

Monday, August 24, 2020

C.W

Task 1: Follow the Flowcharts

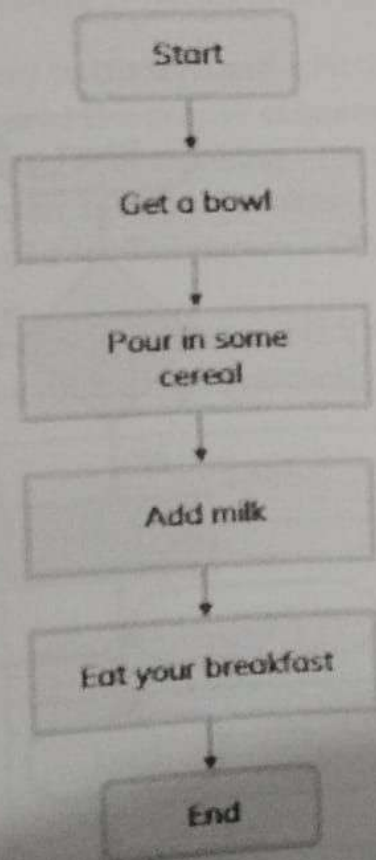
There are a number of flowcharts in this activity. Your task is to use your understanding of the flowchart symbols to follow and figure out what each chart is doing.



Use your finger to follow the flowchart.

Also discuss the difference between the flowcharts with a partner in class. What differences do you see?

A.

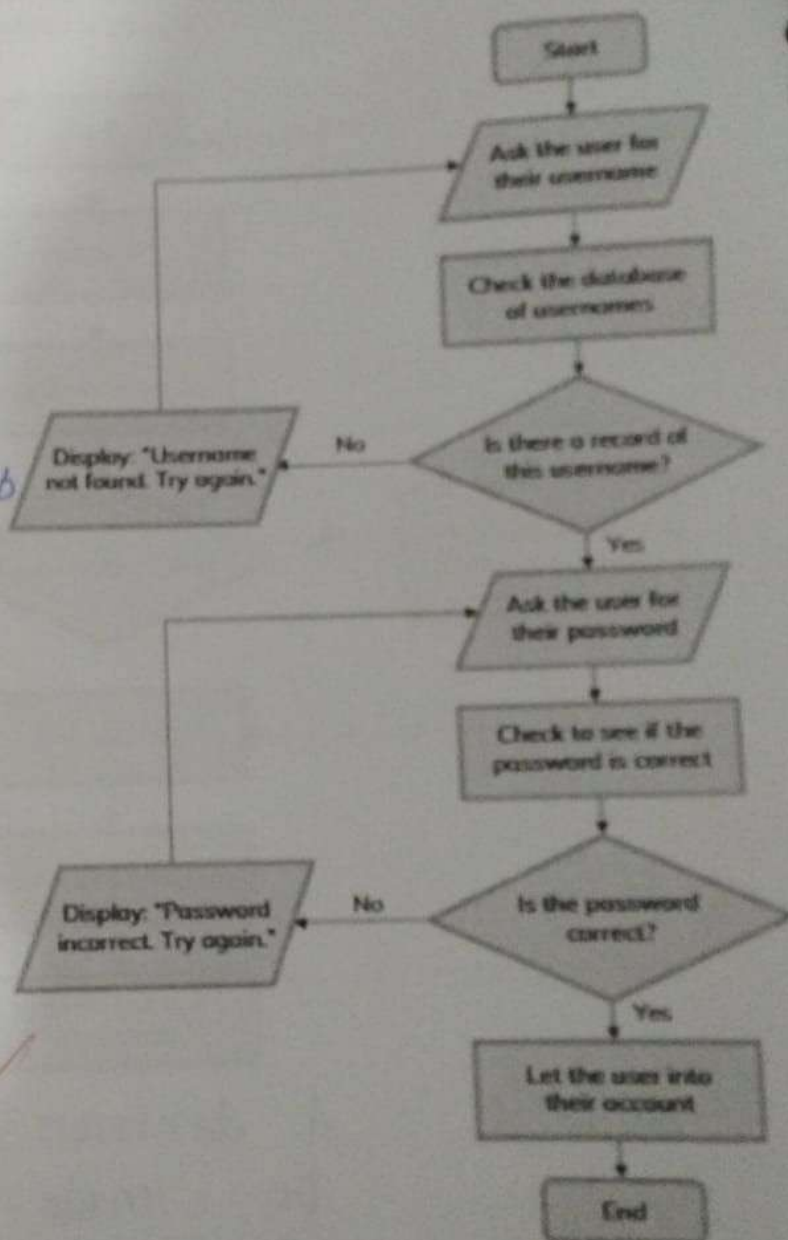
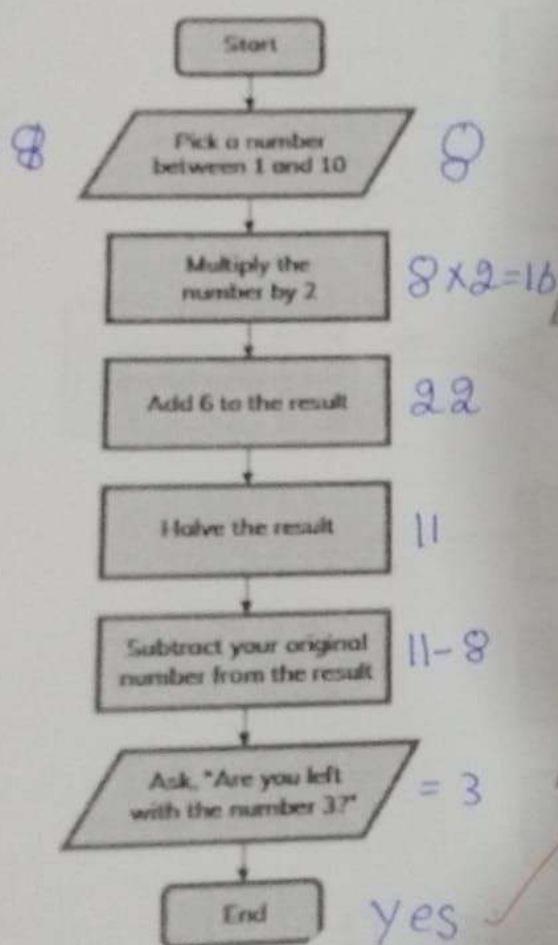


