Task 1: Network Knowledge Check-up

A. Circle the correct answer from the options given in each question.

1. What is a network? **a)** A single computer **b)** Group of connected computers **c)** A program **d)** A database	**2.** Which of the following is a type of network? **a)** RAM **b)** ROM **c)** LAN **d)** CPU
3. What does LAN stand for? **a)** Local Area Network **b)** Large Access Node **c)** Line Access Network **d)** Logical Application Network	**4.** Which network covers a large area? **a)** LAN **b)** WAN **c)** PAN **d)** USB
5. What is the internet? **a)** A document **b)** A group of emails **c)** A global network **d)** A printer	**6.** What device connects computers in a network? **a)** Printer **b)** Router **c)** Mouse **d)** Monitor
7. Which type of network connects computers in one room? **a)** LAN **b)** WAN **c)** SAN **d)** MAN	**8.** What allows us to send emails? **a)** Internet **b)** Keyboard **c)** Printer **d)** Scanner
9. What does a router do? **a)** Types words **b)** Shows pictures **c)** Connects networks **d)** Stores data	**10.** WAN stands for: **a)** World Access Node **b)** Wireless Access Network **c)** Wide Area Network **d)** Web Application Network

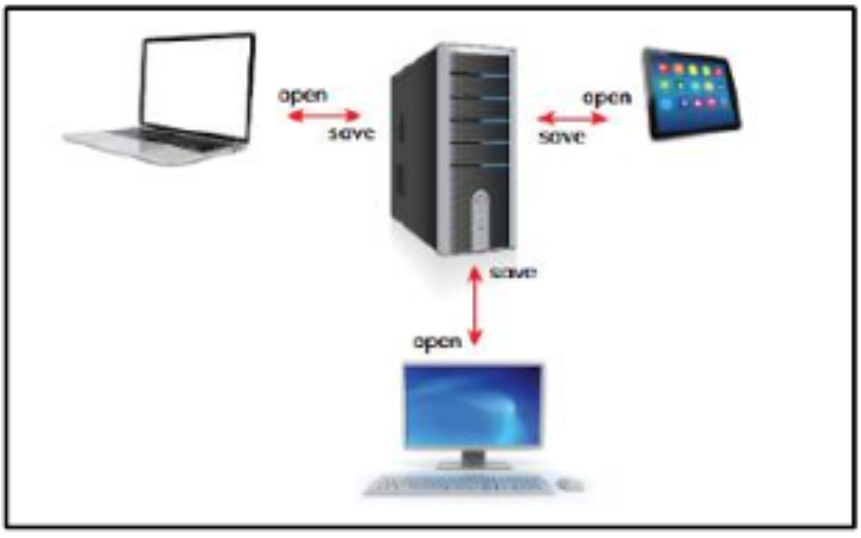
B. Match the terms in Column A with their description in Column B

Column A	Column B
1. LAN	Local Area Network
2. WAN	Wide Area Network
3. Router	Connects devices to the Internet
4. Internet	Global Network
5. Wi-Fi	Wireless connection
6. Computer Network	Computers that are connected to each other
7. Wi-Fi Access Point	A device that sends and receives wireless signals
8. Disadvantage of Networks	Computer Viruses can spread
9. Example of LAN	School computer lab
10. Wired Network Disadvantage	Non-portable



Task 2: Identify and Underline

A. Mark the statements as TRUE or FALSE. Identify and underline the mistake if the statement is wrong.



No	Statement	True/ False
1	A network is a group of connected computers.	TRUE
2	WAN covers a smaller area than LAN.	FALSE
3	The Internet is a private network.	FALSE
4	LAN can only be used in a single room.	FALSE
5	A router helps devices connect to the internet.	TRUE
6	Sharing files and printers is a disadvantage of a network.	FALSE
7	In a network, if one computer gets a virus, other computers will always remain safe.	FALSE
8	Wi-Fi is a type of wired connection.	FALSE
9	Wi-Fi Access Point is a device that sends and receives wireless signals.	TRUE
10	The Internet is the biggest WAN in the world.	TRUE

B. Answer the following questions:

1. What is a computer network?

A computer network is a group of computers that are connected together so can share information.

2. Define **LAN** and **WAN** with **one** example of each.

LAN	WAN
Local Area network	Wide Area Network
connects computers in a small area such a school or office	connects computers over a large area like cities or countries
Example: Computers connected in our school ICT.	Example: The internet is a WAN.

