- | Flip 1 | Flip 2 | Outcome |
|--------|--------|---------|
| H | H | (H, H) |
| H | T | (H, T) |
| T | H | (T, H) |
| T | T | (T, T) |
- b) $\frac{1}{4}$ or 25%

10. a)

		Pail						
		Nail (n)	Screw (s)	Screw (s)	Screw (s)	Screw (s)	Hook (h)	Hook (h)
Tool Box	Hammer (H)	H, n	H, s	H, s	H, s	H, s	H, h	H, h
	Screwdriver (S)	S, n	S, s	S, s	S, s	S, s	S, h	S, h
	Pliers (P)	P, n	P, s	P, s	P, s	P, s	P, h	P, h
	Tape Measure (T)	T, n	T, s	T, s	T, s	T, s	T, h	T, h

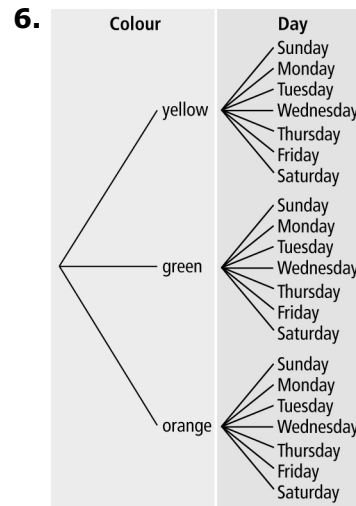
- b) $\frac{1}{28}$ or 3.6% c) 0
11. a) Answers may vary. Roll a 4-sided die and then spin a 4-section spinner.
 b) $\frac{4}{16}$ or 25% c) $\frac{4}{16}$ or 25%
 d) $\frac{6}{16}$ or 37.5%

12. a)
- | Spinner 1 | Spinner 2 | Outcome |
|-----------|-----------|---------|
| L | Y | (L, Y) |
| | O | (L, O) |
| | U | (L, U) |
| O | Y | (O, Y) |
| | O | (O, O) |
| | U | (O, U) |
| V | Y | (V, Y) |
| | O | (V, O) |
| | U | (V, U) |
| E | Y | (E, Y) |
| | O | (E, O) |
| | U | (E, U) |
- b) $\frac{1}{12}$ or 8.3%
 c) $\frac{11}{12}$ or 91.7%

13. a) $\frac{7}{20}$ b) $\frac{1}{4}$ c) Answers may vary. The probability in a) is based on the results of an experiment.
14. a) $\frac{8}{20}$ or 40% b) $\frac{1}{2}$ or 50% c) The theoretical probability is greater than the experimental probability.

Chapter 5 Practice Test, pages 192-193

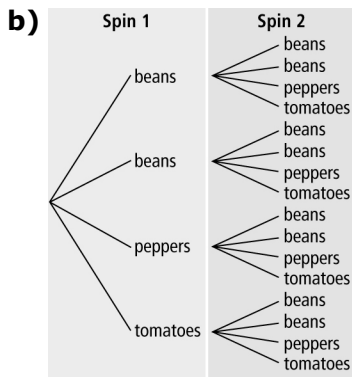
1. A 2. B 3. C 4. D 5. B



7.

		Meal		
		Wrap	Pizza	Salad
Drink	Milk (M)	M, wrap	M, pizza	M, salad
	Apple juice (A)	A, wrap	A, pizza	A, salad

8. a) No. Answers will vary. Two of the 4 sections on the spinner are labelled *beans*.



c) $\frac{4}{16}$ or 25% **d)** $\frac{10}{16}$ or 62.5%

9. a)

		Spin 2				
		1	2	3	4	5
Spin 1	1	1, 1	1, 2	1, 3	1, 4	1, 5
	2	2, 1	2, 2	2, 3	2, 4	2, 5
	3	3, 1	3, 2	3, 3	3, 4	3, 5
	4	4, 1	4, 2	4, 3	4, 4	4, 5
	5	5, 1	5, 2	5, 3	5, 4	5, 5

b) $\frac{5}{25}$ or 20% **c)** 8% **d)** $\frac{10}{25}$

10. a) The spinner has 5 equal sections: 4 are marked *in* and 1 is marked *miss*. Spin the spinner twice and record the outcomes.

b)

		Spin 2				
		In (I)	In (I)	In (I)	In (I)	Miss (M)
Spin 1	In (I)	(I, I)	(I, I)	(I, I)	(I, I)	I, M
	In (I)	(I, I)	(I, I)	(I, I)	(I, I)	I, M
	In (I)	(I, I)	(I, I)	(I, I)	(I, I)	I, M
	In (I)	(I, I)	(I, I)	(I, I)	(I, I)	I, M
	Miss (M)	M, I	M, I	M, I	M, I	M, M

c) 75% **d)** $\frac{16}{25}$ or 64%

e) The experimental probability is greater than the theoretical probability.