

Week 7 Term 3 Weekly Framework Stage 3

Below is a learning framework for you to follow at home. You should be able to complete each activity independently. If you need some assistance, ask for some help from a parent/carer or send a message to your teacher on Google Classroom. You are also able to access your Mathletics account. You can complete activities in your Homework book or an exercise book, some maybe submitted through your google classroom. Don't forget to write the date on your activities to keep track. Resources/worksheets/spelling words can be found at the end of this document under resources.

T3 Wk 7	Morning Session	Middle Session	Afternoon
Monday	 English - Yr 5 Spelling with Miss Deathe Success Criteria: I can spell common homophones Open the Term 3 Wk 7 Spelling PowerPoint (this can be found on your Google Classroom) and follow the prompts. <u>Activity 1:</u> Fold your page into four columns, labelling each Monday-Thursday with the short date under each. Copy out your spelling words for the week. <u>Activity 2:</u> Highlight the Spelling Pattern Use a highlighter to trace over the spelling pattern in each of your words (excluding sight words). Can you find other words in a book or dictionary that use the digraph /ss/ to make the same "s" sound? List these in your book. Year 6 Spelling <u>Activity 1:</u> Look, Cover, Write, Check Fold your page into four columns, labelling each Monday-Thursday with the short date under each. Copy out your spelling words for the week. <u>Activity 2:</u> Highlight the Spelling Pattern Use a highlighter to trace over the spelling pattern in each of your words <u>Activity 3:</u> Word meanings- review your words and write the meaning in your own words for at least 10 of your words. Make sure you do the words you don't know first. <u>Writing</u> Create a board game about being in lockdown. Use the outline or create your own. Plan- list the positive and negative things about being in lockdown. Positive- wear oodie while doing schoolwork, walk the dog after lunch. Negative- cannot see nana, share laptop with my sister, Place your points around the board, positive may lead to moving forward, negative may send you back spaces. You will also need to write instructions on how to play your game. 	Maths Patterns are all around us. Everywhere you look you will find a pattern. This week we are looking at number patterns and how to work out the rules that apply to that pattern. Watch the below video for an explanation on number patterns and the mathematical strategies we can use to work them out. Math Antics - Number Patterns - YouTube This week we have created a work booklet that is for the entire week. Keep the pages together and work through at your pace. Make sure you are checking in with your teacher in google classroom regularly so that they know where you are up to. Year 5 - Patterns and Algebra Booklet Year 6 - Patterns and Algebra Booklet	Library Match the author to the book. Worksheet attached. Match the lawbok to its Author Write the name of the author next to the book Write the name of the author next to the book Match rest to the book Ma

T3 Wk 7	Morning Session	Middle Session	Afternoon
Tuesday	 English - Spelling with Miss Deathe Success Criteria: I can spell common homophones Use the Look, Cover, Write, Check method to copy out your spelling words under your 'Tuesday' column. <u>Activity 2:</u> Spelling Points Say the word aloud and write it by separating the sounds. How many points is each word worth if a; - Graph = 2 points - Digraph = 5 points - Trigraph = 10 points <u>Year 6 Spelling</u> Activity 1 Look, Cover, Write, Check method to copy out your spelling words under your 'Tuesday' column. Activity 2 Spelling Points as above and activities 1-4 on the worksheet. English- Handwriting WALT: - Write using cursive - Explore joins that facilitate fluency and legibility Core Task: Review the five S's - slope, shape, size, spacing and style Review correct pen/cil grip, book and sitting position/posture Word Spacing The first time you copy this passage, take your time. The second time write as quickly as you can. Is there a difference between the letter and word spacing in the slow and fast versions? <i>Tuesday 24th August 2021</i> Write out your spelling words for the week in cursive When rain or melted ice or snow mixes with volcanic ash, it creates a lahar - a massive river of sticky mud that hurtles down the side of the volcano, flattening everything in its path. 	This week we have created a work booklet that is for the entire week. Keep the pages together and work through at your pace. Make sure you are checking in with your teacher in google classroom regularly so that they know where you are up to. Year 5 - Patterns and Algebra Booklet Year 6 - Patterns and Algebra Booklet Continue working through your booklets and checking in with your teachers to let them know where you are up to and make sure you ask, if you need any assistance.	 Science: Learning Intention: Investigate the properties of matter and identify when they are changed. Activity 1: Watch the video <u>Changes of State</u> and while watching, fill in the information in your Science Booklet. https://www.youtube.com/watch?v=x YU7RSoOZOU OPTIONAL EXPERIMENT: You will need: saucepan water packet of dry pasta 1. Take out the dry pasta from it's packet and describe its properties (would we use to describe items) 2. WIth a trusted adult, bring the water in a saucepan to a boil and add your dry pasta. 3. Take notes and describe the effects and how the pasta changes. What is the change in state that is occurring?

Enjoy a hike or walk with your family, if you are near the wetlands keep an eye out for the painted stones.

Have a dance party

Bake something sweet for dessert

Find a space and do some yoga or meditation

Wellness Wednesday Play a board game

Complete a puzzle

Spend some time in the garden

Have a cupcake decorating

competition

Do a random act of kindness for someone without them knowing.

