Year 8
Mathematics
Unit 7

Name: ______________________________

Class: ______________________________

Contents

1 Sequences

Introduction

A **sequence** is simply an ordered list of items (possibly infinitely long), usually with some kind of pattern.

Each item in a sequence is called a **term**.

1.1 Finding the Next Term

In this section you will look at how to find the next term of a sequence.

1.2 Constant Differences

In this section you will look at how to find the constant difference given terms in a sequence.

Worked Example	Your Turn
What is the constant difference in the sequence? The 10^{th} term is 52 and the 18^{th} term is 76	What is the constant difference in the sequence? The 10^{th} term is 52 and the 22^{nd} term is 76

Worked Example	Your Turn
What is the constant difference in the sequence? The 10^{th} term is 76 and the 18^{th} term is 52	What is the constant difference in the sequence? The 10^{th} term is 76 and the 22^{nd} term is 52

1.3 Term to Term Rule

In this section you will look at how to find the term to term rule of a sequence.

Some sequences we can generate by stating a rule to say how to generate the next term given the previous term(s).

$\mathbf{3}, \mathbf{7}, \mathbf{11}, \mathbf{15}, \mathbf{19} \ldots$

What is the rule, in words, for this sequence?
We add 4 each time.

The problem is that this also describes many other sequences.
Can you think of another sequence that adds 4 every time?

We need to both state our **rule** and our **starting term**.

A better rule for this sequence would be:
Start with 3, add 4 each time.

Fill in the Gaps

First Five Terms of Sequence					Term-to-Term Rule
6	10	14			
5	3	1			
3		5			
1	3	9			
1.5	1.7		2.1		
	7	2	-3		
80	40	20			
	1		$1\frac{1}{2}$		
8					$add\ 3$
2					$add\ 7$
	4				$subtract\ 2$
		2.5			$add\ 0.5$
			5		$subtract\ 2.5$
	2				$multiply\ by\ 2$
100					$divide\ by\ 10$
-4					$subtract\ 3$

1.4 Types of Sequences

In this section you will look at the different types of sequences.

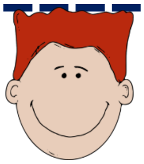
Arithmetic/Linear: The terms' first difference is constant.
e.g., $1, 3, 5, 7, \ldots$

Geometric: The terms found by multiplying by the same number each time.
e.g., $2, 4, 8, 16, \ldots$

Quadratic: The terms' second difference is constant.
e.g., $2, 5, 10, 17, \ldots$

Fibonacci-Type: The terms found by adding the previous two terms together.
e.g., $1, 3, 4, 7, 11, \ldots$

Fluency Practice

Charlie 	Types of Sequence Tick or Trash Tick one answer and trash the other!	 Lola
Arithmetic	4, 7, 11, 15, 19, 23, …	Geometric
Quadratic	1, 4, 9, 16, 25, 36, …	Square numbers
Arithmetic	3, 6, 12, 24, 48, …	Geometric
Fibonacci	1, 1, 2, 3, 5, 8, 13, …	Quadratic
Quadratic	3, 6, 11, 18, 27, …	Arithmetic
Triangular	-5, -7, -9, -11, -13, …	Arithmetic
Quadratic	1, 3, 6, 10, 15, 21, …	Triangular
Square numbers	1, 8, 27, 64, 125, …	Cube numbers
Fibonacci	-2, 4, -8, 16, -32, …	Geometric
Quadratic	3, 11, 23, 39, 59, …	Arithmetic

Special Sequences

Find the next two terms in each sequence and name the sequence:

- $1, 3, 5, 7, 9, \ldots$
- $2, 4, 6, 8, 10, \ldots$
- $1, 4, 9, 16, 25, \ldots$
- $1, 8, 27, 64, 125, \ldots$
- $2, 4, 8, 16, 32, \ldots$
- $1, 3, 6, 10, 15, \ldots$
- $1, 1, 2, 3, 5, \ldots$
- $2, 3, 5, 7, 11, \ldots$
- $1, 11, 21, 1211, 111221, \ldots$

1.5 Linear Sequences

In this section you will look at linear sequences which are also known as arithmetic sequences.

Frayer Model – Linear Sequences

Definition	**Characteristics**
Examples	**Non-Examples**

1.6 Position to Term Rule

In this section you will look at how to find the position to term rule of a sequence.