It shows step for eating breakfast.

C.

Look at the flowcharts below. With a partner, take it in turns to follow the flowcharts with your finger.

1. With a partner, discuss what is happening in each of the flowcharts.
2. Can you remind your partner what any of the different shapes mean?



Selection and Loop

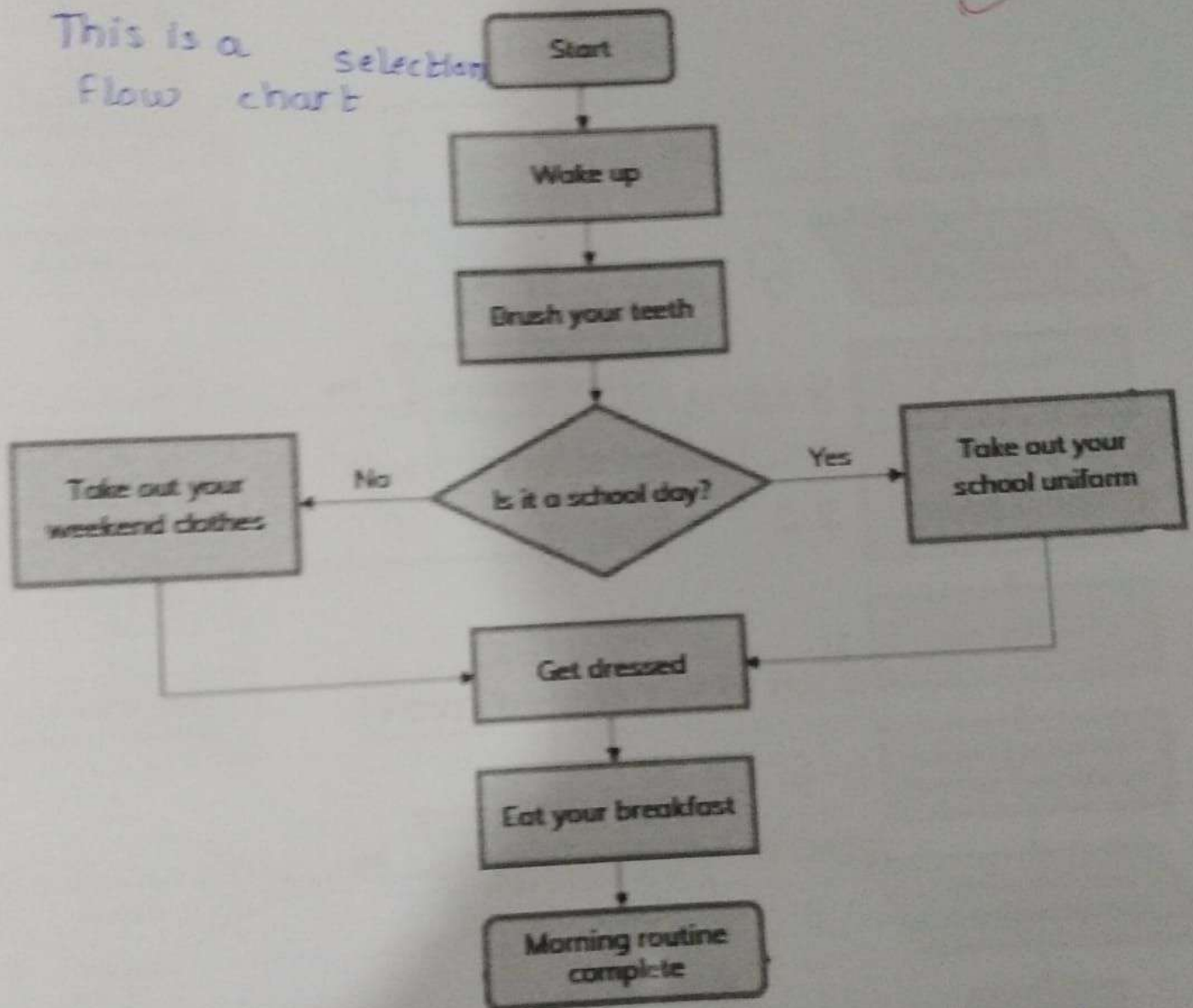
B.