Call or zoom a family member you haven't seen in a while

Find a quiet place to read a book or magazine

Make a card for someone

special

Be a master chef help cook dinner for the family

Have a lip sync battle

English - Spelling with Miss Deathe Maths- Mission Success Criteria: I can spell common homophones Mission- Should you choose to accept it? Year 5 and 6 Mission- Should you choose to accept it? Have a member of your household test you on your words for the week. Mission- Should you choose to accept it? In your framework you have a package that contains all the instructions and materials needed to uncover the 4 mystery codes. Today you are going to learn how to draw self-portrait. Activity 2: Read all the instructions carefully to work carefully to solve the problems. You can work by yourself or you may choose to work with a All you need is a sheet of A4 paper - portrait	T3 Wk 7	/k 7	Morning Session	Middle Session	Afternoon
Friday Grammar You will also been about symmetry and measurement to create your drawing. Private Herman You will be activities on the worksheet in the resource section. When you finish a task the code must be typed into the google form (private) by step i private do is iconced you will be prompted to start working on this measurement to create your drawing. Click on the link below and watch the You will be prompted to start working on this measurement to create you will be prompted to start working on this measurement to create you will be prompted to start working on this measurement to create you will be prompted to start working on the worksheet in the resource section. You will also been about symmetry and measurement to create you drawing. Friday When you finish a task the code must be typed into the google form (provided by your clear is inconce) you will be prompted to start working on the measurement to create you will be prompted to start working on the worksheet in the resource section. You will also been about symmetry and measurement to create you drawing. Friday Work through the activities on the worksheet in the resource section. Good Luck! When you private is an about symmetry and measurement to the assignment	Friday	Vk 7 English Success of Year 5 ar Have a m Activity 2 Complete Gramma Visual ele To unders This meal images to represent inference colours. A think "gold the adult of Work throw	h Contrained of the second of	Maths- Mission Mission- Should you choose to accept it? In your framework you have a package that contains all the instructions and materials needed to uncover the 4 mystery codes. Read all the instructions carefully to work carefully to solve the problems. You can work by yourself or you may choose to work with a partner. When you finish a task the code must be typed into the google form (provided by your teacher) If your code is incorrect you will be prompted to "try again" if your code is correct you will be prompted to start the next task. You will then be prompted to start working on the next task. Good Luck!	Afternoon Art Activity - Self Portrait Today you are going to learn how to draw a self-portrait. All you need is a sheet of A4 paper - portrait orientation, a pencil, sharpener and eraser. You will also learn about symmetry and measurement to create your drawing. Click on the link below and watch the YouTube video that takes you through step by step in how to achieve this. You can pause the video at any time to alter your picture. Make your portrait unique by drawing your particular hairstyle and if you wear glasses, you can add glasses. You can also add shading if you wish. When you have finished, take a picture of your drawing and add it to the assignment to turn in. Self-Portrait Drawing Difference Output Difference Difference

T4 Wk 7 Spelling Words - Year 5									
	Challenge Words								
their there they're hole whole	flour flower weather whether rode	road war wore brake break	Principal principle draw drawer symbol						

	Year 6 T3 Wk7 Spelling Words										
	Spelling Focus Words	Challenge Words	Phonics								
familiar practice personal necessary donor	editor publish scissors patients practise	thorough donation continent necessity endeavour	facilities terminus adrenaline interrogate exaggerate	pedal pedlar pedestal pedigree pedicure							



- b That information is persenol and private.
- c "Where are my scessors?" asked Ali.
- d The editor will publesh my story.
- e Which contenent do you live on?

Word building

Complete the word building table.

а	practise		practised	
ь		endeavours		endeavouring
с	publish		published	
d		Interrogates		Interrogating

Word meanings Solve the crossword puzzle. Across Solve the crossword puzzle. Solve the crosword

(Technical Spelling)

Shade the correct syllabilication and blending of the word below.

c pedal, publish, practice

adrenaline adrenaline

- 9. Is the line part of the word adrenaline pronounced line or lin?
- Write a sentence using these words.

а	publish	
b	endeavour	r
c	donor	

Root words – Word meanings

11. The root of the word holograph is graph, which is a Latin root meaning draw or write. Write two more words that have the root graph. You may need a dictionary.

holograph

Grammar – Prepositions

- Prepositions are words that show position. Example: The book is (on, under, below, beside) the table. Underline the prepositions in the sentences below.
 - a Please put the scissors on the desk.
- c I made a donation to charity.

d The editor sat near the window.

b The plane flew over the continent.

Grammar

- Shade the correct word in each sentence.
 - a The editor (ring)/(rang)/(rung) her personal assistant.
 - b I will endeavour to (ring)/(rang)/(rung) my mum tomorrow.
 - c I have (ring)/(rang)/(rung) the doctor to make an appointment.
 - d "The scissors are (break) / broke) / broken) !" exclaimed Luke.

(Punctuation)

- 14. Shade the box that has the correct punctuation.
 - a Are you familiar with these facilities!
 - b Where are all my Patients.



- c Mr Brooks published a book titled Butterflies.
- d Mr donor gave a donation?

















Match the book to its Author

Write the name of the author next to the book











<u>Authors –</u>

Jeff Kinney Morris Gleitzman Anh Do



Andy Griffiths Liz Pichon Aaron Blabey



teacher **toolkit**

MSCHOLASTIC

Board Game Template







Science Booklet: Tuesday

Watch the video *Changes of State* and fill in the below information as you watch. Alternatively, you may wish to watch the video first to enjoy, and then re-watch to fill in you answers.

 Fill in the blank boxes in this video to describe what is happening to the solid, liquid or gas to change its state and properties.



2. Describe the difference between *Evaporating* and *Boiling*. Can you give an example of each?





3. How would you explain or describe what condensation is and <u>why</u> it occurs?



4. Explain what is happening in this picture to the dry ice.

5. Fill in the missing gaps to name the change of each state to one another.



Change of State Match-Up

The terms on the left do not match the statements on the right.

Complete each cloze statement, then cut out every box. Glue the term with its matching statement next to each other in your book.



