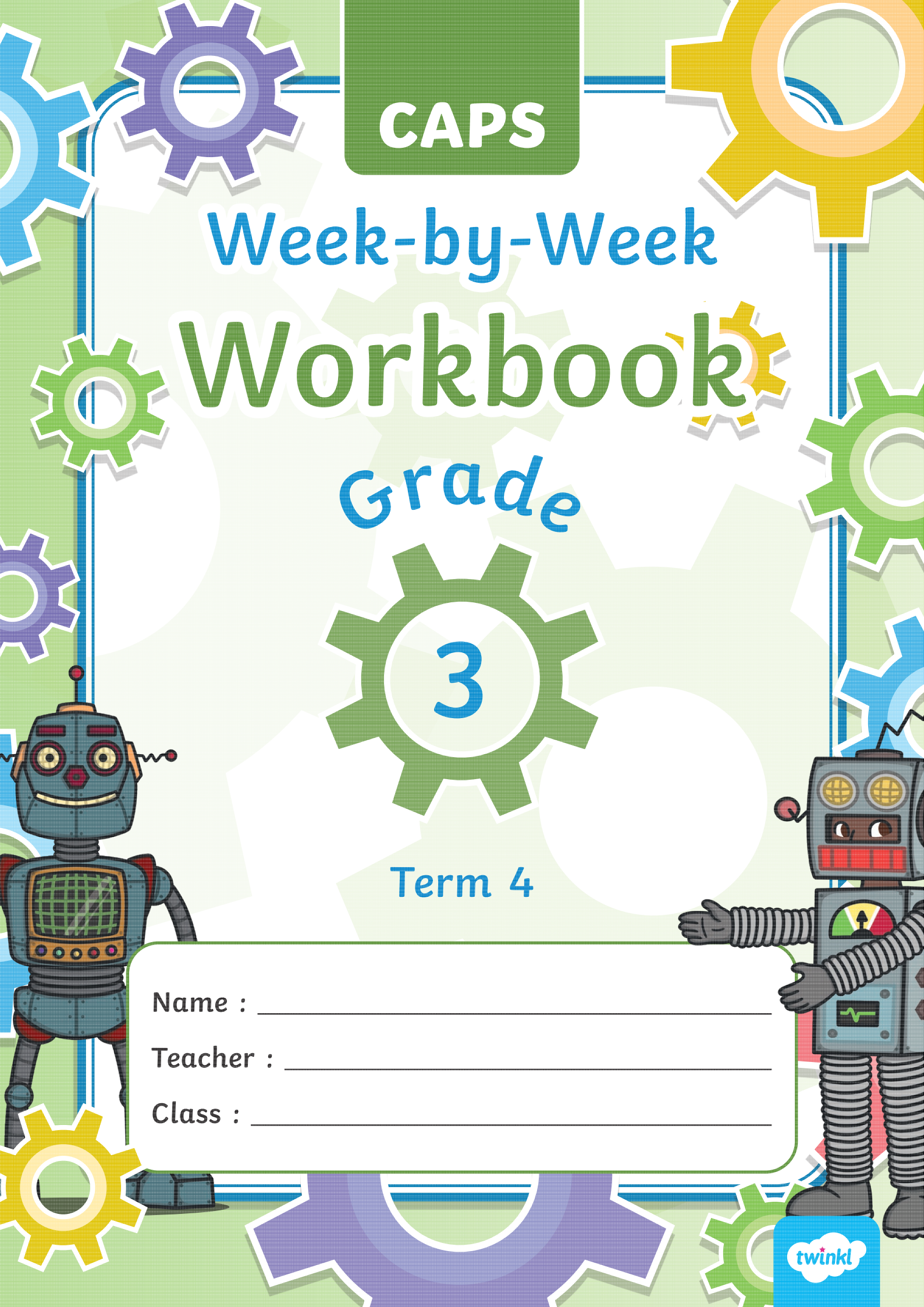




CAPS

Week-by-Week
Workbook

Grade

3

Term 4

Name : _____

Teacher : _____

Class : _____

Notes about the Robotics and Coding Curriculum

The curriculum is divided into three topical areas.

Coding,

Robotics,

Digital skills.

Each of these has its own competencies which must be achieved at appropriate levels.

Coding

- C.1** Apply computational thinking skills to develop a set of logical instructions to solve a problem.
- C.2** Present a simple coding solution using symbolic or written statements representing sequences of commands, single repetition, and conditional constructs.
- C.3** Interpret and execute a given symbolic or written set of instructions.
- C.4** Debug a symbolic or written set of instructions.
- C.5** Evaluate a given solution towards potential improvement.
- C.6** Recognise and interpret patterns and symbolic sets of data or visualisations.
- C.7** Create or complete a pattern to represent a particular data set.

Robotics

- R.1** Explain what a robot is in simple terms.
- R.2** Identify different types of robots.
- R.3** Outline the different components of a robot.
- R.4** Present an understanding of how robots affect the world.
- R.5** Design a simple product (artefact) based on a set of design specifications.
- R.6** Mimic the operations of a robot.
- R.7.** Create, test, and execute a set of robotic instructions.



Digital Skills

- D.1** Outline the concept of technology and the purpose of Information Technology (IT).
- D.2** Recognise that he or she is living as a citizen in a digital world.
- D.3** Demonstrate an understanding of the concept of a computing device.
- D.4** Identify the common uses of ICT (Information and Communications Technology) in the real world.
- D.5** Differentiate between the components of an ICT system.
- D.6** Explain how the adaptation of technology impacted the world we work and live in.
- D.7** Present a basic understanding of the concept of input, processing, and output.
- D.8** Interpret a pattern to represent or communicate a message or image.
- D.9** Create a pattern to represent or communicate a message or image.
- D.10** Demonstrate a basic proficiency in the use of digital skills.

Once you have an understanding of what these competencies cover it becomes easy to use our other Robotics and Coding resources to supplement and enhance your learners' understanding of Robotics and Coding.

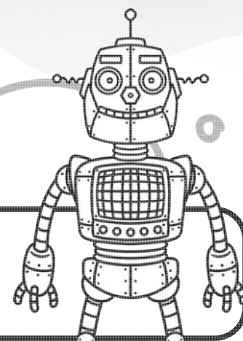
You will need:

- a set of action cards;
- a set of directional arrow cards;
- a demarcated 4x4 grid (made from paving blocks outside or inside from floor tiles) on which the learners can move according to a set of instructions.
- a copy of the Grade 3 Week-By-Week Planning for Term 4.