3. Explain how you use the **internet** in daily life. Give at least **two** examples.

We use the internet in daily life to:

- Learn new things: watching videos or searching for information.
- Send messages: using email or chatting apps.
- Play games: using online platforms.

4. Identify the **advantages of a computer network** from the following options. **Tick (✓)** all that apply.

- ☐ Sharing files and printers
- ☐ Viruses can spread
- ☐ Working together on projects
- ☐ Needs internet or cables
- ☐ Saving time
- ☐ Can be slow with many users

Task 3: De-cipher What you Know

A. Circle the correct answer.

1. What is a cipher? **a)** A type of food **b)** A secret code **c)** A computer **d)** A printer	**2.** Why are ciphers used? **a)** To break systems **b)** To play games **c)** To keep messages secret **d)** To share public info
3. Which cipher shifts letters by a fixed number? **a)** Morse code **b)** Caesar cipher **c)** Binary code **d)** QR code	**4.** Which tool helps decode ciphers? **a)** Printer **b)** Decoder ring **c)** Mouse **d)** Monitor
5. What is encryption? **a)** Making a phone call **b)** Scrambling data to keep it safe **c)** Playing videos **d)** Sending emails	**6.** What is decryption? **a)** Watching movies **b)** Unlocking messages **c)** Printing text **d)** Making calls
7. In Caesar cipher, how is a letter changed? **a)** Reversed **b)** Removed **c)** Shifted by positions **d)** Doubled	**8.** What is the key in a cipher? **a)** The font **b)** The shift rule or key **c)** The title **d)** The sound
9. Why are ciphers used online? **a)** To entertain **b)** To store files **c)** For secure communication **d)** To crash a website	**10.** Which device below may use a cipher? **a)** Toaster **b)** Smart watch **c)** Book **d)** Mirror

B. Match the terms in Column A with their corresponding description in Column B.

Column A		Column B
1.	Cipher H	A. Sharing information with others
2.	Caesar Cipher E	B. The answer that unlocks the code
3.	Encryption G	C. Important information kept safe
4.	Decryption D	D. Solving the secret writing
5.	Key B	E. A code that shifts letters over
6.	Online messages I	F. A tool that solves secret writing
7.	Secure info C	G. Hiding a message in secret writing
8.	Secret text J	H. A secret code
9.	Decoder F	I. Notes sent on the internet
10.	Communication A	J. Words written in code

Task 4: Decipher the Cipher

A. The following is a Cipher made by replacing the Alphabet with Numbers:

KEY:

A	B	C	D	E	F	G	H	I	J
1	2	3	4	5	6	7	8	9	10
K	L	M	N	O	P	Q	R	S	T
11	12	13	14	15	16	17	18	19	20
U	V	W	X	Y	Z				
21	22	23	24	25	26				

The **Cipher Text** (Encrypted Text) is as follows:

9 20	9 19	19 15	13 21 3 8	6 21 14
20 15	13 1 11 5	3 9 16 8 5 18 19		

Decode the cipher text using the above key, writing the decoded answer in the box given below:

IT	IS	SO	MUCH	FUN
TO	MAKE	CIPHERS		

B. Use **Google search** to find out whether the following statements are **true** or **false.** Some of them you may already know, but some need to be found out.

No	Statement	True/ False
1	A cipher is a type of message.	TRUE
2	Caesar cipher shifts characters to make a code.	TRUE
3	Encryption protects data.	TRUE
4	You cannot decode a cipher.	FALSE
5	Secret codes help keep information safe.	TRUE
6	A key is not important in a cipher.	FALSE
7	Decryption makes messages unreadable.	FALSE
8	Ciphers are used in digital communication.	TRUE
9	Ciphers are used to make information public.	FALSE
10	The Caesar Cipher is named after Julius Caesar.	TRUE

Did you know?

The **Caesar Cipher** is named after the Roman Emperor Julius Caesar. He used to send secret messages to his military leaders. He used a shift of three letter so 'A' became 'D'.



C. Answer the following questions:

1. What is a **cipher** and what is it used for?

A cipher is a type of algorithm that helps to change a message into a secret code so that others can't read it unless they know the rule or key. Ciphers are used to keep digital information secret.