7 ear 5			V	Ve	ek	/	2	pe	llı	n	g١	//	σr	d	26	a	rch	ı	
1	В	R	A	K	Е	S	0	A	Ζ	В	J	В	Q	Р	Κ	Н	Ζ	N	Q
Α	L	K	A	W	У	A	R	у	F	М	W	R	J	Р	A	Н	Х	У	В
W	D	Ε	W	У	Е	N	Ε	С	I	R	С	Ε	D	S	I	0	Н	М	Κ
V	R	Q	Н	G	W	Α	Ε	J	F	Н	С	A	T	у	В	и	G	У	Р
V	A	Ν	0	С	Ν	Н	T	Р	Q	R	W	Κ	N	Н	У	0	F	J	Н
J	W	Κ	L	В	Κ	Ν	S	Н	F	L	0	И	R	J	Р	R	L	Α	0
R	Ε	G	Ε	J	V	Ν	у	Ι	Ε	М	Н	A	и	R	Т	Q	0	Р	L
Κ	R	С	Р	Κ	L	С	И	И	С	R	L	Т	Α	Ι	Κ	И	Н	D	Ε
V	Ζ	Ι	F	W	L	I	W	Ζ	S	И	I	A	Н	Ζ	G	У	G	V	Ε
Р	A	V	Ζ	A	и	Е	F	F	I	Q	Ζ	R	F	Ε	У	и	Α	D	R
R	И	Н	у	Н	Κ	Е	Q	L	у	Н	Κ	Ν	Е	Κ	R	F	D	W	G
1	J	Р	R	Ι	Ν	С	I	Р	L	Ε	R	Ε	Н	G	Ι	Е	F	С	S
Ν	Е	I	W	Н	Е	Т	Н	Е	R	Ε	Α	0	D	F	S	Х	L	В	J
С	Е	0	W	D	R	Α	W	Т	W	И	Е	Т	G	I	Е	R	Х	W	Α
1	М	Ν	Х	У	G	Ζ	Ε	0	М	R	Q	Х	Р	R	Ι	L	F	Т	V
Р	Е	Ν	Q	W	T	0	L	Р	0	V	У	Т	У	V	0	0	В	W	Е
Α	G	Р	Ε	Ζ	A	F	Χ	W	V	И	D	Ε	Н	В	V	G	Ζ	С	G
L	И	L	R	Х	Х	R	V	Х	М	A	Н	С	М	Ε	S	0	Н	0	A
0	J	Ν	R	И	W	L	G	М	0	Т	D	У	Q	В	Ι	Ν	F	Е	Х
С	G	F	Ζ	М	М	L	И	R	Ν	Н	S	Ζ	У	Ζ	Р	R	Ν	Р	И

\mathbf{V} I

PRINCIPLE WEATHER FLOWER BREAK FLOUR RODE ROAD

PRINCIPAL WHETHER THEIR SYMBOL WHOLE DRAW WAR

THEY'RE DRAWER BRAKE THERE WORE HOLE

Unit 14 Visual Elements - Colour

To understand visual literacy you must be able to read images. This involves understanding the purpose of the image and being able to create images to communicate graphically. Colours are very symbolic. They can represent feelings and emotions without words.

The second

The colour grid below shows what some colours can represent.

Green	Blue	Red	Yellow		
nature growth freshness harmony fertility safety money peace greed jealousy	confidence water calmness sky loyalty wisdom cleanliness trust intelligence truth	fire love blood passion energy power war strength danger rage	sunshine childishness intellect happiness energy caution joy freshness safety		
White	Orange	Purple	Black		
cleanliness positiveness goodness purity innocence safety perfection light	joy sunshine tropics happiness creativity success	royalty creativity power mystery nobility magic luxury artificiality	mystery evil formality fear elegance grief power death		
hospitals faith	wisdom quality	wealth femininity	negativity authority		
She wanted to be a first	prestige wealth				

- Which colour could you use to illustrate the following things?
- a wealth, luxury and royalty
- b cleanliness, safety and purity
- c nature, peace and fertility
- d danger, power and strength
- e confidence, loyalty, calmness and wisdom

Brightness of an image or series of words can grab the viewer's attention. Contrast is when two colours are used together to make one stand out more than the other. This is seen a lot in advertising and on signs in the community.

2 Explain why each sign or graphic uses appropriate colour to get its message across.



💽 Tina's Tropical Tang 🖛 company symbol product name white writing on orange background nutritional fact creates contrast vectors/imaaes attention grabbing imaae catchy slogan 3 Use the advertisement above to answer the following questions. What is this advertisement selling? а b How do we know what is in the juice? What are the three main colours used in the advertisement? С Which bright colours are used to grab our attention? d

e Is there any contrast in this advertisement? Where?

a

b

c

d

le

5

Type of Text: Advertisement (Exposition)



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Scanned with CamScanner

YEAR 5 Week 7 Maths Patterns and Algebra

Patterns and functions – recursive number patterns

Look around you, can you see a pattern? A pattern is an arrangement of shapes, numbers or objects formed according to a rule. Patterns are everywhere, you can find them in nature, art, music and even in dance!

In this topic, we are looking at number patterns. A number pattern is a sequence or list of numbers that is formed according to a rule.

Number patterns can use any of the four operations $(+, -, \times, \div)$ or even a combination.

In the example below, if we follow this instruction: "starting at 1 add 5 each time" we get this number pattern:



Write the next 3 numbers in each sequence by following the rule:



2 Figure out the missing numbers in each pattern and write the rule. Circle the ascending patterns.



3 Complete these grid patterns. Look closely at the numbers in the grid and follow the patterns.

b

 32

 40
 42

 50
 52

а





SERIES

TOPIC

Patterns and functions – recursive number patterns

Some number patterns can be formed with 2 operations each time. For example:



Mith these number patterns, write the rule as 2 operations in the diamond shapes and describe it underneath.