The worksheets in this workbook are arranged following the Week-by-Week Planning.

Follow the Pattern

Instructions: Start at the top and colour the pattern in order all the way to the end.



Pattern: PRYND

Colour each letter of the pattern a different colour.

G	P	R	Y	M	T	N	D	P	V	D	W
H	K	O	N	N	R	Y	T	R	Y	E	N
U	J	K	D	I	B	R	U	Y	E	R	I
F	G	R	P	K	L	P	W	N	H	D	A
A	R	Y	F	H	S	D	L	D	O	P	E
C	V	N	N	B	V	N	I	P	L	E	R
T	Y	D	H	J	R	T	U	R	H	A	G
G	T	P	T	H	G	R	R	Y	T	M	N
M	L	R	Y	N	D	P	J	N	G	D	A
S	D	Y	G	V	A	D	T	D	H	G	L
G	H	L	T	E	R	S	A	P	R	T	U
U	N	Y	R	P	D	N	Y	R	H	T	M
C	D	V	T	W	A	S	I	K	G	L	O
R	P	R	Y	N	D	P	R	Y	N	D	Y

Pattern Debugging



Instructions: Look carefully at each pattern and find the errors. Draw the pattern correctly in the row below.

A	B	B	C	D	A	B	B	C	C	A	B	A	C	D

AA	BB	CC	DD	AA	AA	BB	CD	DD	AA	AA	BC	CC	DD	AB

A	B	C	A	B	C	A	B	C	A	C	C	A	S	C

AB	AC	AD	AE	AF	AA	AC	AD	AE	AF	AB	AC	AD	AF	AF

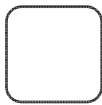
ABC	CDE	EGF	ABC	CDE	EFG	ABB	CDE	EFG	ABC	CEE	EFG	ABC	CDE	EFF

WE	WE	WE	WE	WF	WE	WE	WE	WE	WF	WF	WE	WF	WE	WF

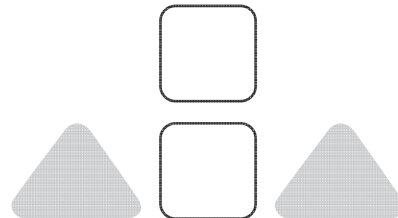
Patterns and Problem Solving

Pyramid Patterns

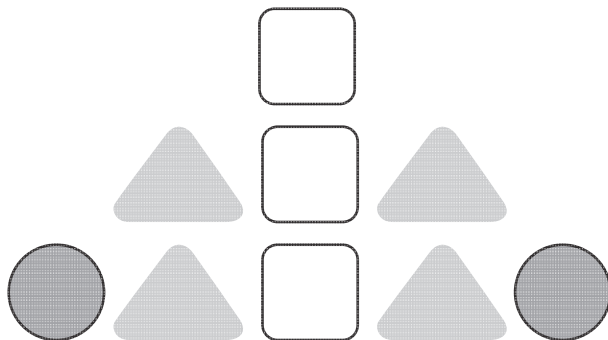
Begin with one shape



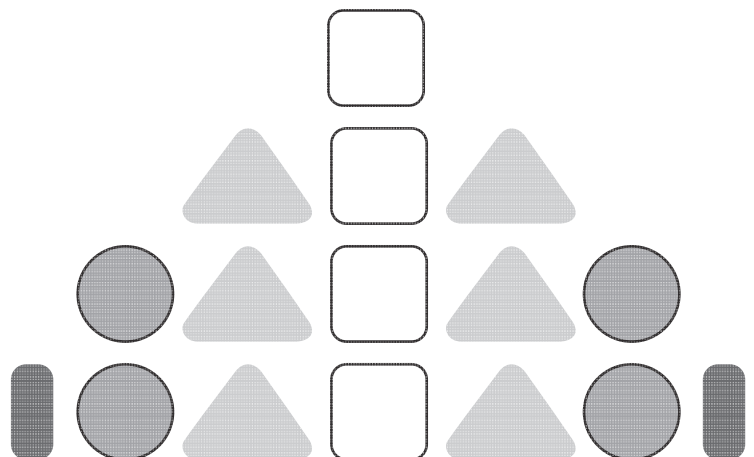
Add another one on each side



Now add another



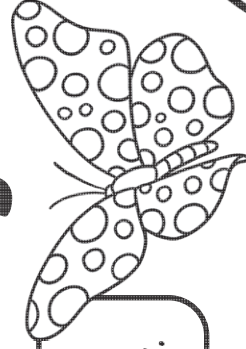
And another



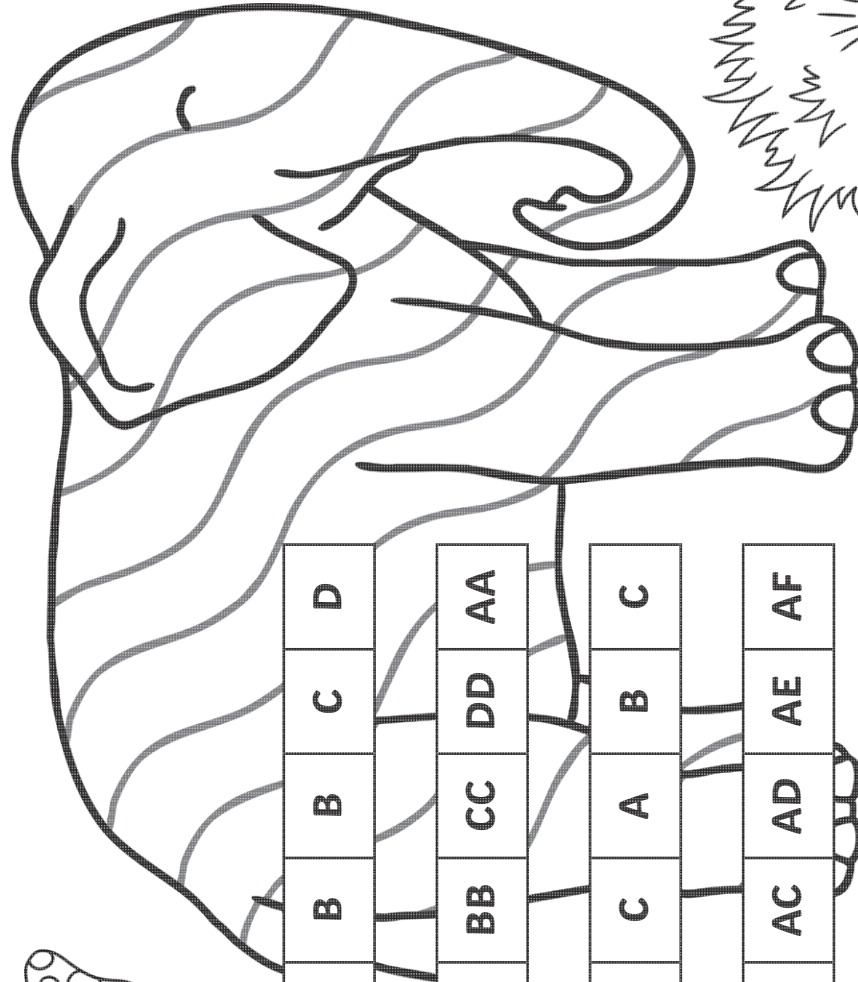
Instructions

- Now try and make your own pyramid pattern.
- You can make your pyramid as big as you like.
- See if you can make 11 blocks across the bottom.