2. Give **two** examples of places where Ciphers are used.

a. Online banking: ciphers keep our passwords and money details safe when we use internet banking

b. Messaging app: Apps like WhatsApp use ciphers to protect our chats so only we can read them.

3. Choose **three** reasons which show why Ciphers are important in digital communication.

- ☐ Ciphers keep personal messages secret so only the right people can read them.
- ☐ Ciphers help computers work faster by skipping long calculations.
- ☐ Ciphers protect important information like passwords and bank details.
- ☐ Ciphers make every website look more colorful.
- ☐ Ciphers help stop hackers from stealing data.

4. From the following scenarios, identify which ones would need a cipher and which ones would not

Scenario	Cipher Needed/ Not Needed
1. Mia plays an online game that stores her password to log in securely. No one must be able to guess that password.	Cipher Needed
2. Ben is baking cookies and follows a recipe written in a notebook.	Not Needed
3. Sam is drawing a poster for a school project using crayons and paper.	Not Needed
4. A doctor sends a patient's confidential medical report to another hospital using email.	Cipher Needed

Task 5: Hands on Activity – Topics: 3.1 & 3.2

1. In the Caesar Cipher, if A becomes D, how many letters have been shifted forward? Circle the correct answer:

   a) 1 letter
   b) 2 letters
   c) 3 letters
   d) 4 letters

2. If the Caesar Cipher shift letters forward by 1, what does 'B' mean when used in the cipher?

If B is in the secret message and the shift is +1, then the real letter is A
(B is one letter after A, so it must have started as A)

3. Write the **+3** Cipher for the alphabets given in the table below:

Alphabets	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Cipher Key	D	E	F	G	H	I	J	K	L
Alphabets	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**
Cipher Key	M	N	O	P	Q	R	S	T	U
Alphabets	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**	
Cipher Key	V	W	X	Y	Z	A	B	C	

Encrypt the message **"HOW ARE YOU?"** using the above Cipher.

KRZ DUH BRX

Task 1: Revise What You Know – Topics 1.1 & 1.2

A. Circle the correct answer from the given options in each question:

1. What is an algorithm?

a) A robot
b) A step-by-step process
c) A device
d) A program

2. Which of these is an example of input?

a) Monitor
b) Keyboard
c) Printer
d) Speaker

3. Which is an output device?

a) Scanner
b) Microphone
c) Monitor
d) Keyboard

4. What does an input device do?

a) Store data
b) Display output
c) Send data to the computer
d) Print

5. A recipe is an example of a/an

a) game
b) algorithm
c) output
d) code

6. What is the data which is entered into a computer called?

a) Output
b) Process
c) Input
d) Storage

7. An algorithm helps to _____

a) Solve problems
b) Draw pictures
c) Make videos
d) Edit music

8. What is a common feature of output devices?

a) They store data
b) They show results
c) They receive data
d) They control input

9. A mouse is used to _____

a) Display output
b) Input data
c) Print pages
d) Speak

10. Algorithms are useful because:

a) They are games
b) They give steps to solve a problem
c) They input data
d) They are drawings

Task 2: Match, Correct & Answer

A. Match the terms in the Column A with their corresponding description in Column B.

Column A	Column B
1. Algorithm	Controls cursor
2. Monitor	Making changes
3. Mouse	Step-by-step solution
4. Editing	Printer
5. Speaker	Output
6. Entering Text Input	Touch Screen
7. Output Device's job	Keyboard
8. Recipe for cake	Sound output
9. Example of input device	Example of Algorithm
10. Example of output device	To show results



For example, if you want to write a recipe for baking a cake, you need to think about:

- what ingredients to use
- what equipment to use
- what temperature the oven needs to be
- what instructions need to be followed
- what order the instructions are given in.

B. Mark the statements as **True** or **False**. Identify and **underline** the mistake if statement is wrong and **write the correct answer** below the marked word.