The rule is _____

Lena and Max were asked to show a number pattern for different rules. Check each sequence and put a circle around any errors. You may use a calculator.

a Start at 2, add 1 and multiply by 2

1											
	Lena	2	6	14	30	62	126	254	510	1022	
	20110	-	Ŭ			02	120		010	1011	
A.		·	· · · · · · · · · · · · · · · · · · ·	·							

b Start at 3, add 1 and multiply by 2

1											
		2	0	10	20	70	150	220	640	1 200	
	Iviax	3	8	18	38	/8	158	320	640	1280	
											÷.,

Look at each pattern of shapes and see if you can predict the following:



What will shape number 20 look like? Draw it here:

What will shape number 33 look like? Draw it here:



What will shape number 15 look like? Draw it here:

What will shape number 26 look like? Draw it here:



6

а

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Patterns and functions – function number patterns

There are 2 different types of rules that a number pattern can be based upon:

- 1 A recursive rule used to continue the sequence by doing something to the **number** before it.
- **2** A function rule used to predict any number by applying the rule to the **position** of the number. A function rule is a rule based on the position of a number.

Consider this. Lucia was given this number pattern: 5 10 15 20 25

Her teacher asked her to work out what the 20th number would be without continuing the sequence. Lucia used a table to work out the rule between the position of a number and the number in the pattern. She worked out the rule to be \times 5.

Position of number	1	2	3	4	5	20
Function rule	× 5	× 5	× 5	× 5	× 5	× 5
Number pattern	5	10	15	20	25	100

So, following the rule based on the position of a number, the 20th number is 100. This is a function rule.

Use the function rule and then apply the rule to position 20.

с

а	Position of number	1	2	3	4	5	20
	Function rule						
	Number pattern	6	12	18	24	30	

b	Position of number	1	2	3	4	5	20
	Function rule						
	Number pattern	4	8	12	16	20	

Position of number	1	2	3	4	5	20
Function rule						
Number pattern	8	16	24	32	40	

	(HINT: In the)
_	last pattern,
	the rule has
	2 operations.
-	
	THINK

SERIES

TOPIC

d	Position of number	1	2	3	4	5	20
	Function rule	× 4 +					
	Number pattern	7	11	15	19	23	

Patterns and functions – function number patterns

Function rules with 2 operations are easy to work out when we look at how they are linked to the multiplication tables.

Position of number	1	2	3	4	5
2 times table + 3	2 + 3	4 + 3	6 + 3	8 + 3	10 + 3
Number pattern	5	7	9	11	13
Function rule		Multiply	by 2 and th	en add 3	

This table shows that the number pattern is the same as the 2 times table with 3 added to each answer.

2 Complete each table to show how function rules with 2 operations can be linked to multiplication tables.

а	Position of number	1	2	3	4	5
	3 times table +	3+	6+	9+	12 +	15 +
	Number pattern	7	10	13	16	19
	Function rule		Multiply b	y 3 and then ac	dd bb	

b Position of number 1 2 3 4 5 6 times table + 6+ 12 + 18 + 24 + 30 + Number pattern 8 14 20 26 32 Multiply by 6 and then add Function rule

с	Position of number	1	2	3	4	5
	times table +					
	Number pattern	11	19	27	35	43
	Function rule					

Complete this table to show the 4 times tables with 2 added.

а	Position of number	1	2	3	4	5
	4 times table + 2					
	Number pattern					
	Function rule					

b What would the number in the 20th position be?



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Patterns and functions – matchstick patterns

Use the function rule to predict geometric patterns with matchsticks. Here is an example. Mia made this sequence of shapes with matchsticks:

Shape 1	Shape 2	Shape 3	Shape 4
\bigtriangleup	\bigtriangleup	$\Delta\Delta\Delta$	$\triangle \triangle \triangle \triangle$
is followed this	coquence how many	matcheticks will she need	for chang 202

If Mia followed this sequence, how many matchsticks will she need for shape 20?

Shape number	1	2	3	4	5	20
Number of matchsticks	3	6	9	12	15	60
Function rule	Numbe	r of match	nsticks = S	Shape nun	nber ×	3

Complete the table for each sequence of matchstick shapes. Use the function rule for finding the number of matchsticks needed for the shape in the 20th position.



b	Shape 1	Shap	e 2	Shape 3				
	\bigcirc	\bigcirc		$\langle \rangle \rangle \rangle$			>	
	Shape number	1	2	3	4	5	20	
	Number of matchsticks	6	12	18				
	Function rule	Number of matchsticks = Shape number ×						

Shape 1	Shap	e 2	Shape 3				
\sum	$\Sigma \subset$		$\sum \in \sum$				
Shape number	1	2	3	4	5	20	
Number of matchsticks	7	14	21				
Function rule	Number of matchsticks = Shape number ×						

С

Patterns and functions – function machines



Look carefully at the numbers going *in* these function machines and the numbers coming *out*. What rule are they following each time?







3 What numbers go *in* to these number function machines?







Patterns and functions – function machines





Which function machine will win this game of bingo? Write the numbers that come out and colour each 5 machine's numbers in a different colour. Check which machine has 3 numbers in a line in any direction.





× 5 + 22

Patterns and functions – function tables with addition and subtraction

The function machines showed us that when a number goes in, it comes out changed by the rule or the function. There are many function patterns in real life.

Look at this example:

At their Christmas fair, Middle Street Primary School charges \$1.50 for a gift wrapping service. This table shows the total cost of each wrapped gift and shows the rule.

Cost of unwrapped gift	\$7	\$10	\$15	\$18				
Cost of wrapped gift	\$8.50	\$11.50	\$16.50	\$19.50				
Rule	Cost of unwrapped gift + \$1.50 = Cost of wrapped gi							

Complete the function table for the total cost of a day out at a fun park. You must pay an entry fee of \$12 6 and purchase a wrist band for the amount of rides that you want to go on.

Wrist band	5 rides for \$20	6 rides for \$25	7 rides for \$30	8 rides for \$35					
Total admission									
Rule	Wrist band + \$12 = Total cost								

2 Complete the function table for the total cost of lunch at a school canteen. Students pay \$2.40 for a sandwich and then choose what else they would like. Work out the total cost of lunch for each option.