Pattern Identification



Instructions: Colour in the squares for one repetition of the pattern in each row.



A	B	B	C	D	A	B	B	C	D
---	---	---	---	---	---	---	---	---	---

AA	BB	CC	DD	AA	AA	BB	CC	DD	AA
----	----	----	----	----	----	----	----	----	----

A	B	C	A	B	C	A	B	C	A
---	---	---	---	---	---	---	---	---	---

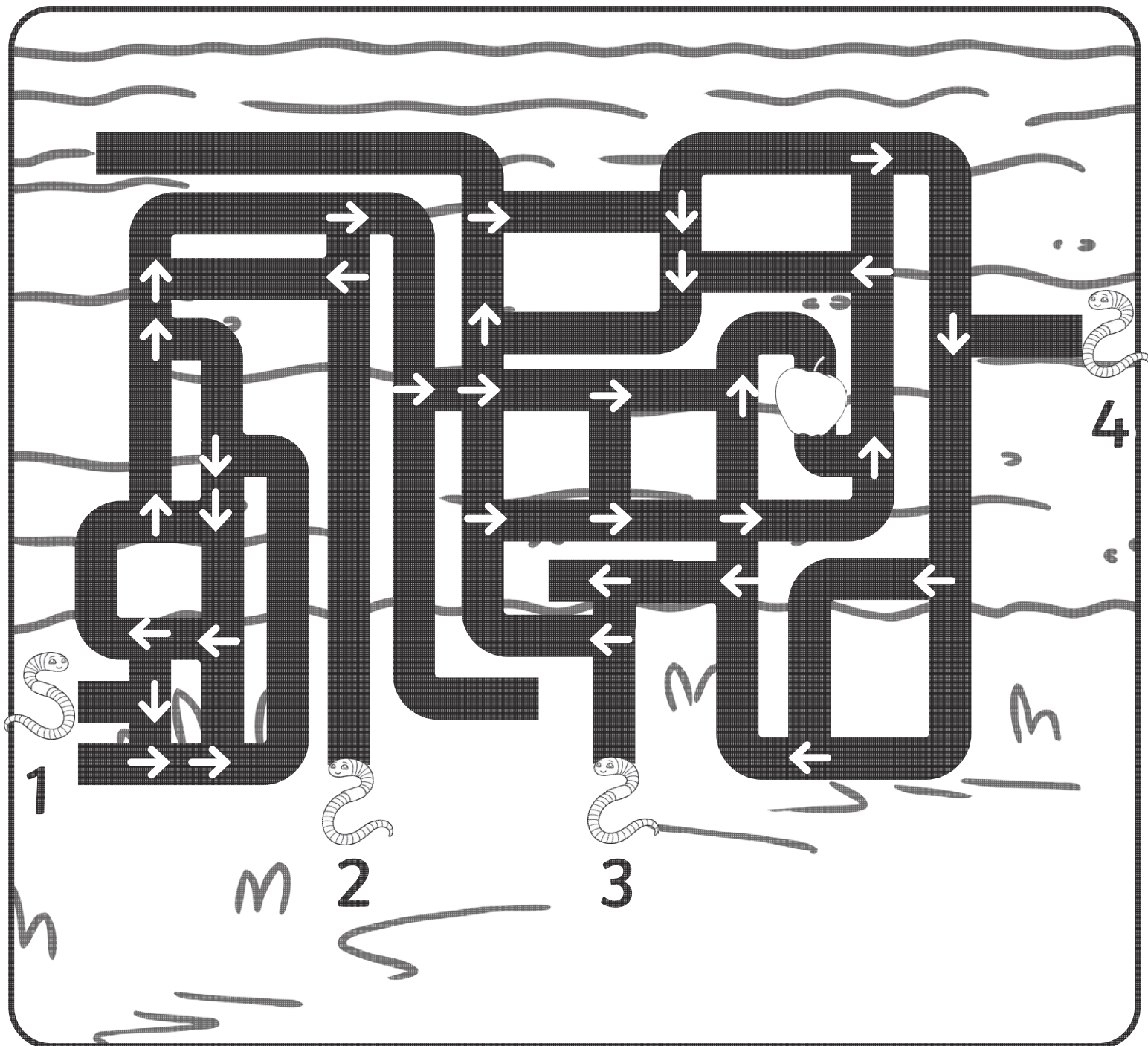
AB	AC	AD	AE	AF	AB	AC	AD	AE	AF
----	----	----	----	----	----	----	----	----	----

WE	WE	WE	WE	WF	WE	WE	WE	WE	WF
----	----	----	----	----	----	----	----	----	----

ABC	CDE	EFG	ABC	CDE	EFG	ABC	CDE	EFG	ABC
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