No	Statement	True/ False
1	An algorithm is a type of game. An algorithm is a step-by-step solution to a problem	FALSE
2	A keyboard is an output device. A keyboard is an input device	FALSE
3	A monitor shows the output.	TRUE
4	A speaker is an input device. A speaker is an output device	FALSE
5	An output could be an image shown on screen or sound heard through a speaker.	TRUE
6	mouse A keyboard has buttons and can scroll up and down using the scroll wheel.	
7	A monitor consists of keys and buttons only. A monitor consists of a screen.	FALSE
8	We use speakers to record our voice. We use microphone to record our voice.	FALSE
10	Input devices help enter data.	TRUE
11	A printer is an input device. A printer is used for output.	FALSE
12	Algorithms make solving tasks easier.	TRUE
13	A mouse is not an input device. A mouse is an input device.	FALSE



C. Answer the following questions.

1. **(a)** What is an algorithm?

An algorithm is a set of step by step instructions.

These instructions help us to solve a problem

(b) Give an example where you followed an algorithm in your daily life.

A daily life example:

When I brush my teeth, I follow these steps:
1. Pick up my toothbrush.
2. Apply toothpaste on it.
3. Clean my teeth using the brush.
4. Rinse my mouth.

2. Give **two** examples of **input** and **two** examples of **output** devices.

Input Devices		Output Devices	
a.	Keyboard	**a.**	Monitor
b.	Mouse	**b.**	Speaker

3. Why is **input** important in a computer system? **Tick (✓)** the correct answer.

- ☐ It helps the computer only to make sounds.
- ☐ It helps us give data and instructions to the computer.
- ☐ It is used only to switch the computer on and off.

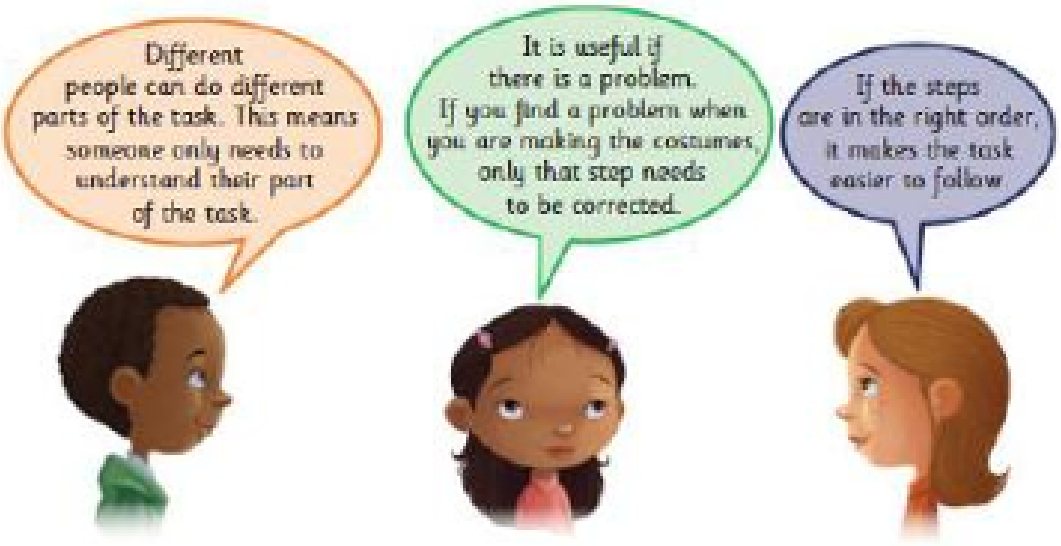
Task 3: Check Your Scratch Fundamentals – Topic 1.3 & 1.4

A. Circle the correct answer from the options given in each question.

2. What is Scratch? **a)** A game **b)** A text editor **c)** A visual programming tool **d)** A calculator	**3.** What is a sprite in Scratch? **a)** A background **b)** A character or object **c)** A command **d)** A font style
4. Which tab allows adding blocks to control sprite actions? **a)** Motion **b)** Music **c)** Video **d)** Paint	**5.** What block makes a sprite move 10 steps? **a)** Say Hello **b)** Move 10 Steps **c)** Turn 15 Degrees **d)** Wait
6. What is used to change how a sprite looks? **a)** Code tab **b)** Looks block **c)** Motion block **d)** Sound block	**7.** Which flag starts the program in Scratch? **a)** Red flag **b)** Blue arrow **c)** Green flag **d)** None
8. What does the 'say Hello' block do? **a)** Makes a sprite jump **b)** Displays text on screen **c)** Changes color **d)** Adds music	**9.** What is the stage in Scratch? **a)** The control panel **b)** Area where sprites perform **c)** A sound player **d)** A code editor
10. Where do you add costumes for a sprite? **a)** Script tab **b)** Stage tab **c)** Costume tab **d)** Music tab	**11.** What is the purpose of blocks in Scratch? **a)** Playing games **b)** Visual programming commands **c)** Drawing **d)** Saving files