Lunch option	Drink: 80¢	Fruit: 95¢	Yoghurt: \$1.10	lce block: \$1.50				
Total cost of lunch								
Rule	Lunch option + \$2.40 = Total cost of lunch							

3 5F have fitness every Thursday afternoon for 30 minutes. Each week they complete a fitness activity and then play running games. Work out how much time is left for games after each activity.

Activity	Skipping 10 minutes	Star jumps 12 minutes	Push ups 15 minutes	Sit ups 16 minutes				
Time left for games								
Rule	30 minutes – length of time of activity = Time left for games							



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Patterns and functions – function tables with multiplication

Let's look at more real life function tables, this time based on multiplication. By working out the function, you can extend the pattern to find out unknowns. For example:



A bakery makes 10 cupcakes an hour.

The rule to work out the number of cupcakes this bakery produces within a certain amount of time is:

Number of hours \times 10 = Number of cupcakes

Hours	1	2	3	4	5	6	7	8
Cupcakes	10	20	30	40	50	60	70	80

How many cupcakes will it make in 1 day?

This table only goes up to 8 hours but we can use the function to answer this question:

24 hours × 10 cupcakes = 240 cupcakes

1 Complete the function tables, write the rule and answer the question.

I	A dry cleaner charges \$2 to iron a shirt.									
Number of shirts 1 2 3 4 5 6 7 8										
Cost \$2 \$4 \$6										
	Write the rule for finding out the cost of ironing shirts when you know how many shirts:									
	How much does it cost to have 12 shirts ironed?									

b Monica and Anna have a lemonade stand outside their house. For every litre of lemonade they make 4 cups to sell.

Litres	1	2	3	4	5	6	7	8	
Cups 4 8									
Write the rule for finding out how many cups are needed when you know how many litres have been made:									
How many cups will be needed if they have enough to make 12 litres of lemonade?									

с	At a cinema, the lollies are sold by weight. 1 scoop costs 50¢.										
	Scoops of lollies 1 2 3 4 5 6 7 8										
Cost 50¢ \$1											
	Write the rule to find out the cost of the Iollies when you know how many scoops:										
	How many scoops of Iollies can I get for \$10?										

Patterns and Algebra

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Equations and equivalence – using symbols

Symbols help us when we have more than one number to find.

A symbol can be any shape and stands for any unknown numbers.

Work out the value of the diamond in each question. Notice the same symbol is added 3 times. Your 3 times tables will help here.



2 Find the value of the symbols. Remember that if a symbol is used more than once, it means it is the same value again.

a \swarrow + \bigstar + \bigstar = 9 **b** \heartsuit × \heartsuit = 36

c ⓒ × ⓒ = 49



3 Find the value of the symbols and then check if you are right by using the same value in the question alongside it.





Equations and equivalence – using symbols



4 Look carefully at the example above and follow the steps to find out the values of these secret symbols:



5 This time you must find the value of 3 different symbols $\triangle \frac{1}{24}$ out using the clues in each step:



Equations and equivalence – keeping balance



Find out how many counters are in each of the boxes. Remember to take away the same amount on both sides so the balance is kept.











YEAR 6 Week 7 Maths Patterns and Algebra

Patterns and functions – recursive number sequences

A number pattern is a sequence or list of numbers that is formed according to a rule. Number patterns can use any of the four operations (+, -, ×, \div) or a combination of these. There are 2 different types of rules that we can use to continue a number pattern:

- ${\bf 1} \quad {\rm A \ recursive \ rule find \ the \ next \ number \ by \ doing \ something \ to \ the \ number \ before \ it.}$
- 2 A function rule predict any number by applying the rule to the position of the number.

Here is an example of a number sequence with a recursive rule.

The rule is add 8 to the previous number, starting with 5.



1 Figure out the missing numbers in each pattern and write the rule:



- 2 What do you notice about the patterns a and b in Question 1?
- Complete these grid patterns. Look closely at the numbers in the grid and follow the pattern going vertically and horizontally:

10

37

b







7

SERIES

TOPIC

Patterns and functions – recursive number sequences

4 Complete these sequences according to the recursive rule:



5 Complete these decimal number sequences according to the recursive rule:



Complete the following number patterns and write the rule as 2 operations in the diamond shapes and describe it underneath.



The rule is _____



Use a calculator to work out where each pattern started to go wrong in these single operation patterns and circle them. Hint: The first 2 numbers in both are correct.







Patterns and functions – function number sequences

There are 2 different types of rules that we can apply to find out more about a sequence:

- 1 A recursive rule gives the next number by applying a rule to the number before it.
- **2** A function rule predicts any number by applying a rule to the position of the number.

So far we have practised the recursive rule to work out the next number in a sequence. Now we will apply the function rule to this problem:

How can we find out the 20th number in this sequence without writing out all of the numbers?

To use the function rule we:

- Use a table like this one below.
- Write each number of the sequence in position.
- Work out the rule, which is the relationship between the position of a number and the number in the pattern.
- Use the rule to work out the 20th number in the sequence.

Position of number	1	2	3	4	5	20
Rule	× 3 + 1	×3+1	×3+1	× 3 + 1	× 3 + 1	×3+1
Number sequence	4	7	10	13	16	61

HINT: a good way to work out the rule is to see what the sequence is going up by. This tells you what the first operation is and then you adjust. This sequence is the 3 times tables moved up one so it is × 3 + 1.