This is a morning routine flowchart.

Follow both its pathways and discuss the difference.

Selection Flow chart

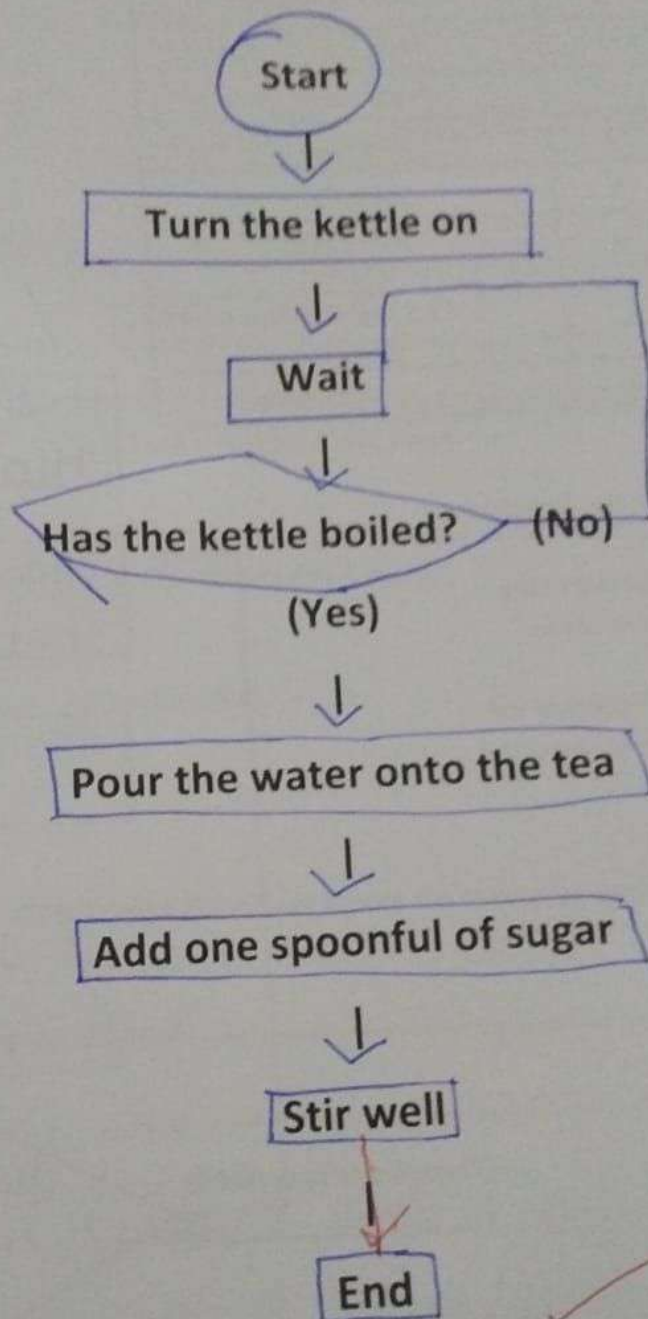
This is a selection flow chart



A decision is it to be made in this flow chart.

- D. Do you notice something different about the flowchart on the right side? There are no «symbols» in the chart but the flow is clearly visible. What interrupts the flow?