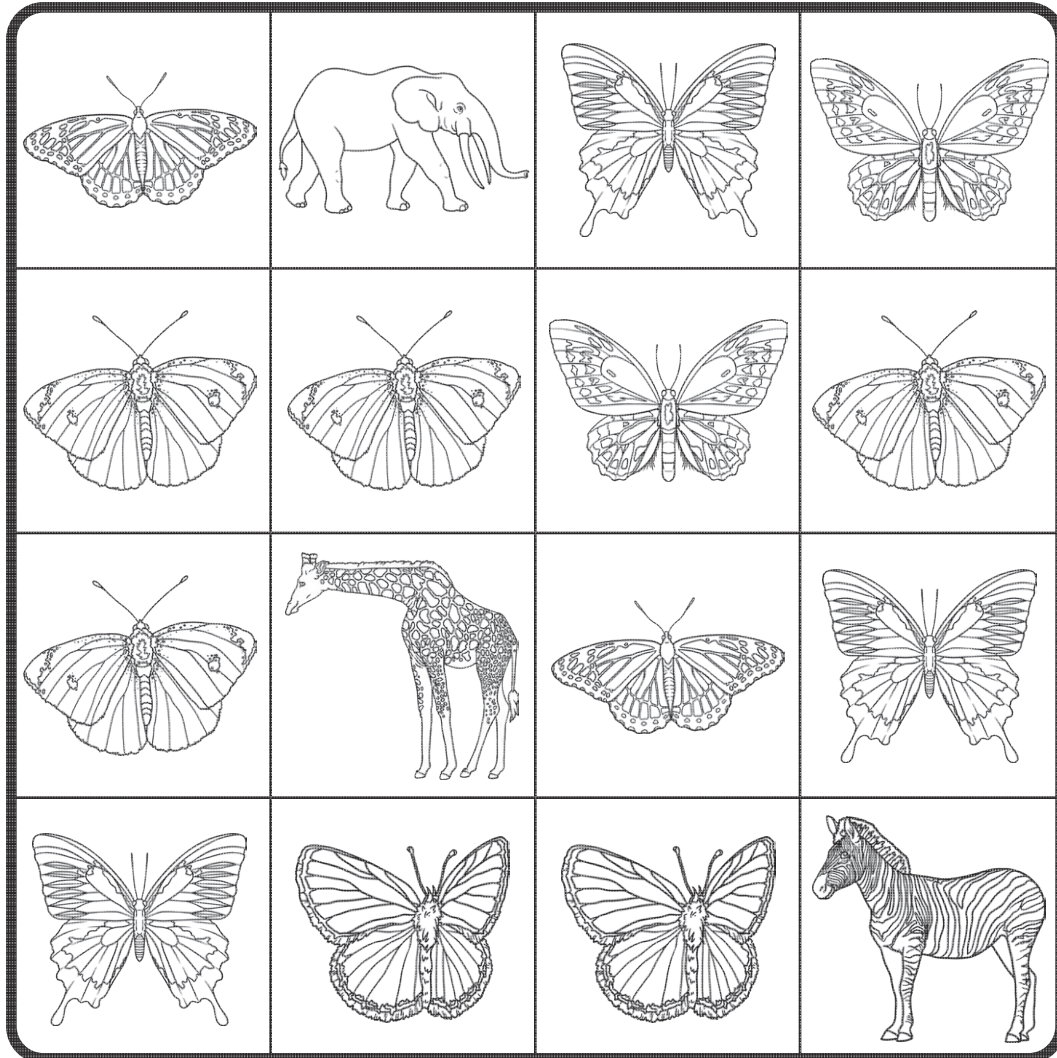
Who Will Reach the Apple First

Instructions: The worms all start from different places. They can only move forward and always follow the arrows. Put a circle around the worms that will reach the apple.



Butterfly Tag

Study the picture and then answer the questions below.



1. Can zebra visit elephant without crossing any orange butterflies?

2. Can giraffe visit zebra by crossing every single orange butterfly?

3. If elephant can only cross each colour butterfly once, which way must he go to visit zebra? Draw the arrows here.

4. Can giraffe visit elephant, only crossing white butterflies?

5. Draw the longest route for zebra to visit elephant, only crossing each block once. Draw the arrows here.

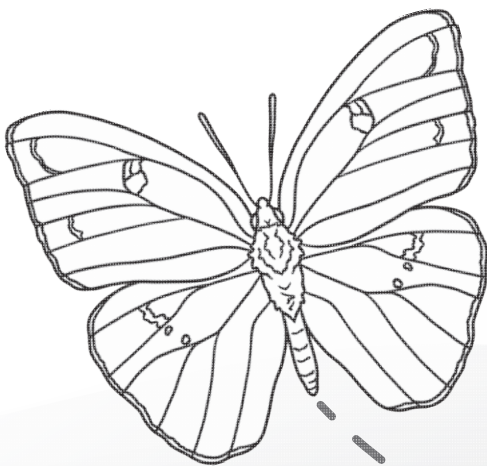
6. Can giraffe visit zebra, only crossing purple butterflies.