1 In each table, find the rule and write it in the middle row. Then apply the rule to position 20.

а	Position of number	1	2	3	4	5	20
	Rule						
	Number sequence	6	11	16	21	26	

b	Position of number	1	2	3	4	5	20
	Rule						
	Number sequence	5	7	9	11	13	

с	Position of number	1	2	3	4	5	20
	Rule						
	Number sequence	8	17	26	35	44	



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Patterns and functions – function number sequences



	L					
Position of number	1	2	3	4	5	20
Rule						
Number sequence						

3 Circle true or false for each of the following:

a The number in the 6th position is 24	true / false	b 32 is in this sequence true / false
c The number in the 20th position is 65	true / false	d The number in the 100th position is 305 true / false

4 Here is another number sequence but this time 4 of these numbers do not belong. Given the function rule and the first 2 numbers, use the table below to work out how this sequence should go, then cross out the numbers that do not belong:

15	23	31	36	47	59	63	74	79	97	
Position of number	1	2	3	4	5	6	7	8	9	10
Rule	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7	× 8 + 7
Number sequence										

5 Unscramble the sequence according to this function rule: × 9 - 6.

a Again, use the table below to work out how this sequence should go and cross out numbers that do not belong:



Position of number	1	2	3	4	5	6	7	8	9	10
Rule										
Number sequence										

b What will be the number in position 50? _____



Patterns and functions – function shape patterns

When you are investigating geometric patterns, look closely at the position of each shape and think about how it is changing each time.

How many matchsticks are needed for the first shape?

How many more are needed for the next shape?

of r	of matchsticks needed for each shape including the 50th shape:													
а								ĺ						
	Shape number	1	2	3	4	5	6	7	8	9	10	50		
	Number of matchsticks	4	7	10	13	16								
	Function rule		Nur	nber of	match	sticks =	= Shape	e numb	oer×_		+ 1			
b		-				-	-		_	-	-			

Complete the table for each sequence of matchstick shapes. Use the function rule for finding the number

						\sum							
Shape number		1	2	3	4	5	6	7	8	9	10	50	
Number of matchstic	ks	6	10	14	18	22							
Function rule			Numbe	er of ma	atchstic	:ks = S	hape n	umber	×	+			

с	\triangle \triangle	1	Δ	Δ	é			7				
	Shape number	1	2	3	4	5	6	7	8	9	10	50
	Number of matchsticks	3	5	7	9	11						
	Function rule		Numb	er of m	atchstic	cks = S	hape n	umber	×	+_		

d

Shap

Num

be number	1	2	3	4	5	6	7	8	9	10	50
ber of matchsticks	5	8	11	14	17						
ction rule		Numbe	er of ma	atchstic	:ks = S	hape n	umber	×	+		

SERIES

TOPIC

Patterns and functions – function shape patterns

2 Gia started to make a sequence out of star and pentagon blocks and recorded her findings in the table as she went. She had to stop when she ran out of pentagons. This is where she got up to:



a Help Gia continue investigating this sequence by using the table below:

Shape number	1	2	3	4	5	6	7	8	9	10	15	
Number of stars	1	2	3									
Number of pentagons	0	1	2									
Rule for stars			Num	per of s	tars =	Numbe	er of pe	ntagon	s + 1			
Rule for pentagons		1 2 Number of stars = Number of pentagons + 1 Number of pentagons = Number of stars - 1										

b How many stars are in the 10th shape?

- _____
- c How many pentagons are there in the 15th shape?

3 Tyson also made a sequence out of pattern blocks but stopped after the first 3 shapes and decided to continue investigating by using the table.



Shape number	1	2	3	4	5	6	7	8	9	10
Number of crosses	1	2	3							
Number of rectangles	0	2	4							
Rule for crosses		Num	ber of o	crosses	= (2 +	numbe	r of rect	angles)	÷ 2	
Rule for rectangles		Num	nber of I	rectangl	es = (2	× num	ber of o	crosses)	- 2	

- a How many rectangles will there be in the 12th shape?
- **b** Josie made this shape following Tyson's sequence.



What is the position of this shape? ____

How do you know?



Patterns and functions – function machines and function tables



Look carefully at the numbers going *in* these function machines and the numbers coming *out*. What 2 rules are they following each time?



The function machines showed us that when a number goes in, it comes out changed by the rule or the function. Function tables are the same idea – the number goes **in** the rule and the number that comes **out** is written in the table. The rule goes at the top:

Rule: ÷ 2 + 6											
IN	10	24	50	70	48	90	100	80			
OUT	11	18	31	41	30	51	56	46			

2 Complete these function tables according to the rule:

а

Rule: × 8	+ 1		Rule: × 8 + 1												
IN	8	2	3	5	7	9	4	6							
OUT	65														

b	Rule: × 5	- 4							
	IN	6	9	3	4	7	11	20	8
	OUT	26							

Patterns and functions – real life functions

So far we have seen that functions are relationships between numbers.

These numbers are attached to real life situations everywhere you look. It is possible to create a function table to show the relationship between many things, for example:

- Your high score Live Mathletics depends on how often you practise mental arithmetic.
- The distance that you run depends on how long you run.
- The amount that you can save depends on how much you earn.
- The amount of US dollars you get when you travel to Los Angeles depends on the exchange rate. There are many, many more examples. Can you think of any?

Complete the function tables for these real life scenarios:

a A pool which fills at a rate of 4 litres every minute.

Rule: Numb	Rule: Number of minutes × 4 = Amount of litres												
Minutes	5	10	15	20	25	30	35	40					
Litres	20	40	60	80									
How full is it	t after 1 hou	ır?											

b Maya downloads 5 songs a day onto her MP3 player.

Rule: Numbe	Rule: Number of days × = Amount of songs												
Days	1	2	3	4	5	6	7	8					
Songs	5	10	15	20									

How many songs would she have downloaded after 30 days?

c A car is travelling at a speed of 50 km/h.

Rule: Number of	hours ×	= A	mount of k	m travelled	ł			
Hours	1	2	3	4	5	6	7	8
Km travelled	50	100	150	200				
			_					

How long would it take to travel 800 km?

We can show these relationships on a graph. On the right is a graph of the function table in question **c**. This is known as a travel graph and shows the relationship between time and distance. Next, we will look at some examples of graphing functions.