B. Match the terms in Column A with their correct descriptions in Column B

Column A	Column B
1. Sprite	Area where the sprite performs its actions
2. Stage	Moves the Sprite
3. Motion block	Appearance of the Sprite
4. Looks block	Changes the appearance
5. Say block	Visual Programming tool
6. Green flag	Set of blocks
7. Costume	Character in a program
8. Scratch	Displays messages
9. Script	Rotates the Sprite
10. Turn block	Starts a program



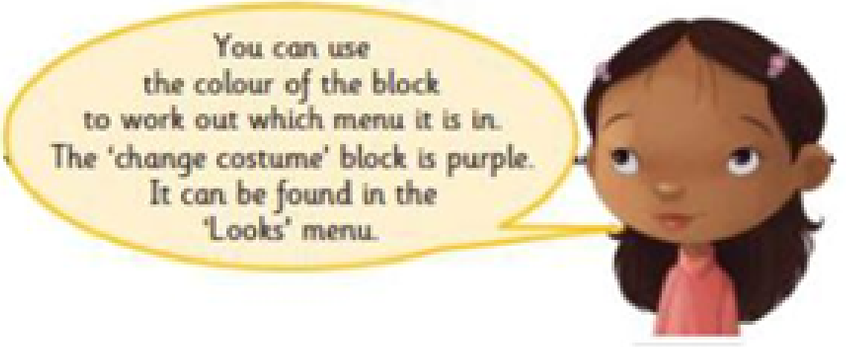
Task 4: Complete the Paragraph

A. Fill in the following paragraph with the correct words from the given box. Each word in the box must be used only **once**.

Jump	**green**	**costumes**	**stage**	**projects**
block	**motion**	**scripts**	**one**	**text**



Scratch is a software used to create __projects__ and animations. Sprites can be moved using __motion__ blocks. The Say block makes sprites show __text__ on the screen. __Costumes__ change how a sprite looks. The __stage__ is where sprites perform actions and the program runs. You can start the program with the __green__ flag. Sprites can have more than __one__ costume. The motion block can make a sprite perform actions like __jump__. Blocks are used to build coding __scripts__. Scratch uses __block__-based programming.



B. Answer the following questions:

1. What is Scratch used for? From the following options **tick (✓)** all that apply:

- ☐ To create stories, games, and text documents
- ☐ To browse the internet
- ☐ To create animations and interactive projects

2. From the following 5 sentences **tick (✓)** the **two** sentences that are correct about sprites:

- ☐ Sprites can be programmed to move, talk, and interact with other sprites.
- ☐ Sprites are only used to store music files.
- ☐ A sprite can change its look using different costumes.
- ☐ Sprites are only visible when the computer is turned off.
- ☐ Sprites are used to print documents in Scratch.