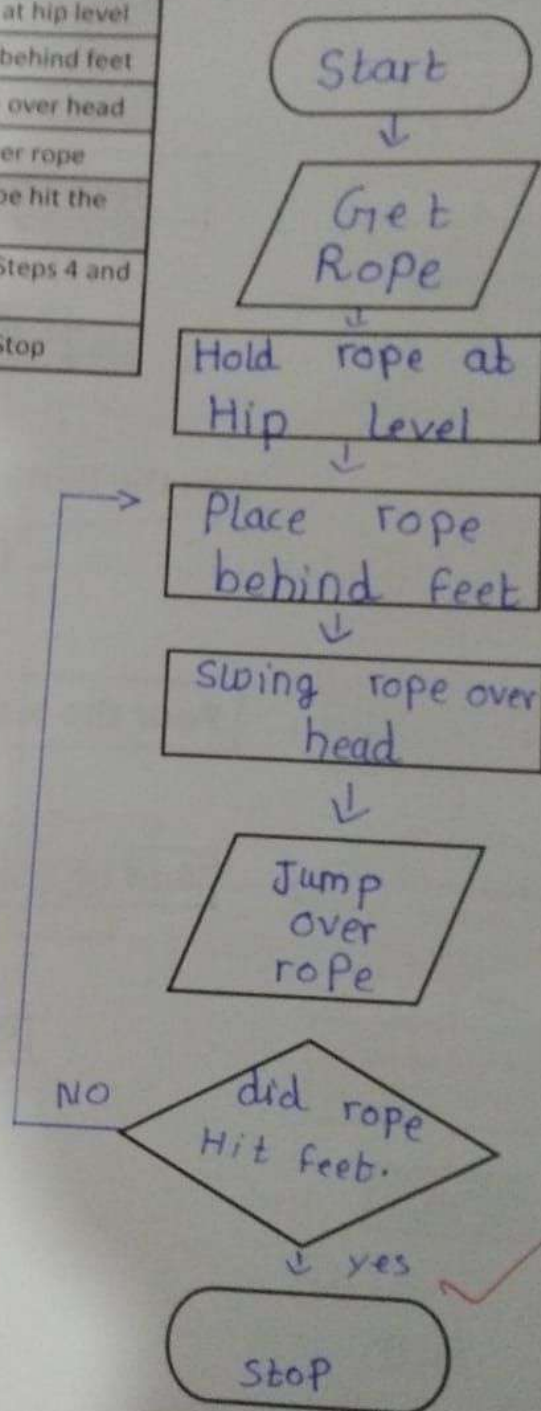
Notice that there is a decision in this flowchart. Have a look at the morning routine flowchart to remind yourself how a decision should look. Think carefully about where the arrow from 'No' should point to.



Task 2: Flowchart for "How to use a jump rope"

The following flowchart shows us the steps we need to follow in order to successfully jump rope. Read the steps and follow the sequence:

Outcomes	Step	Instruction
	1	Start
Input	2	Get rope
Process	3	Hold rope at hip level
	4	Place rope behind feet
	5	Swing rope over head
Output	6	Jump over rope
Decision	7	Did the rope hit the feet?
Forever loop	8	If no, repeat Steps 4 and 5 once
	9	If yes, Stop



- Now try to make the flowchart on your own.
- Write the steps above in the right place in the symbols below.
- Try to make the Arrows of the chart on your own to show the flow of steps.

Task 3: Q & A

1. What shape should be at the start and end of a flowchart?

Oval

2. When should you use a rectangle in a flowchart?

When a process has to be carried out.

3. Why would you use a diamond in a flowchart?

A diamond is used to show a decision point with different outcome.

4. Read the following scenario and answer the questions given below:

A company needs a simple program to calculate bonuses for employees based on their years of service. The flowchart for this program follows these steps:

1. Start
2. Input the number of years the employee has worked (years).
3. If years is greater than or equal to 5, then:
4. Set bonus = 1000.
5. Go to Step 7.
6. Otherwise, set bonus = 500.
7. Display the bonus.
8. End

Question:

What will be the displayed output if the user inputs the following two values:

a) years = 7

Output 1000

b) years = 3

500

Explain your reasoning based on the flow of the flowchart.

For input second 7. Since ~~7~~ 7 $\geq$ 5, is the bonus is 1000. ~~if~~ input 3, since $3 < 5$, the bonus is 500.