Patterns and functions – real life functions

2 Crawly the caterpillar crawls 4 centimetres per day.



- a Complete the table to show how far he gets in 8 days.
- **b** Write a rule for working out the distance if you know the number of days.

Number of days

Rule:								
Days	1	2	3	4	5	6	7	8
Distance								

During the day, Crawly's friend Creepy, crawls 5 cm up a garden wall. At night when he falls asleep, he slides 2 cm back down the wall.

a Complete the table below to show

how far he gets in 8 days.



8																	
7																	
6	\vdash											-					
5	<u> </u>	_			-			-		-	-	-		-	-		
4	<u> </u>											-					
3																	
2																	
1																	
1																	
0	2	2 4	1 6	5 8	3 1	0 1	2 1	4 1	6 1	8 2	0 2	22 2	4 2	6 2	8 3	0 3	2
								cta		in	~m						
							וט	Sid	nce		CIII						

SERIES

TOPIC

Creepy's journey

Rule:								
Days	1	2	3	4	5	6	7	8
Distance								

- **b** Write a rule for working out the distance if you know the number of days. Think about the total distance Creepy covers in 24 hours.
- **c** Plot the points on the graph above (just like the one in Question 2), then compare the graphs. How are they different?

Patterns and functions – real life functions

- Julie is planning her birthday party and is planning how much food and drink she needs for her guests. She has sent out 15 invitations.
 - a Complete the table to show how much pizza is needed for different numbers of guests. She has based this table on the estimation that one guest would eat 3 slices of pizza.



b Write a rule in the table for working out the slices of pizzas needed, if you know the number of guests.

Rule:										
Number of guests	1	2	3	4	5	6	7	8		
Slices of pizza	3									

c Graph this data by plotting the points from the table:

Do not join the points because the data is about whole slices of pizza – not parts of slices. Also you can't have part of a person, the data is about single people.

d How many slices are needed for 11 people?



e How did you work this out?

f How could the graph help you?

g 10 people confirmed they were coming to the party. How many pizzas will Julie need to buy if each pizza has 12 slices? Will there be any leftovers? Show your working.



Getting readv

A famous mathematician by the name of Leonardi di Pisa became known as Fibonacci after the number sequence he discovered. He lived in 13th century Italy, about 200 years before another very famous Italian, Leonardo da Vinci.

His number sequence can be demonstrated by this maths problem about rabbits:

"How many pairs of rabbits will there be a year from now, if ...?"

- 1 You begin with one male rabbit and one female rabbit. These rabbits have just been born.
- **2** After 1 month, the rabbits are ready to mate.
- **3** After another month, a pair of babies is born one male and one female.
- **4** From now on, a female rabbit will give birth every month.
- 5 A female rabbit will always give birth to one male rabbit and one female rabbit. 6 Rabbits never die.

	Month	Babies from 1st Pair	Babies from 2nd Pair	Babies from 3rd Pair	Total Pairs of Rabbits
	1				x
Кеу	2				X
X = 1 pair of rabbits	3	x			XX
÷.	4	X			XXX
	5	x	X		XXXXX
	6	X	X	X	<u> KKKKKKK</u>



Key

Look carefully at the table above to understand the problem. If we kept going, the table would get very wide indeed and guite confusing! So it is up to you to figure out the pattern. Here is a closer look. Can you see what is happening? What are the next 2 numbers?



Now, back to the bunnies. Use the table below to answer Mr Fibonacci. "How many pairs of rabbits will there be a year from now?"

Months	1	2	3	4	5	6	7	8	9	10	11	12
Pairs of bunnies	1	1	2	3	5							



Fibonacci now wants to know:

"How many pairs of rabbits will there be 2 years from now?"

Use a calculator. *Hint:* The table below should just continue from the previous one.

Months	13	14	15	16	17	18	19	20	21	22	23	24
Pairs of bunnies												

Triangular numbers

investigate





Write a number sentence for each part of the Triangular number pattern and continue to complete this list:

1st	1	= 1
2nd	3	= 1 + 2
3rd	6	= 1 + 2 + 3
4th	10	= 1 + 2 + 3 + 4
5th	15	=
6th	21	=
7th	28	=
8th		. =



Let's investigate a faster way to find the 10th number:

(2)+(3)+(4)+(5)+(6)+(7)

Work from the outside in, until you reach the halfway point adding the numbers.

What is the answer each time?

Half of 10 is ______ so that means we have 5 lots of 11, so the 10th triangular

number is _____

What is the 20th number?

1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17+18+19+20

Work from the outside in, until you reach the halfway point adding the numbers.

What is the answer each time?

Half of 20 is ______ so that means we have ______ lots of _____,

so the 20th triangular number is



Find the 30th triangular number without writing down the numbers.

Hint questions: What are the first and the last numbers? _____ What do they add to? ____



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Watch the video –	Planet Earth			
Imagine you were in ch What would you chang	arge of an area of the world e?	. How would you manage it?		
Now is your chance to see how you could change the world!				
Read the eBook o	n The World's Biomes.			
Look at the Biomes	Maps and choose a place in a.	Australia, North America,		
Name of country				
Choose a biome in that	country.			
Type of biome				
Do some research on y	our biome.			
(Wetlands	(Polar	(Tropical Forest		
Grasslands	Alpine	(R) Temperate Forest		
Ocean	Desert			
Write some words in th e.g. for grassland include	e box which would be helpfu de prairie, savanna, shrub la	I with your research nd.		

You will need to find specific information for your area. Make sure your area is natural. Record the information you found here.

Natural Features	
Vegetation	
Climate	
Animals	
Threats	

Unit 1 Factors that Change Environments

Lesson 3 Choose Your Biome

This part can be done on pencil and paper, as a working model or digitally such as a drawing tool, or Minecraft or Lego World. You may need to take a photo or screenshot to record your maps.

Draw or insert an image of a map of your biome in its natural state. Include the natural features, vegetation and climate information you found in your research.