3. What is the purpose of the '**motion**' block? Circle the **two** correct answers from the ones given below?

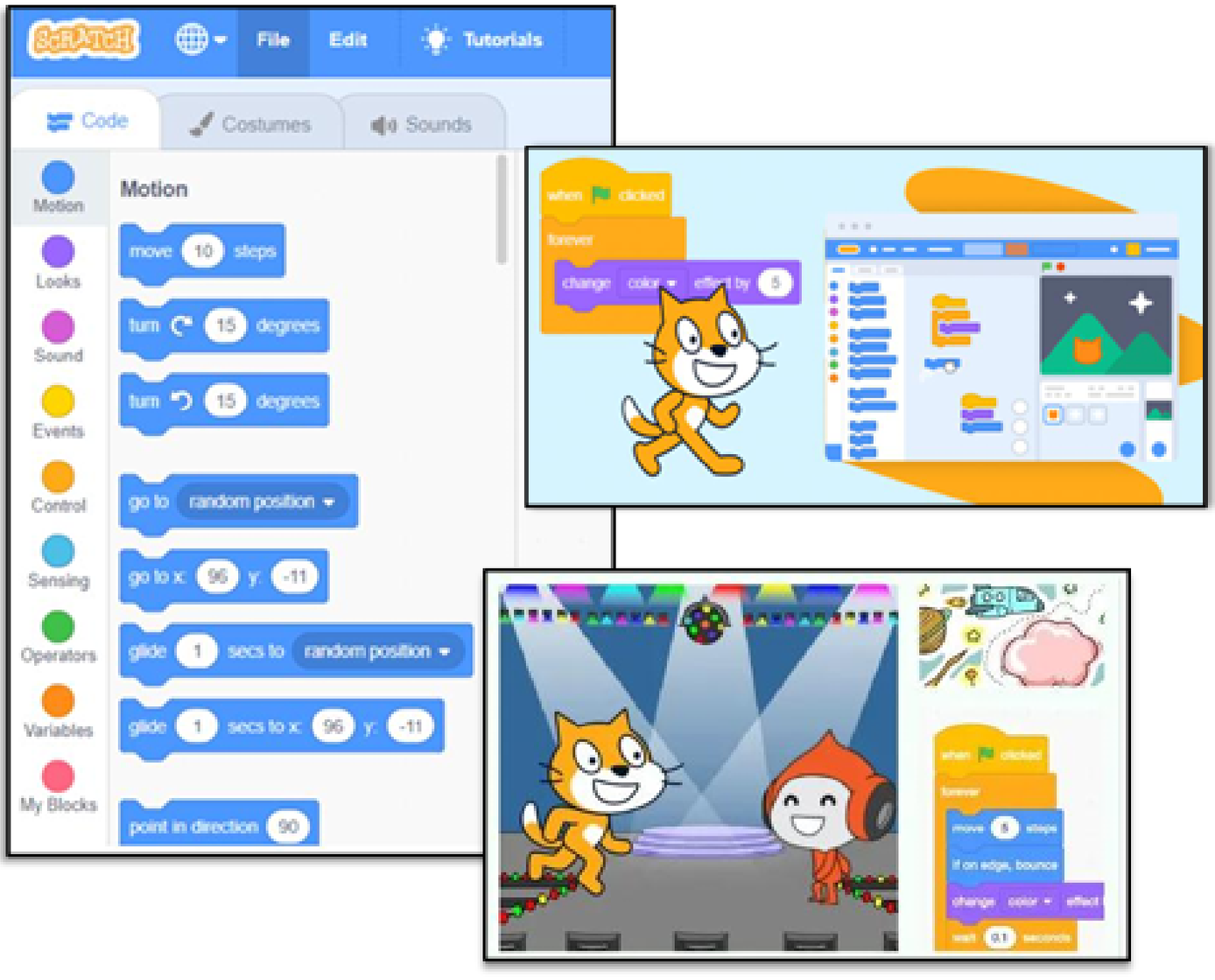
Changes the color of the sprite	Moves the sprite in different directions
Rotates the sprite left or right	Changes the color of the sprite

4. How do you change a sprite's appearance? Put a **cross (✖)** on the statement from the following which is **incorrect**.

- ☐ You can change a sprite's appearance by switching its costume.
- ☐ You can use the "looks" blocks to make a sprite change color or size.
- ☐ Costumes can be edited in the costume editor to change how the sprite looks.
- ☐ A sprite's appearance can only change if you delete it and add a new one.

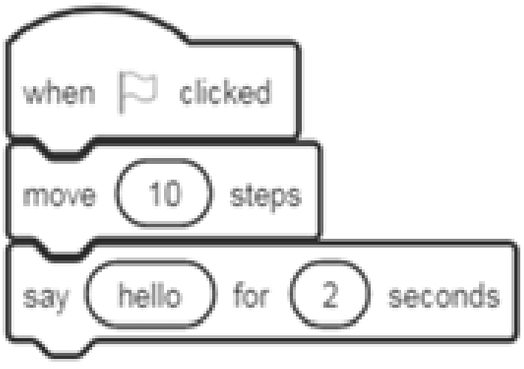
5. What happens in Scratch when the **green flag** is clicked?