7. Can zebra visit elephant only crossing one colour butterfly?

8. Draw the longest route for elephant to visit giraffe only crossing each block once. Draw the arrows here.

9. Draw the longest way for Zebra to visit giraffe.

10. Draw the shortest way for elephant to visit giraffe.

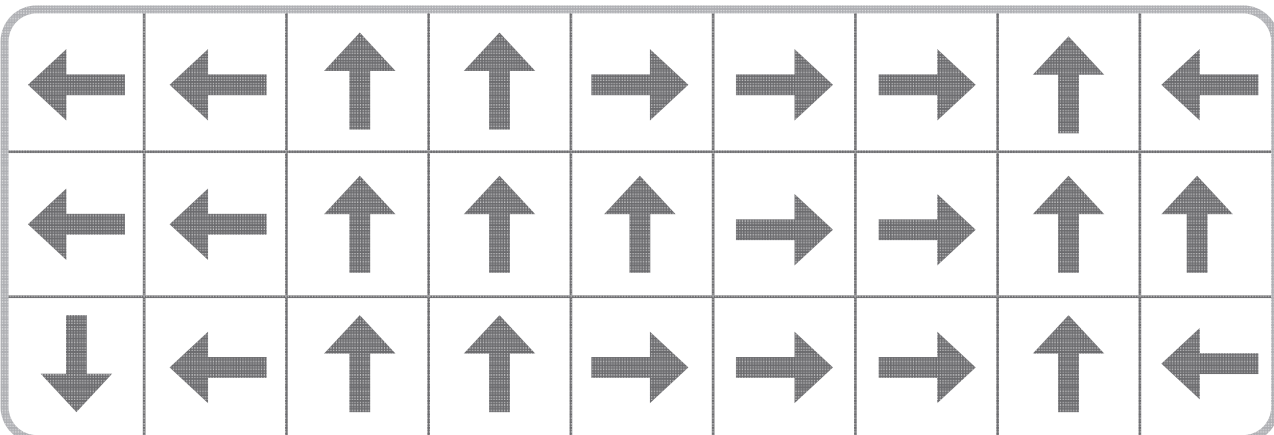
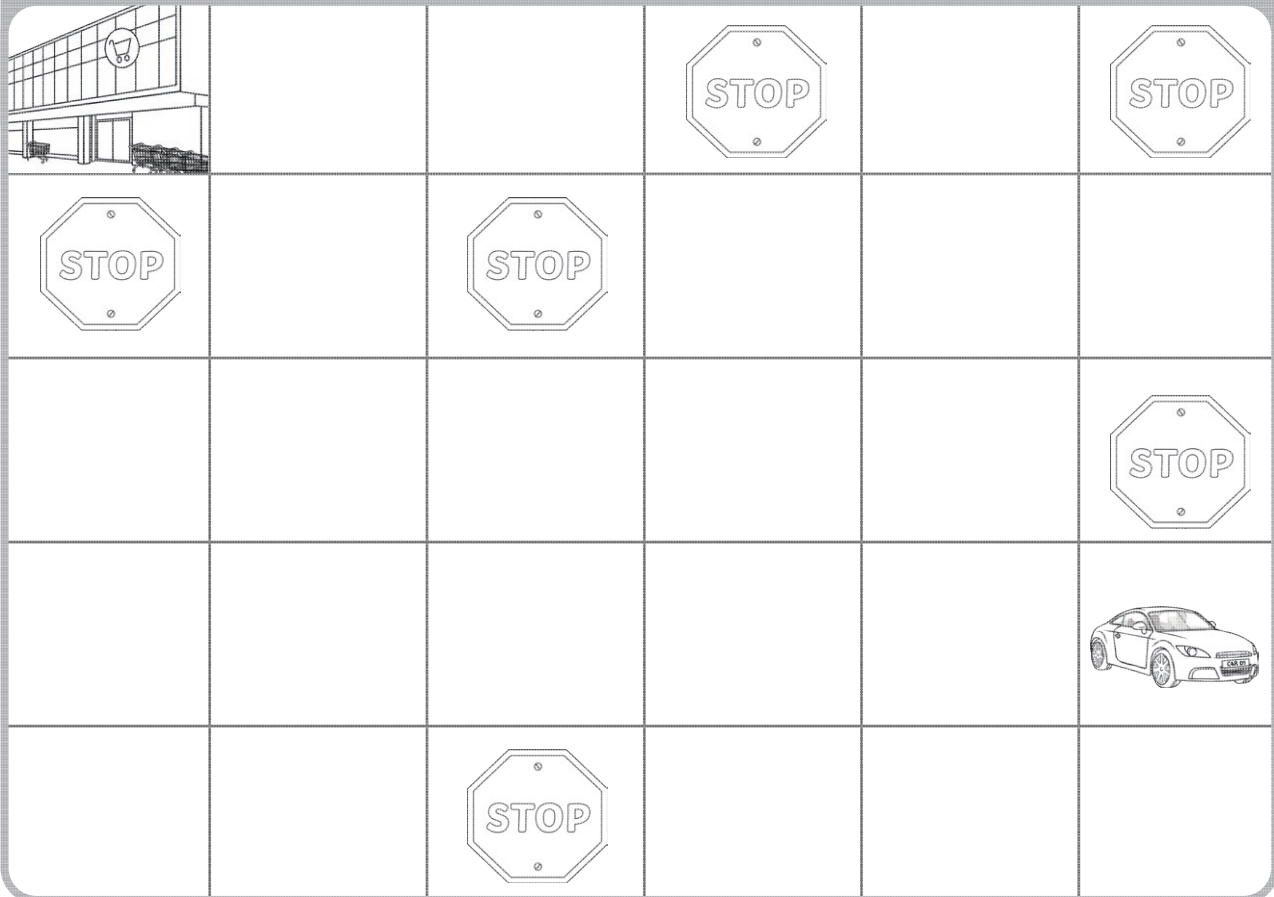


Read, Understand and Explain

Instructions:

Look at the grid below and study the algorithms.

Then explain the problem



Mr. Dean wants to go to the supermarket but he has forgotten the way.

1 Explain the problem.

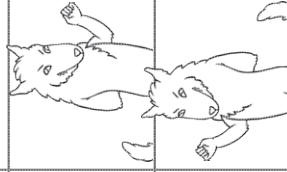
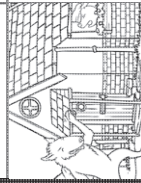
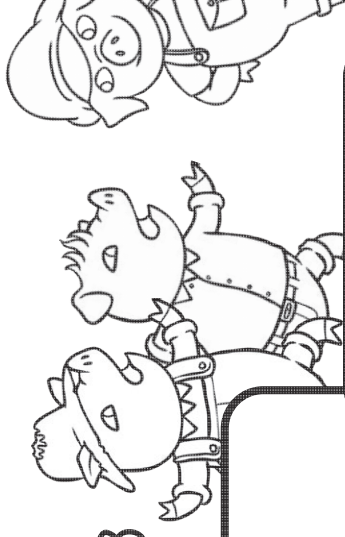
2 What is the solution?

3 Carry out your plan. Write it here.

4 Did it work?



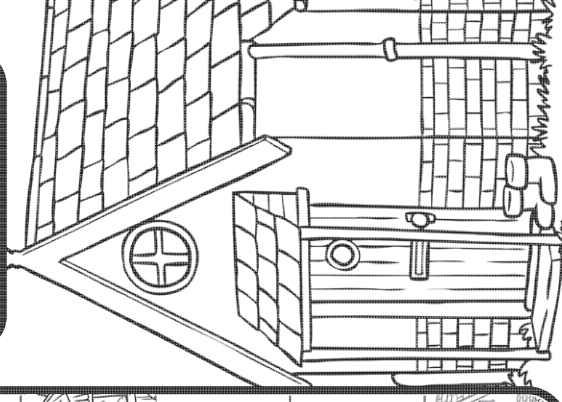
Sequences - The Three Little Pigs



Start

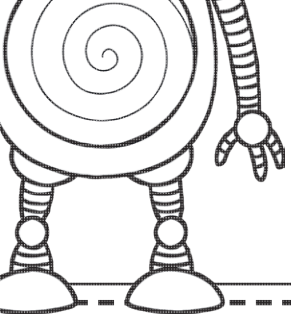
Use directional
arrows to follow
the story in the
correct sequence.

Watch out
for the wolf!

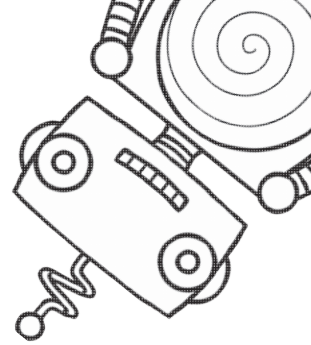


A stylized line drawing of a whale's head and tail. The head is on the left, showing a small eye and a blowhole. The tail is on the right, with a small fin. The whale is facing right.