For many thousands of years humans were hunters survived by hunting animals and gathering plants in the wild. Some hunters and gatherers still exist today but if we were all hunters and gatherers the world could only support about 100 million people not the 7 billion who live here now. Because of diversified farming practices and high rise living, the world can continue to support a very large population. Most people now live in settlements but this has changed the natural environment dramatically.

Building a settlement

To build a settlement on your area of land what would be the first thing you would do?

Remember, you can only use the resources available in your biome, for example if you lived in the grasslands there would not be many trees so you would have to build a house from grass or mud.

How would cutting grass or making a mud pit change your landscape?

3

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2

Lesson 3 Choose Your Biome

Complete the table with information about your biome.

Building resources	Impact on the environment

List the structures you would build and include the changes it will make to the environment.

Add the changes to your map.

8

Introduce some animals to your area. What animals would live best here? What animals would be useful? What animals would be a pest? How would you keep the animals in or out of your area? What resources would you use to do this? List the animals you would introduce, why you would included them and how you would keep them in.

List the changes the animals would make to the environment.

Add the animals and any other changes to your map.

Unit 1 Factors that Change Environments

Lesson 3 Choose Your Biome

You will probably want to grow some food in your area. What food would grow best? What plants would be a pest? How would you make sure your plants are productive? If you grow more food then you need then you could probably trade it for other resources from different biomes.

Write your thoughts about crops in the box.

Plant some crops in your area.

Add the crops and any changes to your map.



Does your area have resources that you could trade with settlements in other biomes, gold or oil for example?

How would your landscape change if you built a dam, farmed, logged, mined or drilled? What would you do with the money you earned?

Write your thoughts about the use of resources on your land in the box. Add the changes to your map.



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4

5

Ocean Biomes

http://www.greenpeace.org/usa/oceans/issues/

http://biomemarine.weebly.com/climate-and-weather.html

http://oceanexplorer.noaa.gov/facts/climate.html

http://kids.nceas.ucsb.edu/biomes/marine.html

Wetlands Biomes

https://www.environment.nsw.gov.au/topics/water/wetlands/plants-and-animals-in-wetlands

http://www.softschools.com/facts/biomes/wetland_biome_facts/170/

https://www.youtube.com/watch?v=4VpNidhY10M

Temperate

http://minecraft.gamepedia.com/Biome#Medium.2FLush_biomes

http://kids.nceas.ucsb.edu/biomes/temperateforest.html

https://www.britannica.com/science/temperate-forest

Tropical Forest Biomes

http://www.wettropics.gov.au/plants-animals

http://www.softschools.com/facts/biomes/tropical_rainforest_biome_facts/160/

http://kids.nceas.ucsb.edu/biomes/rainforest.html

Alpine Biomes

http://kids.nceas.ucsb.edu/biomes/alpine.html

https://www.blueplanetbiomes.org/

Grasslands Biomes

http://www.ducksters.com/science/ecosystems/grasslands_biome.php

http://kids.nceas.ucsb.edu/biomes/grassland.htm

http://www.softschools.com/facts/biomes/grassland_biome_facts/165/

Desert Biomes

http://www.blueplanetbiomes.org/desert.htm

http://www.kidcyber.com.au/deserts/

http://www.softschools.com/facts/biomes/desert biome facts/167/

Polar Biomes

https://www.bbc.co.uk/bitesize/guides/zt7hvcw/revision/1

http://easyscienceforkids.com/all-about-polar-climates/

https://en.wikipedia.org/wiki/Polar_climate

https://www.factmonster.com/world/world-geography/polar-regions



Supplies needed:

✓ Task 1 question sheet

Directions:

- 1. Work together to find the missing quantities in each number sentence
- Add all the digits of each answer (the missing number), one at a time, then record this number on the code line below. Do this for all the numbers, working from left to right and top to bottom
- 3. Type your code into the Google Form with no spaces. If the code is correct, progress to the next task.

TASK ONE QUESTION SHEET



TASK TWO

Supplies needed:

✓ Task 2 question sheet

Directions:

- 1. Work together to find the values of the lemon, strawberry and watermelon
- 2. Write these values at the bottom of the page, then type the numbers from left to right into the Google Form with no spaces. If the code is correct, progress to the next task.

TASK TWO QUESTION SHEET





Supplies needed:

✓ Task 3 question sheet

Directions:

- 1. Work together to find the rule for each number pattern
- 2. Using the rule, fill in the missing numbers
- 3. Record the missing numbers (not the rule) on the code line below. Numbers should be recorded in order (left to right and top to bottom)
- 4. Type your code into the Google Form with no spaces. If the code is correct, progress to the next task.

TASK THREE QUESTION SHEET

23 ,, 219 , 317 ,, 513	Rule =
, 273 , , I25 , 5I , -23	Rule =
12,26,54,110,,446	Rule =
CODE:	

TASK FOUR

Supplies needed:

- ✓ Task 4 question sheet
- ✓ Task 4 decoder

Directions:

- 1. Work together to solve the word problems
- 2. On the decoder page, use the answers from the word problems to find the secret message
- 3. Type the secret message (in capitals) into the Google Form with no spaces. If the code is correct, you have made it out!

TASK FOUR QUESTION SHEET

QUESTION I	QUESTION 2
Matthew has saved \$1560 for a trip	Tom purchased 2 books at his local
overseas, and his parents gave him	book store for a total of \$39. If one
\$200. How much more money does	book was double the price of the
he need to save if the trip costs	other, how much was the cheapest
\$2300?	book?
QUESTION 3 Rihanna ran 7.5km over 3 days. On the first 2 days she ran the same distance. How far did she run on the third day, if it was half of what she ran on each of the first 2 days?	QUESTION 4 Milly's dad is 45 years old, he is 15 years older than twice Milly's age. How old is Milly?