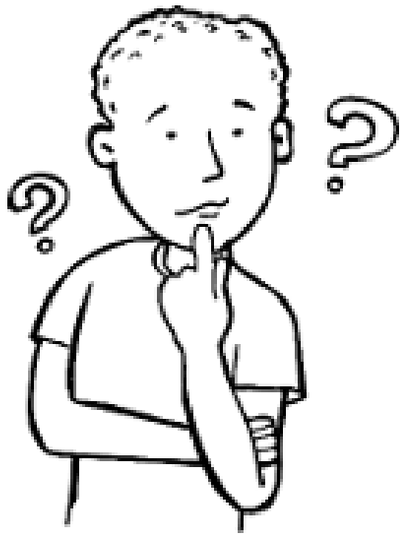
The program starts. The sprite follows the blocks in order and performs on stage like moving, talking or changing costumes.



Task 5: Understand the Code

1. Look at this Scratch code

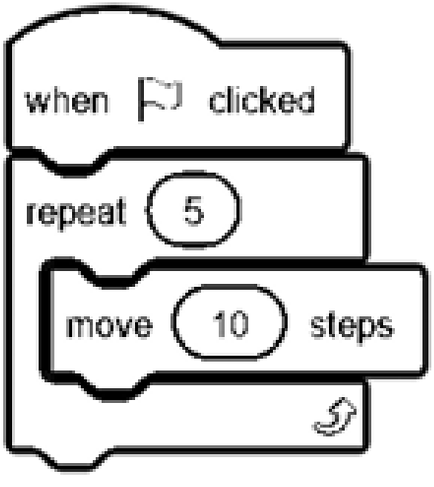




What will the **sprite** do? **Circle** the correct option.

a. The sprite will repeat the movement 5 times
b. The sprite will only move continuously without stopping
c. The sprite will say "hello" first and then move 10 steps
d. The sprite will move 10 steps and then say "hello" for 2 seconds
e. The sprite will do nothing unless clicked twice

2. Look at this Scratch code



What will the **sprite** do? **Circle** the correct option.

a. The sprite will move 10 steps only once
b. The sprite will move 10 steps a total of 5 times
c. The sprite will say "hello" 5 times
d. The sprite will move 50 steps in a single jump
e. The sprite will stop immediately after starting

Task 6: Review What You Know

A. Circle the correct answer from the options given in each question.

1. What makes a program easy to understand? **a)** Long blocks **b)** Random names **c)** Clear and short code **d)** Extra blocks	**2.** Why is it important to write clean code? **a)** To make it confusing **b)** To save space **c)** To help others understand **d)** For fun
3. What is a micro:bit? **a)** A calculator **b)** A game **c)** A mini computer **d)** A speaker	**4.** What can a micro:bit do? **a)** Fly **b)** Make phone calls **c)** Detect light, heat, motion etc. and display messages **d)** Take pictures
5. What is a feature of micro:bit? **a)** Paper display **b)** LED lights **c)** Camera lens **d)** Joystick	**6.** What helps make a program easier to debug? **a)** Random colors **b)** Organized code **c)** Extra loops **d)** Complicated logic
7. Micro:bit is used mostly in: **a)** Engineering **b)** Education **c)** Medicine **d)** Farming	**8.** What language is often used to program the micro:bit? **a)** Urdu **b)** Scratch-like blocks **c)** Only Python **d)** Excel
9. A good program should be: **a)** Long **b)** Clear and correct **c)** Complex **d)** Unreadable	**10.** What powers the micro:bit? **a)** Petrol **b)** Electricity **c)** Battery or USB **d)** Solar pane