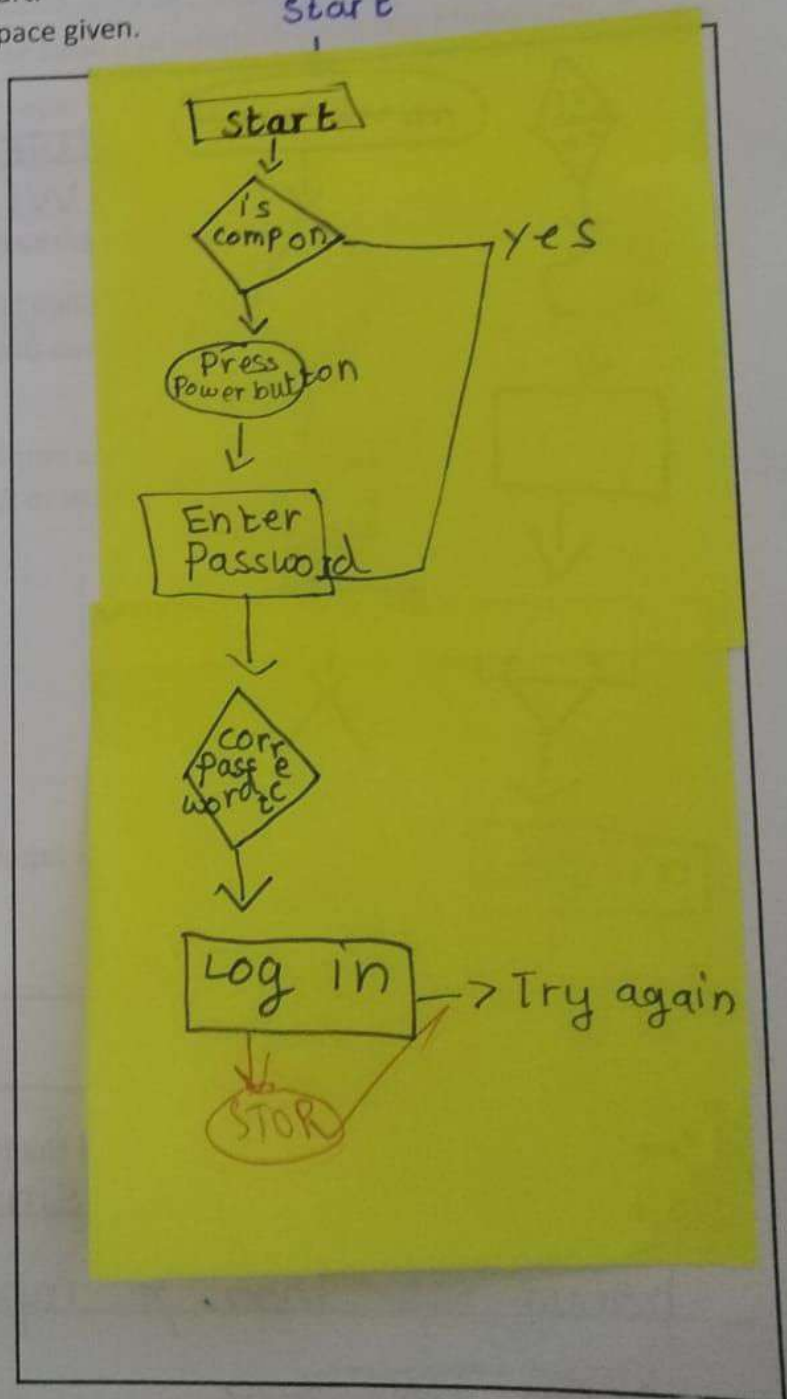
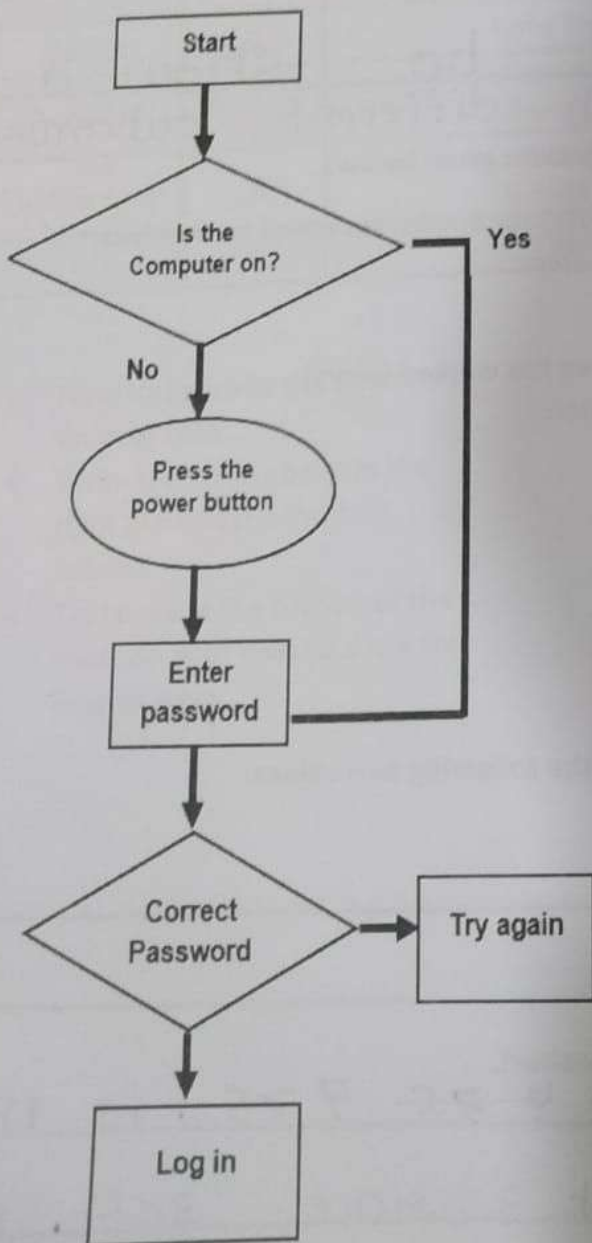
Task 4: Correct the Flowchart