Robotics and Coding



Problem-Solving – The Robot

- 1 Read, understand and explain the problem.
- 2 Devise a plan.
- 3 Implement the plan.
- 4 Reflect – did it work?

1

What is the problem?

You have been given the following code to get the robot across the grid to the computer but the robot ends up in the wrong place.

2

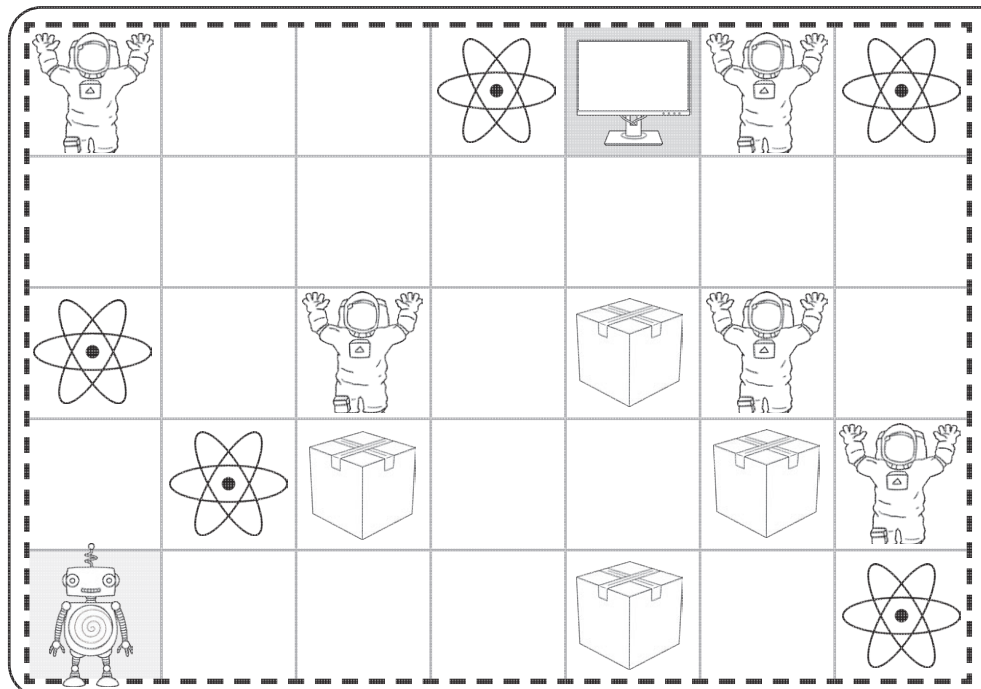
Devise a plan.

What plan can you make to fix the problem? Look carefully at the code and determine where the bug is. Debug the code.

3

Implement the plan.

Write the new code here.



4

Reflect.

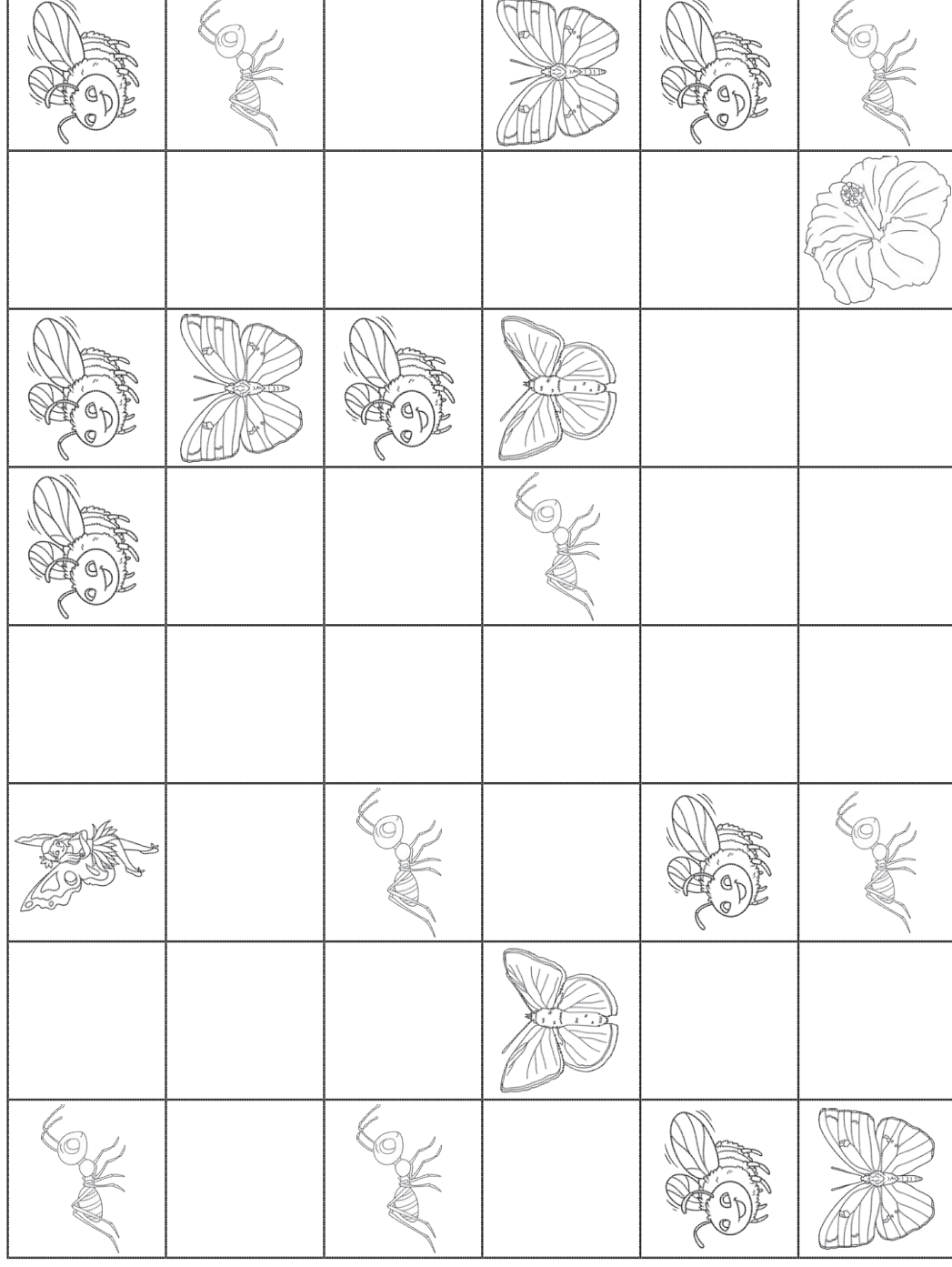
Did it work? Did the robot end up in the correct place?