It is sometimes more helpful to be able to generate a term of a formula based on its position in the sequence.

We could use it to say find the 300^{th} term of a sequence without having to write all the terms out!

We use $\boldsymbol{n}$ to mean the **position in the sequence**. So, if we want the 3^{rd} term, $n = 3$.

The **position to term rule** is also called the $\boldsymbol{n}^{\text{th}}$ **term rule**.

This year, we will only look at how to work out the position to term rule for linear sequences. You will learn how to find the position to term rule for geometric and quadratic sequences in year 11.

Worked Example	Your Turn
Find the n^{th} term rule:	Find the n^{th} term rule:
$8, 15, 22, 29, 36, \ldots$	$11, 18, 25, 32, 39, \ldots$
$-6, 1, 8, 15, 22, \ldots$	$-3, 4, 11, 18, 25, \ldots$
$36, 29, 22, 15, 8, \ldots$	$39, 32, 25, 18, 11, \ldots$

Worked Example	Your Turn
Find the n^{th} term rule:	Find the n^{th} term rule:
$\frac{1}{2}, \frac{7}{10}, \frac{9}{10}, 1\frac{1}{10}, \ldots$	$\frac{1}{3}, \frac{7}{9}, 1\frac{2}{9}, 1\frac{2}{3}, \ldots$

Worked Example	Your Turn
Find the n^{th} term rule: $\frac{5}{12}, \frac{7}{19}, \frac{9}{26}, \frac{11}{33}, \ldots$	Find the n^{th} term rule: $\frac{6}{13}, \frac{8}{20}, \frac{10}{27}, \frac{12}{34}, \ldots$

1.7 Generating Linear Sequences

In this section you will look at how to generate terms in a linear sequence.

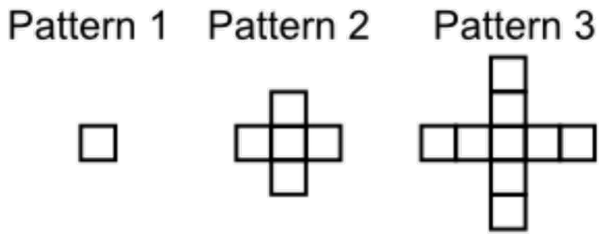
To generate a term of a linear sequence, substitute n (the position number) into the n^{th} term rule.

Worked Example	Your Turn
Generate the first 5 terms of a) $5n+3$ b) $-3-5n$	Generate the first 5 terms of a) $6n-3$ b) $3-6n$

1.8 Patterns

In this section you will look at how to apply your sequences knowledge to patterns.

Worked Example



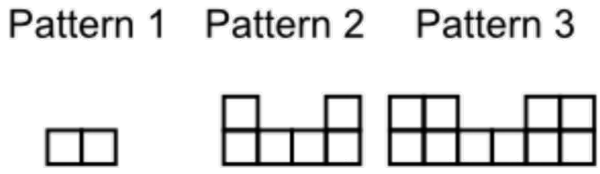
a) Draw the next pattern.

b) How many squares are in the n^{th} pattern?

c) How many squares in the 50^{th} pattern?

d) Which pattern will use 145 squares?

Your Turn



a) Draw the next pattern.
b) How many squares are in the n^{th} pattern?
c) How many squares in the 50^{th} pattern?
d) Which pattern will use 154 squares?

1.9 Fibonacci-Type Sequences

In this section you will look at Fibonacci-type sequences.

Recall that the next term of a Fibonacci-type sequence can be found by adding the previous two terms.

Worked Example	Your Turn
Find the next three terms in these Fibonacci-type sequences:	Find the next three terms in these Fibonacci-type sequences:
$2, 7, 9, 16, \ldots$	$3, 11, 14, 25, \ldots$
$\frac{2}{3}, \frac{5}{6}, \frac{3}{2}, \frac{7}{3}, \ldots$	$\frac{3}{4}, \frac{5}{6}, \frac{19}{12}, \frac{29}{12}, \ldots$
$3a + 4b, a + 7b, 4a + 11b, \ldots$	$3a - 4b, 2a - 5b, 5a - 9b, \ldots$

2 Prime Factorisation

2.1 Prime Factors

In this section you will look at how if a number is a prime factor of another number.