The following flowchart has some mistakes in it such as:

- Some shapes are incorrect
- Some arrows are missing or pointing the wrong way
- Some steps are out of order

Your Task:

1. Identify **04 mistakes** in the given flowchart.
2. Redraw the corrected flowchart in the space given.



Task 5: Q & A

1. Why do you think iterators are useful in programming?

Iterators allow a task to be performed multiple times without having to write

2. Which block in Scratch allows you to make an 'input variable'? ^{to right the code for it multiple times}

To create a new variable exlicks an ^{variable} block and then select ^{variable} make a

3. Define "operators"?

An operators is a symbol that tells the program to do a different certain action with the information. e.g. +, <, =.

4. What is the difference between arithmetic and comparison operators?

Arithmetic's operators	They compare the first numbers with the second numbers and output either
are used to do calculations. e.g. +, -, *	

5. What is the difference between a 'forever' block and a 'repeat [10]' block in Scratch? ^{True or False.}

Forever block: Repeat the instruction continuously until the program is stopped. Example --> Move 10 steps.

Repeat (10) block: Repeats the instrue 10 times only & then stop. Example: Repeat (10) --> Move 10 steps.

Task 6: Choose the Right Constructs in the Given Scenarios

Read each of the following scenarios and determine which type of programming construct—sequence, selection, or iteration—would be most appropriate to use.

NOTE: There can be more than one programming construct used in a single scenario.

Scenario 1: Making a Sandwich

You are writing a program for a robot that makes a peanut butter and jelly sandwich. The robot follows exact steps in order:

- Take two slices of bread.
- Spread peanut butter on one slice.
- Spread jelly on the other slice.
- Put the slices together.

Question: What programming construct/constructs should you use? Sequence

Scenario 2: School Dismissal in Bad Weather

A school principal wants a program that decides whether students can go outside at dismissal. The program checks if the weather is good or bad.

- If it is sunny, students go outside.
- If it is raining, students stay inside.

Question: What programming construct/constructs should you use? Selection

Scenario 3: Counting Down for a Rocket Launch

You are writing a program that counts down from 10 to 1 before a rocket launch. The program should display each number one after another:

- Start at 10.
- Display the number.
- Subtract 1 and repeat until you reach 1.
- Display "Blast Off!"

Question: What programming construct/constructs should you use? Iteration

Scenario 4: Playing a Guessing Game

You are designing a number guessing game where a player has to guess a secret number between 1 and 10.

- The player enters a guess.
- If the guess is correct, display "You win!"
- If the guess is wrong, tell them to try again.
- Repeat until they guess correctly.

Question: What programming construct/constructs should you use? selection

Scenario 5: Watering Plants with a Robot

A robot needs to water plants in a garden. The robot moves to each plant and checks if the soil is dry.

For each plant in the garden:

- If the soil is dry, water the plant.
- If the soil is wet, do nothing.
- Repeat until all plants are checked.

Question: What programming construct/constructs should you use? selection



Sequence, selection, iteration, variables, sprite interaction, arithmetic operators, procedures . . . You have learnt so many programming constructs! Don't worry – you don't need to use them all in every program. Think of them like tools that you can use to help you when programming!

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Friday, August 28, 2026

Task 8: Usage of Variables

A **variable** is like a box that stores a value. This value can change during, for example, a game.

Consider the following game:

- This is a quiz game in which you must answer questions.
- You get 1 point for each correct answer.
- The score of the quiz game is 0 before the game starts.