B. Match the column with their corresponding description.

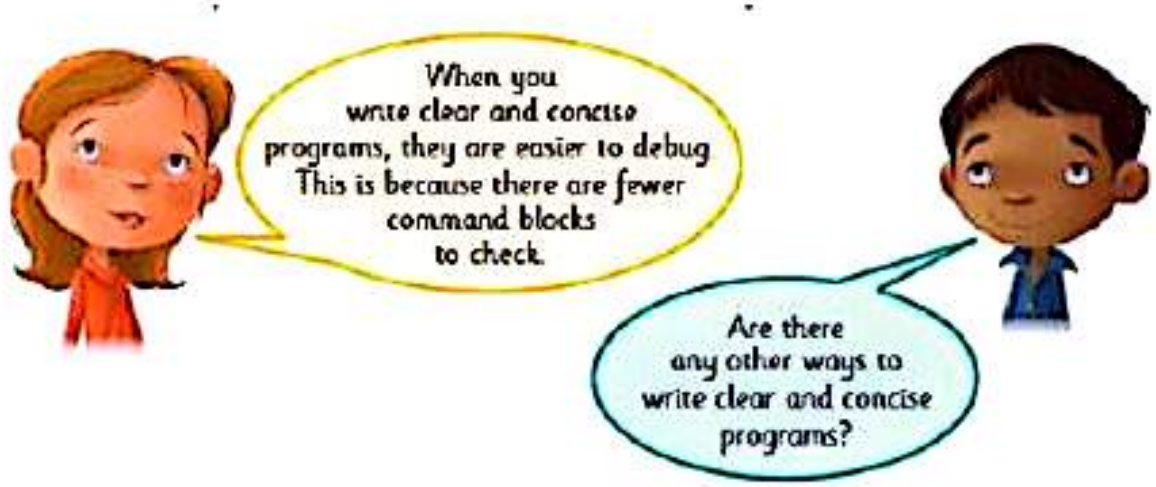
Column A	Column B
1. Micro:bit	Mini-computer board
2. LED	Used to shows messages/output
3. Buttons on micro:bit	Used for input
4. Simple code	Can power micro:bit from PC/ laptop
5. Clear program	Tell micro: bit what to do
6. USB	Easier to program with
7. Instructions	Portable power source
8. Battery	Good program structure
9. Block based programming	Easy to understand



Task 7: Review Your Learning – Topic 1.5 & 1.6

A. Mark the statements as **True** or **False.** Also **underline** the incorrect part of the sentence if the statement is False:

No	Statement	True/ False
1	The Micro:bit can detect light.	TRUE
2	Clear programs should be hard to understand.	FALSE
3	The Micro:bit runs on petrol.	FALSE
4	You can show messages using LED display.	TRUE
5	Random code is better than clean code in proper sequence.	FALSE
6	Buttons on the micro:bit are used for giving it output.	FALSE
7	Programs should be written clearly.	TRUE
8	The Micro:bit is used in schools to teach beginners how to code and write programs for a physical device.	TRUE
9	Debugging code is easier with clean code.	TRUE
10	The Micro:bit can be programmed using block based programming languages.	TRUE



B. Answer the following questions:

1. What is a **clear program**? From the following options, **tick (✓)** all that apply:

- ☐ A program that is easy to read
- ☐ A program that is easy to understand
- ☐ A program that is very confusing
- ☐ A program that is easy to follow

2. Some **functions** of the **Micro:bit** are given below. Put a **cross (X)** on the **incorrect** statements:

- ☐ LED display is used only for sound
- ☐ Micro:bit has sensors that can detect light, motion, and temperature
- ☐ Micro:bit can record and play voice recordings directly
- ☐ Buttons A and B are used to give input to the Micro:bit
- ☐ LED display shows shapes, letters, and numbers
- ☐ Micro:bit cannot detect movement or shaking

3. Why is **clean code** easier to **debug**? From the following options, **tick (✓)** all that apply:

- ☐ it is easy to understand
- ☐ it helps us find mistakes faster
- ☐ it is very confusing and messy
- ☐ it is neat and simple

4. Name **any one input** and **output** feature of the **micro:bit.**

Input	Output
BUTTONS	LED

Task 8: Hands on Activity – Topics 1.1 till 1.6 – Practice Some More

A. Given below are some simple algorithms. Their steps are OUT OF ORDER. Your job is to number the steps from 1, 2, 3 & 4 in the proper order.

Algorithm for making a sandwich:

1. Eat the sandwich ___5___
2. Put jam on the bread ___3___
3. Take two slices of the bread ___1___
4. Close the sandwich ___4___
5. Open the jam jar ___2___

B. Given below are some simple algorithms. Their steps are OUT OF ORDER. Your job is to number the steps from 1, 2,3 & 4 in the proper order.

Algorithm for getting ready for school:

1. Go to school ___5___
2. Wear your uniform ___2___
3. Wake up ___1___
4. Eat breakfast ___3___
5. Pack your school bag ___4___

C. Now try this!

Look at these shapes.

They make a pattern which means that they repeat in a certain way.



triangle triangle rectangle rectangle circle circle triangle triangle

Write an algorithm so that someone else can draw the same pattern <u>5 times</u>. You may not need all the lines provided.

1. Draw two triangles.
2. Then, draw two rectangles to the right.
3. Then draw two circles to the right of the rectangles.
4. In the last, again draw two triangles to the right of the circles.
5.
6.