3 is a prime factor of 36 (True / False)

9 is a prime factor of 36 (True / False)

1 is a prime factor of 36 (True / False)

2 is a prime factor of 36 (True / False)

7 is a prime factor of 36 (True / False)

Intelligent Practice

7 is a prime factor of 12 (True / False)

6 is a prime factor of 12 (True / False)

5 is a prime factor of 12 (True / False)

4 is a prime factor of 12 (True / False)

3 is a prime factor of 12 (True / False)

2 is a prime factor of 12 (True / False)

1 is a prime factor of 12 (True / False)

1 is a prime factor of 27 (True / False)

2 is a prime factor of 27 (True / False)

3 is a prime factor of 27 (True / False)

7 is a prime factor of 27 (True / False)

9 is a prime factor of 27 (True / False)

13 is a prime factor of 27 (True / False)

13 is a prime factor of 26 (True / False)

3 is a prime factor of 26 (True / False)

2 is a prime factor of 26 (True / False)

2 is a prime factor of 25 (True / False)

5 is a prime factor of 25 (True / False)

12.5 is a prime factor of 25 (True / False)

2.2 Product of Prime Factors

In this section you will look at if a number is written as a product of prime factors, and how to write a number as a product of prime factors.

Product of Prime Factors	Yes / No ?
9×11	
19×11	
19×11^2	
$2 \times 19 \times 11^2$	
$2 \times 19 \times 101^2$	

Intelligent Practice

Product of Prime Factors	Yes / No ?
$5+7$	
5×7	
4×7	
3×7	
2×7	
1×7	
$1\times 7\times 9$	
$2\times 7\times 9$	
$2\times 7\times 11$	
$2\times 7+11$	
$2\times 7\times 11\times 21$	
$2\times 7\times 11\times 31$	
$1\times 2\times 7\times 11\times 31$	
$2\times 7\times 7\times 11\times 31$	
$2\times 7^2\times 11\times 31$	
$2^2\times 7^2\times 11\times 31$	
$2^3\times 7^2\times 11\times 31$	
$2^3\times 7^2\times 11^5\times 31^4$	
$1^3\times 7^2\times 11^5\times 31^4$	
$2^3\times 7^2\times 11^5\times 41^4$	

Worked Example	Your Turn
Express 24 as a product of prime factors	Express 48 as a product of prime factors

Worked Example	Your Turn
Express 40 as a product of prime factors	Express 80 as a product of prime factors

Worked Example	Your Turn
Express $2^3 \times 3$ as an ordinary number	Express $3^2 \times 5$ as an ordinary number

Fill in the Gaps

Number	Prime Factor Decomposition	Index Form
6		
	$2 \times 2 \times 3$	
48		
240		
		$2^4 \times 3^2 \times 5$
	$2 \times 2 \times 2 \times 3 \times 3$	
216		
		$2^2 \times 3^2$
	$2 \times 2 \times 3 \times 3 \times 5 \times 5$	
		$2 \times 3 \times 5$
420		
$12\,600$		

2.3 Using Product of Prime Factors

In this section you will look at how to use the prime factorisation of one number to write the prime factorisation of another number.

Worked Example	Your Turn
$84 = 2^2 \times 3 \times 7$ How is 840 written as its product of prime factors?	$84 = 2^2 \times 3 \times 7$ How is 504 written as its product of prime factors?

Worked Example	Your Turn
$C = \mathbf{3}^{\boldsymbol{a}} \times \mathbf{5}^{\boldsymbol{b}}$	$D = \mathbf{3}^{\boldsymbol{e}} \times \mathbf{7}^{\boldsymbol{f}}$
a) $3C$ b) $5C$ c) $25C$	a) $3D$ b) $7D$ c) $27D$

2.4 Factors from Prime Factors

In this section you will look at if a number is a factor given the prime factorisation of the number.