What you must do:

1. Write down the initial value of the variable Score = 0
2. In the following table some sample questions and their answers are given. Fill in the value of score after each question:

#	Sample Questions	Answer	Score
1	The Earth revolves around the Sun.	Correct	1
2	Bats are blind.	Incorrect	1
3	The human body has 206 bones.	Correct	2
4	Lightning never strikes the same place twice.	Incorrect	2
5	Mount Everest is in Africa.	Incorrect	2

Question: What happens to the value of the variable Score when the answer is Incorrect:

When the answers 13 Wrong, the value of the variable score does not change.
When the answers is correct

Task 9: Understanding Data Types

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- Data types A data type is the kind of data a variable holds—like numbers, words, or true/false values. Data types tell the computer what kind of information is being used or stored in a program.

- There are three main data types in Scratch

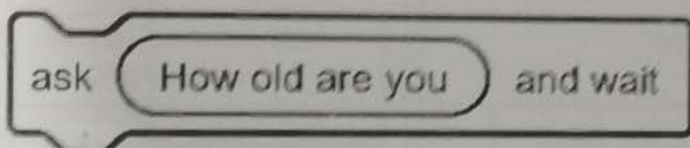
Integer: stores numeric values such as whole numbers 1, 2, 3

Character: stores individual letters, characters or symbols a, e, \$, !, @

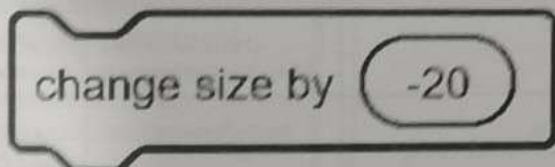
String: a combination of characters, letters, numbers or symbols ALi, Ali\$, sarim 3 1@

- A data type tells us what kind of value a variable or input can hold or work with in a program.

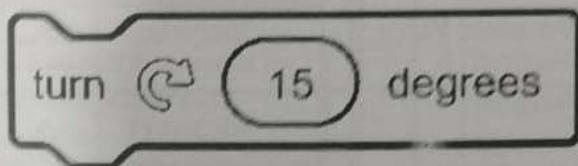
Identify the data type used in the following Scratch commands. Choose from Integer, Character & String:



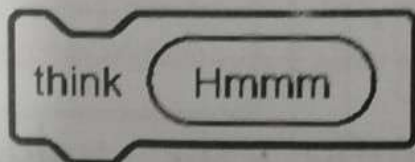
String ✓



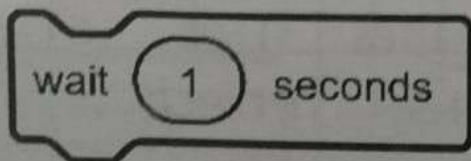
Integer ✓



Integer ✓



String ✓



character ✓

Task 10: Operator Challenge

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Part 1: Sort the Expressions. Look at each expression below. Decide if it's doing a calculation (arithmetic) or a **comparison** (relational).

Write **A** for Arithmetic or **R** for Relational in the blank.

comparative opo $\neq, =, >, <, !, \leq$

#	Expression	Type (A or R)
1	$6 + 4$	A
2	$8 > 3$	R
3	$5 * 2$	A
4	$9 == 10$	R
5	$15 / 3$	A
6	$12 != 7$	R
7	$20 - 4$	A
8	$10 \leq 9$	R

Part 2: Fill in the operator.

Choose the correct **operator** from those given below and fill in the blank to make the statement correct. Operators you can use:

$+$ $*$ $==$ $!=$ $>$ $/$ $-$ $<$

#	Expression	Correct Operator	Final Expression
1	$7 \underline{+} 3 = 10$	$+$	$7 + 3 = 10$
2	$8 \underline{*} 2 = 16$	$*$	$8 * 2 = 16$
3	$5 \underline{=} 5 = \text{True}$	$=$	$5 = 5 = \text{True}$
4	$12 \underline{/} 6 = 2$	$/$	$12 / 6 = 2$
5	$9 \underline{>} 10 = \text{False}$	$>$	$9 > 10 = \text{False}$

Part 3: Give one sentence answers

- What do arithmetic operators do?