Pattern Recognition - Algorithms

Follow the instructions:

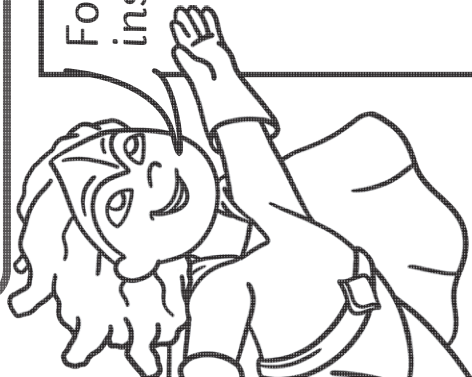
- Move Forward means to advance 1 square.
- Turn Right/Left means to have the fairy turn to your right/left while staying in the same square.

Complete the algorithm to get the fairy to land on the flower.
Draw the directional arrows onto the grid.



Move Forward	Move Forward
Move Forward	Move Forward
Turn Right	Turn Left
Move Forward	Move Forward
Turn Left	Move Forward
Move Forward	Move Forward

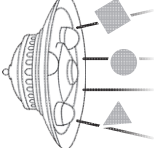
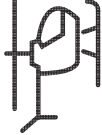
Pattern Recognition - Algorithms



Follow the instructions:

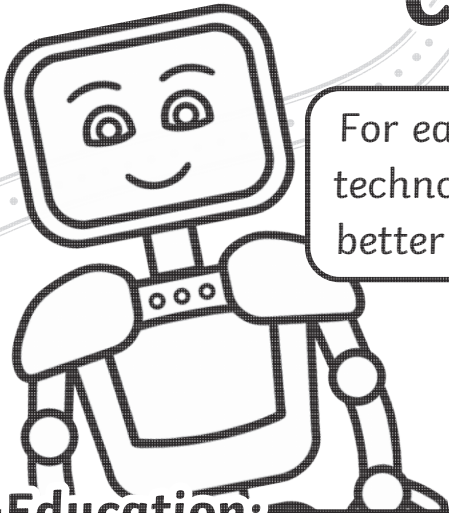
Complete the algorithm to help the superhero stop the aliens.

Draw the directional arrows onto the grid.

Move Forward	Move Forward
Move Forward	Move Forward
Turn Right	Turn Left
Move Forward	Move Forward
Turn Left	Move Forward
Move Forward	Move Forward

Explain How Technology Changed the World



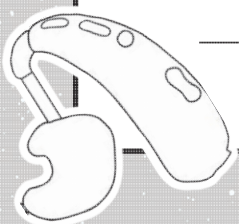
For each category, list five ways
technology has made our lives
better or worse.

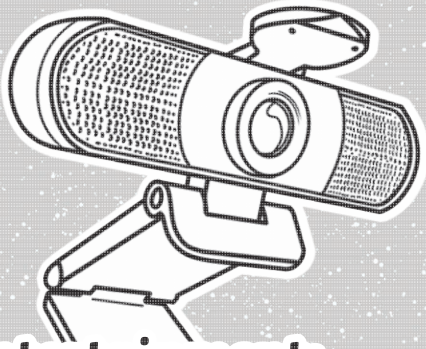


Education:



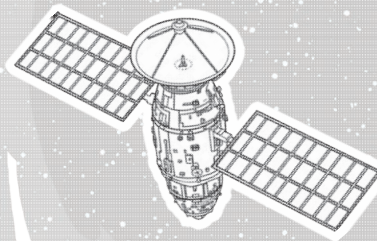
Communication:





Entertainment:

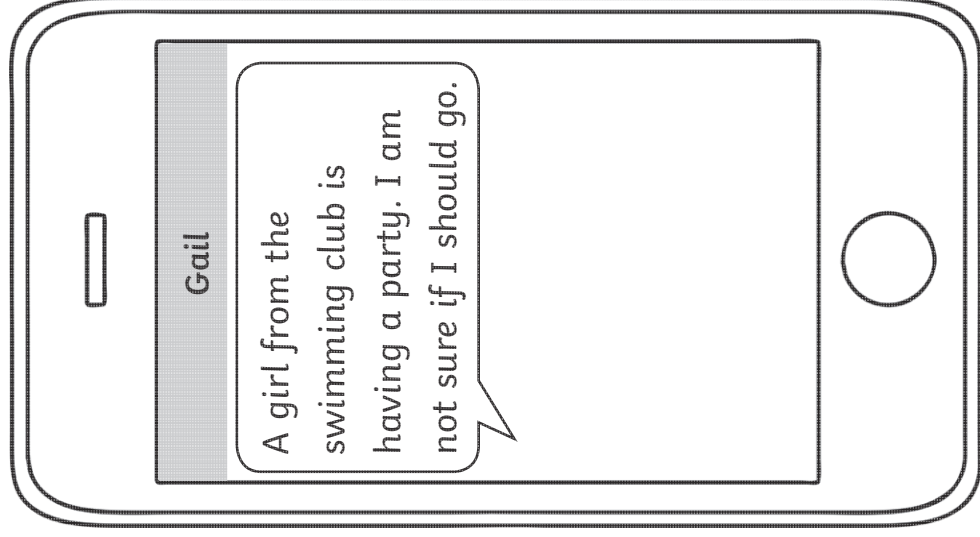
Work:



Replying to Text Messages

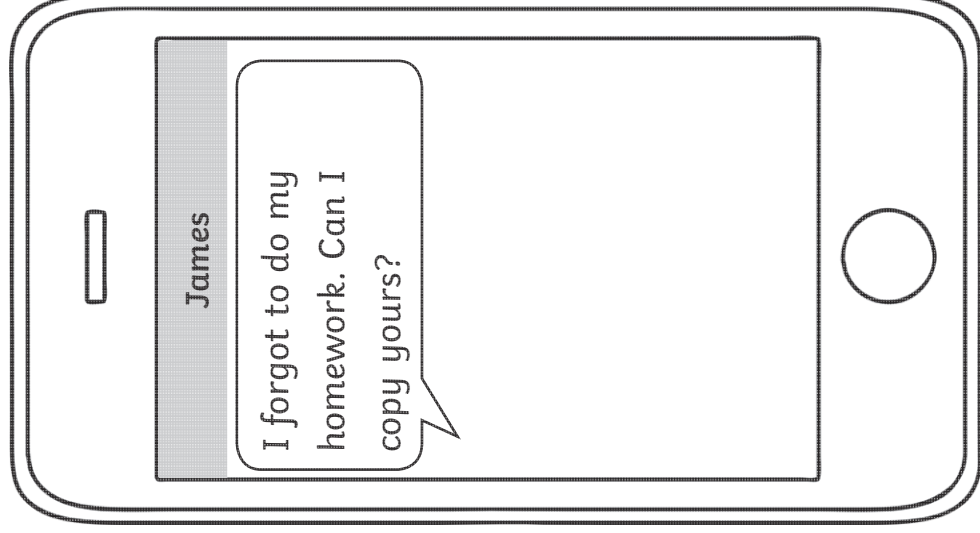
Instructions:

Write an appropriate reply to each of the following text messages.



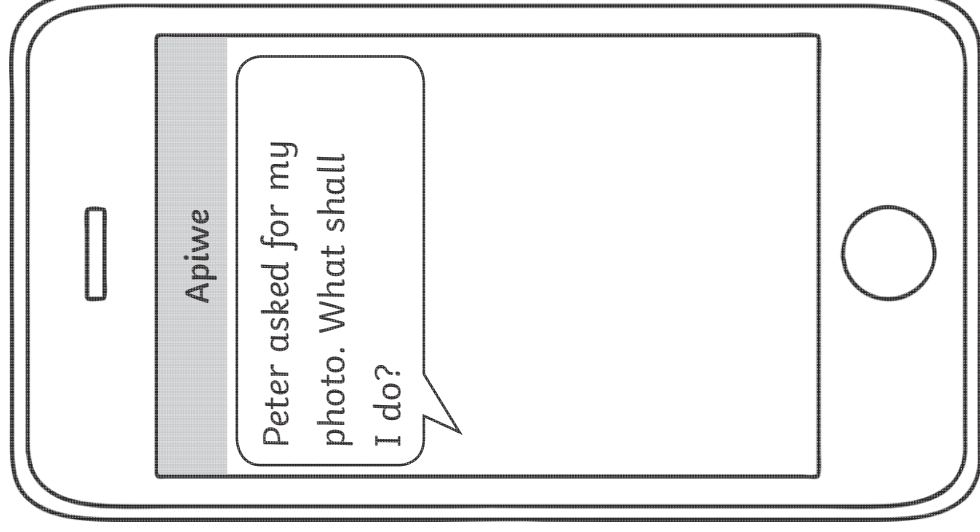
Gail

A girl from the swimming club is having a party. I am not sure if I should go.



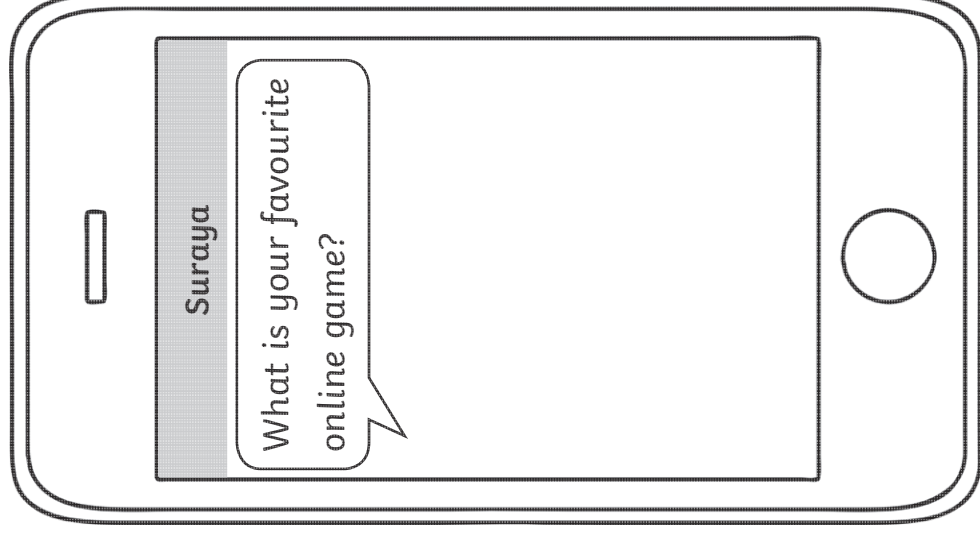
James

I forgot to do my homework. Can I copy yours?



Apiwe

Peter asked for my photo. What shall I do?



Suraya

What is your favourite online game?

Riddle Code Breaker

Use the code to find the answers to the riddles

A	B	C	D	E	F	G	H	I	J	K	L	M
14	26	11	20	4	19	12	24	1	25	6	23	5

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	7	15	2	17	21	10	22	8	16	3	18	9

1. What can you catch but not throw?

14	11	7	23	20
----	----	---	----	----

2. What begins with T, finishes with T, and has T in it?

14	10	4	14	15	7	10
----	----	---	----	----	---	----

3. What question can you never answer yes to?

14	17	4	18	7	22	14	21	23	4	4	15	18	4	10
----	----	---	----	---	----	----	----	----	---	---	----	----	---	----

4. I am an odd number. Take away a letter and I become even. What number am I?

21	4	8	4	13
----	---	---	---	----

5. What's black and white and blue?

14	21	14	20	9	4	26	17	14
----	----	----	----	---	---	----	----	----

A	B	C	D	E	F	G	H	I	J	K	L	M
14	26	11	20	4	19	12	24	1	25	6	23	5

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
13	7	15	2	17	21	10	22	8	16	3	18	9

6. Where can you find cities, towns, shops, and streets but no people?

7	13	14	5	14	15	
---	----	----	---	----	----	--

7. What word is spelled wrong in the dictionary?

16	17	7	13	12	
----	----	---	----	----	--

8. What can you find once in a lifetime, twice in a moment, but never in one hundred years?

10	24	4	23	4	10	10	4	17	5
----	----	---	----	---	----	----	---	----	---

9. Where does success come before work?

1	13	10	24	4	20	1	11	10	1	7	13	14	17	18
---	----	----	----	---	----	---	----	----	---	---	----	----	----	----

10. When things go wrong, what can you always count on?

18	7	22	17	19	1	13	12	4	17	21
----	---	----	----	----	---	----	----	---	----	----