10 is a factor of $2 \times 5 \times 7 \times 11 \times 17$ (True / False)

10 is a factor of $2 \times 5^3 \times 7 \times 11 \times 17$ (True / False)

15 is a factor of $2 \times 5^3 \times 7 \times 11 \times 17$ (True / False)

25 is a factor of $2 \times 5^3 \times 7 \times 11 \times 17$ (True / False)

22 is a factor of $2 \times 5^3 \times 7 \times 11 \times 17$ (True / False)

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2 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

3 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

5 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

7 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

4 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

6 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

14 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

21 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

15 is a factor of $2 \times 3 \times 7 \times 13$ (True / False)

15 is a factor of $2 \times 3 \times 5 \times 7 \times 13$ (True / False)

30 is a factor of $2 \times 3 \times 5 \times 7 \times 13$ (True / False)

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9 is a factor of $2 \times 3 \times 5 \times 7 \times 13$	(True / False)
9 is a factor of $2 \times 3^2 \times 5 \times 7 \times 13$	(True / False)
9 is a factor of $2 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
4 is a factor of $2 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
4 is a factor of $2^3 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
8 is a factor of $2^3 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
16 is a factor of $2^3 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
2 is a factor of $2^3 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
28 is a factor of $2^3 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
28 is a factor of $2^2 \times 3^2 \times 5 \times 7 \times 23$	(True / False)
28 is a factor of $2 \times 3^2 \times 5 \times 7 \times 23$	(True / False)

Fluency Practice

Number	Prime Factor Decomposition	Factor	Yes/No
2520	$2^3 \times 3^2 \times 5 \times 7$	$15 = 3 \times 5$	Yes
2520		8	
2520		25	
2520		45	
1320		22	
1320		45	
1320		88	
20250		12	
20250		27	
20250		15	
20250		75	
15120		16	
15120		21	
15120		70	
15120		18	

2.5 Types of Numbers from Prime Factors

In this section you will look at if a number is a square number or cube number or neither using its prime factorisation.

- Square numbers have even powers in their prime factorisation.
- Cube numbers have powers which are multiples of 3.

Product of Prime Factors	Square Number	Cube Number	Neither
$5^2 \times 11$			
$5^2 \times 11^8$			
$5^6 \times 11^8$			
$5^6 \times 11^9$			
$5^6 \times 11^9 \times 17^{13}$			

Intelligent Practice

Product of Prime Factors	Square Number	Cube Number	Neither
2×3			
3×3			
3^2			
3^3			
$3^3 \times 7$			
$3^3 \times 7^2$			
$3^3 \times 7^3$			
$3^2 \times 7^2$			
$5^2 \times 7^2$			
$2 \times 5^2 \times 7^2$			
$2^2 \times 5^2 \times 7^2$			
$2^3 \times 5^2 \times 7^2$			
$2^3 \times 5^3 \times 7^3$			

Intelligent Practice

Product of Prime Factors	Square Number	Cube Number	Neither
$2^4 \times 5^4 \times 7^4$			
$2^5 \times 5^5 \times 7^5$			
$2^6 \times 5^6 \times 7^6$			
$2^7 \times 5^7 \times 7^7$			
$2^8 \times 5^8 \times 7^8$			
$2^9 \times 5^9 \times 7^9$			
$2^9 \times 5^9 \times 7^6$			
$2^2 \times 5^9 \times 7^6$			
$2^3 \times 5^9 \times 7^6$			
$2^6 \times 5^{18} \times 7^{12}$			
$2^6 \times 5^{18} \times 7^{12} \times 11$			
$2^6 \times 5^{18} \times 7^{12} \times 11^2$			
$2^6 \times 5^{18} \times 7^{12} \times 11^3$			

2.6 Using Prime Factorisation to Simplify Fractions

In this section you will look at how to use prime factorisation to simplify fractions.

Worked Example	Your Turn
Simplify $\frac{693}{1925}$	Simplify $\frac{693}{1155}$

2.7 Using Prime Factorisation to Find Roots

In this section you will look at how to use prime factorisation to find roots.

Worked Example	Your Turn
a) Find $\sqrt{784}$ b) Find $\sqrt[3]{216}$	a) Find $\sqrt{324}$ b) Find $\sqrt[3]{512}$

2.8 Number of Factors

In this section you will look at how to use prime factorisation to find the number of factors of a number.

To get the number of factors of a number in prime factorised form, add one to each power and times the powers together.

Worked Example	Your Turn
a) How many factors does 36 have? b) How many factors does 37 have? c) How many factors does 38 have?	a) How many factors does 72 have? b) How many factors does 73 have? c) How many factors does 74 have?