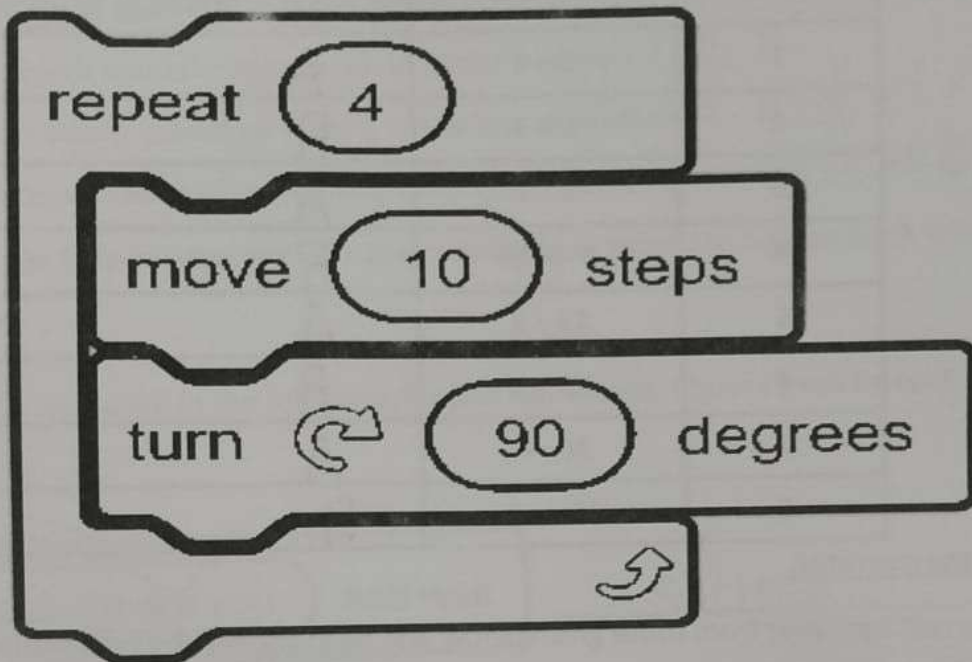
They are used to do mathematical calculations =

- What do relational operators do? $!, *, +$

They compare values $=, >, <$

Task 11: Loop and Operator Detective

Look at the block below and answer the following questions:



1. How many times will the sprite move and turn?

4 times

2. What shape will this block draw, a Circle, Square or Triangle?

Each turn is 90 degrees, and doing this 4 times results in a full 360 turn
 $90 \times 4 = 360$ forming a square

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Monday, August 31, 2026
Task 13: Usage of Variables in an Algorithm (Part 2) C.W

Here is an algorithm that uses two variables. Read the steps to understand what the algorithm is doing:

1. When green flag clicked
2. Set Score to 0
3. Set Lives to 3
4. Say "Welcome to this quiz!" for 2 seconds
5. Ask "What is 3 + 4?" and wait
6. IF answer = 7
7. THEN change Score by 1
8. ELSE change Lives by -1

Answer the following questions:

Look at the above steps of the program and answer the following questions. These questions will help you understand variables and their changing states inside a program.

1. What are the names of the two **variables** the programmer has created?

Score and lives

2. What **data** does each variable store at the beginning?

Score 0 and Lives 3

3. What would happen to the variables if the player entered 5 as their answer?

(5 $\neq$ 7) (lives decreases by 1)

4. What would happen to the variables if the player entered 7 as their answer?

(7 = 7): score increases by 1, lives stays the same.

5. How could you change the program so that you started with 5 lives?

Change step 3 in the algorithm i.e. Replace

6. How could you change the program so that the player would receive 2 points for the correct answer?

change step 7 in the algorithm i.e.

Replace step 7 with change score by 2.

Task 14: Usage of More Variables in Algorithms (Part 1)

Objective:

Learn how multiple variables can be used to track a player's **score** and **lives** in a game.

Scenario:

You are designing a quiz game in Scratch. The following are the rules of the game:

- Each correct answer gives **+2 points**
- Each wrong answer takes away **1 life**

You have two variables:

- **score**
- **lives** (starts at 3)

Fill in the following table based on the player's answers:

Question	Answer (Correct/Wrong)	Score	Lives
1	Correct	2	3
2	Wrong	2	2
3	Correct	4	2
4	Wrong	4	1

Answer the following:

Each wrong answer

1. What happens to the variable **lives** when the answer is wrong? takes 1 life
2. What is the final **score** and number of **lives** left?

- Score: 4
- Lives: 1

monday, August 31, 2026

Task 16: Interface and Prompt Challenge

Scenario:

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You are running a quiz game program in Scratch.

The sprite says: "What is 5 + 2?"

A box appears for you to type your answer.

Your Task:

1. Label the parts below as "Prompt" or "Interface":

Description	Prompt or Interface
The message: "Welcome to the game!"	inter face
The text box that appears for typing	inter face
The green flag to start the game	inter face
The question: "What is your name?"	Prompt
The score display at the top corner	interface

2. Think and Write:

- a. Why do you think we need a prompt in a quiz game?

we need a Prompt is in a quiz game to ask the Player know what to do next.

- b. Name at least **two** things you can see in a game interface:

score display & to and tex box for typing (other exceptable answer start button, Timer message)

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