3 Probability

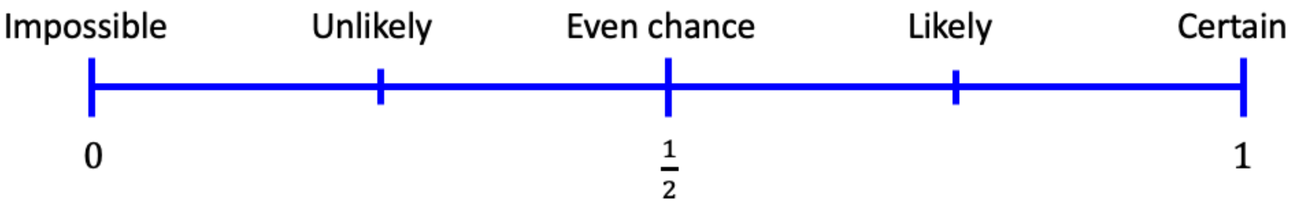
3.1 Probability Scale

In this section you will look at the probability scale.

- Probability is a numerical measure of how likely or unlikely an event is to occur.

- Probabilities are usually written as fractions, but can be written in any form equivalent to that fraction, e.g., $\frac{3}{4} = 0.75 = 75\%$

- Probabilities can be anywhere between 0 (impossible) and 1 (certain):



Could it be a Probability?

0.35674	Yes / No
1.35674	Yes / No
1	Yes / No
$\frac{1}{3}$	Yes / No
$-\frac{1}{3}$	Yes / No

Intelligent Practice

0.3	Yes / No
-0.3	Yes / No
1.3	Yes / No
0.000003	Yes / No
0.43045783	Yes / No
1.43045783	Yes / No
-0.43045783	Yes / No
$0.\dot{4}$	Yes / No
0	Yes / No

1	Yes / No
2	Yes / No
-1	Yes / No
$\frac{2}{3}$	Yes / No
$1\frac{2}{3}$	Yes / No
$-\frac{2}{3}$	Yes / No
$\frac{3}{2}$	Yes / No
$\frac{43}{51}$	Yes / No

Worked Example	Your Turn
Describe using impossible, unlikely, even chance, likely or certain the probability that: a) You will walk to Mars. b) The day after Monday is Tuesday. c) You roll a three on a fair die. d) You flip a tails on a fair coin.	Describe using impossible, unlikely, even chance, likely or certain the probability that: a) You roll an even number on a fair die. b) The day after Monday is Wednesday. c) You roll a number between 1 and 6 on a fair die. d) You will go to space in your life.

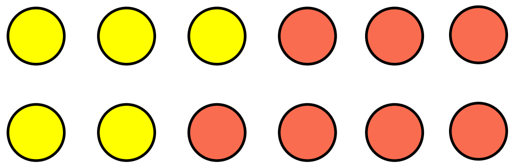
3.2 Probability of Single Events

In this section you will look at how to find the probability of single events.

The probability of an event occurring is defined as:

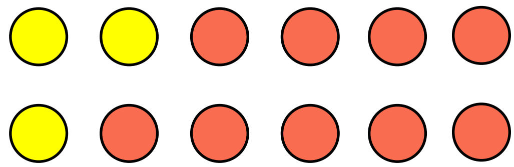
$$\text{Probability} = \frac{\text{Number of desired outcomes}}{\text{Number of possible outcomes}}$$

Worked Example



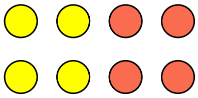
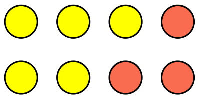
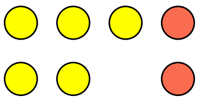
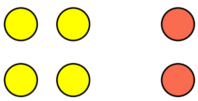
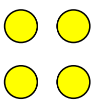
P(yellow) =

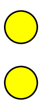
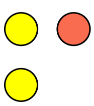
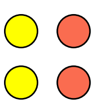
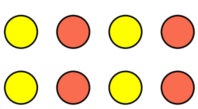
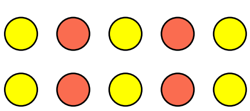
Your Turn



P(yellow) =

Intelligent Practice

	Increase / Decrease / Same?	P(yellow) =
1. 		
2. 		
3. 		
4. 		
5. 		

	Increase / Decrease / Same?	P(yellow) =
6. 		
7. 		
8. 		
9. 		
10. 		

Worked Example	Your Turn
A bag of sweets contains only 4 red sweets, 2 yellow sweets and 4 green sweets. a) What is the probability of choosing a red sweet? b) What is the probability of choosing a red or yellow sweet? c) What is the probability of choosing a mint?	A bag of sweets contains only 8 red sweets, 4 yellow sweets and 8 green sweets. a) What is the probability of choosing a red sweet? b) What is the probability of choosing a red or yellow sweet? c) What is the probability of choosing a mint?

3.3 Mutually Exclusive Events

In this section you will look at mutually exclusive events.

Mutually exclusive means “cannot happen at the same time”.

Examples

- Turning left or turning right (you cannot turn left and right at the same time).

- Going to Liverpool at 9am tomorrow or going to Manchester at 9am tomorrow (you cannot be in two places at once).

Non-Examples

- Turning left and scratching your head can happen at the same time.

- Kings and hearts, because you can have a king of hearts.

3.4 Exhaustive Events

In this section you will look at exhaustive events.

The probabilities of all possible outcomes add up to 1.

Worked Example	Your Turn

Worked Example

Castle FC play football matches every Saturday.

The table shows the probability that Castle FC will win or lose.

a) Work out the probability that Castle FC will lose

Win	Lose
$\frac{3}{4}$	

b) Work out the probability that Castle FC will lose

Win	Lose
0.75	

Your Turn

Castle FC play football matches every Saturday.

The table shows the probability that Castle FC will win or lose.

a) Work out the probability that Castle FC will lose

Win	Lose
$\frac{6}{8}$	

b) Work out the probability that Castle FC will win

Win	Lose
	0.75

3.5 Expectation

In this section you will look at expectation.

Expectation is the long-run average you would get if a test was repeated many times.

If an event has probability p, the expectation in n trials is $n \times p$.

Expectation is used as an estimate for how many times an event will occur.

Worked Example	Your Turn
The relative frequency of a teacher throwing a pen in the bin is 0.5. A teacher throws a pen 100 times. How many throws will be successful?	The relative frequency of a teacher throwing a pen in the bin is 0.5. A teacher throws a pen 1000 times. How many throws will be successful?

Worked Example	Your Turn
If I roll a fair dice 12 times, how many times would you expect it to land on the number 1?	If I roll a fair dice 60 times, how many times would you expect it to land on the number 1?

3.6 Relative Frequency

In this section you will look at relative frequency.

In most events, it is difficult to accurately predict the probability of an event happening.

When there is no theory behind the probability of an event happening, we use **relative frequency** to calculate probabilities.

Because it is often calculated after performing experiments, it is often called **experimental probability.**

The more trials there are, the more accurate that experimental probability becomes.

Worked Example	Your Turn
A coin is flipped 30 times. The results are: H T H H H H H H T T T H H T T T T T H H H T T H H T H T H H a) What are the relative frequencies for heads and tails? b) The coin is flipped 300 more times. Estimate how many times the coin will land on tails.	A coin is flipped 20 times. The results are: T H T T T T T H H H H H T H T H H H H H a) What are the relative frequencies for heads and tails? b) The coin is flipped 100 more times. Estimate how many times the coin will land on tails.

Fluency Practice

1) Simon records the colour of cars going past his house for an hour.

Colour	Frequency
Blue	5
Red	4
Yellow	1
White	7
Black	3

a) What is the probability the next car will be
i) blue ii) red iii) Not black

___________ ___________ ___________

b) How many Red cars would you expect if
i) 100 cars went past ii) 60 cars went past

___________ ___________

2) Sammy throws a drawing pin 200 times and records how it lands.

Pin up	160
Pin down	40

a) What is the probability the pin will land
i) pin up? ii) pin down

___________ ___________

b) How many pin ups would you expect if the pin was thrown
i) 80 times ii) 320 times iii) 400 times

___________ ___________ ___________

3) A group of children are asked to write for their favourite food, and child is picked at random.

Favourite Food	Number of people
Chinese	20
Pizza	16
Mexican	18

a) What is the probability the person
i) liked Chinese? ii) Didn't like Mexican best.

___________ ___________

b) How many people would you expect to like pizza if
i) 100 people were asked

____

ii) 250 people were asked

____

iii) 1000 people were asked?

____

iv) 460 people were asked?

____

3.7 Listing Outcomes

In this section you will look at listing outcomes.

Worked Example	Your Turn
List all the ways of arranging the letters in the word: CAT	List all the ways of arranging the letters in the word: DOG

Worked Example	Your Turn
I flip a coin and then roll a six-sided die. List the possible outcomes.	I flip a coin and then roll a 4-sided die. List the possible outcomes.

Worked Example	Your Turn
The first five positive integers are $1, 2, 3, 4, 5$. I choose two numbers from this list. Write down all possible combinations of two numbers I can choose.	The four square numbers are $1, 4, 9, 16$. I choose two numbers from this list. Write down all possible combinations of two numbers I can choose.

3.8 Sample Space Diagrams

In this section you will look at sample space diagrams.

Horse Race

HORSE RACE

Choose a horse to win! Roll two dice and total the score.
Move that horse forwards by making an **X** in the next box.
Play again. Can you explain why some horses do better than others?

Which horse will win?

						FINISH
1	Nowt Ashance					
2	Lucky Larry					
3	Shoe-In Sarah					
4	Maybe May					
5	Hopeful Harry					
6	Sometimes Sam					
7	Average Adam					
8	Unlikely Lucy					
9	Probable Polly					
10	Golden Glen					
11	Definite Dan					
12	Yul Blucky					

Horse Race

HORSE RACE

1) Who won the race(s)?
2) Who did you expect to win?
3) Do some horses have a higher chance of winning? Why?

4) How many ways can you score a **2**?
5) How many ways can you score a **12**?
6) How many ways can you score a **4**?
7) How many ways can you score a **10**?
8) How many ways can you score a **7**?

We can make this easier by using a <u>Sample Space Diagram</u>.

Score on the 2nd Dice

Score on the 1st Dice

+	**1**	**2**	**3**	**4**	**5**	**6**
1	2					
2			5			
3						9
4						
5						
6				10		

Fill the table with the totals from 2 dice.

a) How many ways to score a **6**?

b) How many ways to score a **5**?

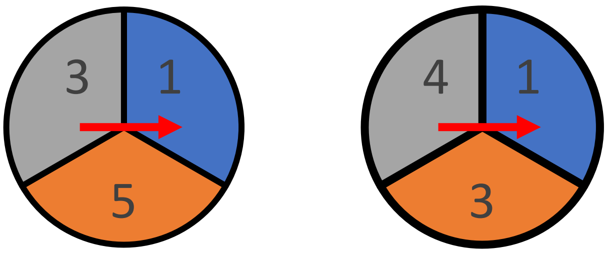
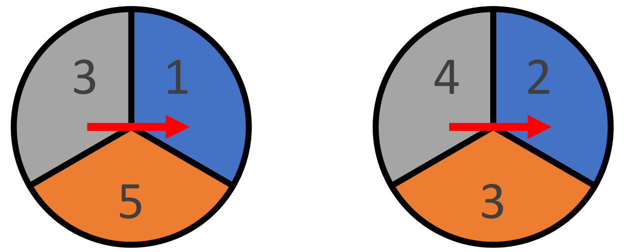
c) How many outcomes are there in total?

Remember, $$Probability = \frac{number\ of\ ways\ outcome\ can\ happen}{total\ number\ of\ possible\ outcomes}$$

Use this to find: d) Probability(**12**) = e) Probability(**8**) =

f) P(**4**) = g) P(**9**) = h) P(**7**) = i) P(**1**) =

If you ran the horse race again, which horse would you pick?

Worked Example	Your Turn
I spin these two spinners then add the numbers together to get a score. Work out the probability that I get a score of 4.	I spin these two spinners then add the numbers together to get a score. Work out the probability that I get a score of 4.
	

Worked Example	Your Turn
Bag A contains four counters, labelled $2, 3, 5$ and 7. Bag B contains five counters, labelled $1, 4, 9, 16$ and 25. A counter is taken from each bag at random and the numbers are added together. Draw a sample space to show all possible scores.	Bag A contains four counters, labelled $3, 5, 7$ and 9. Bag B contains five counters, labelled $1, 8, 27$ and 64. A counter is taken from each bag at random and the numbers are added together. Draw a sample space to show all possible scores.

Worked Example	Your Turn
Two four-sided dice are rolled. The numbers on the two dice are multiplied together. Draw a sample space of the all the possible products.	Two six-sided dice are rolled. The numbers on the two dice are multiplied together. Draw a sample space of the all the possible products.