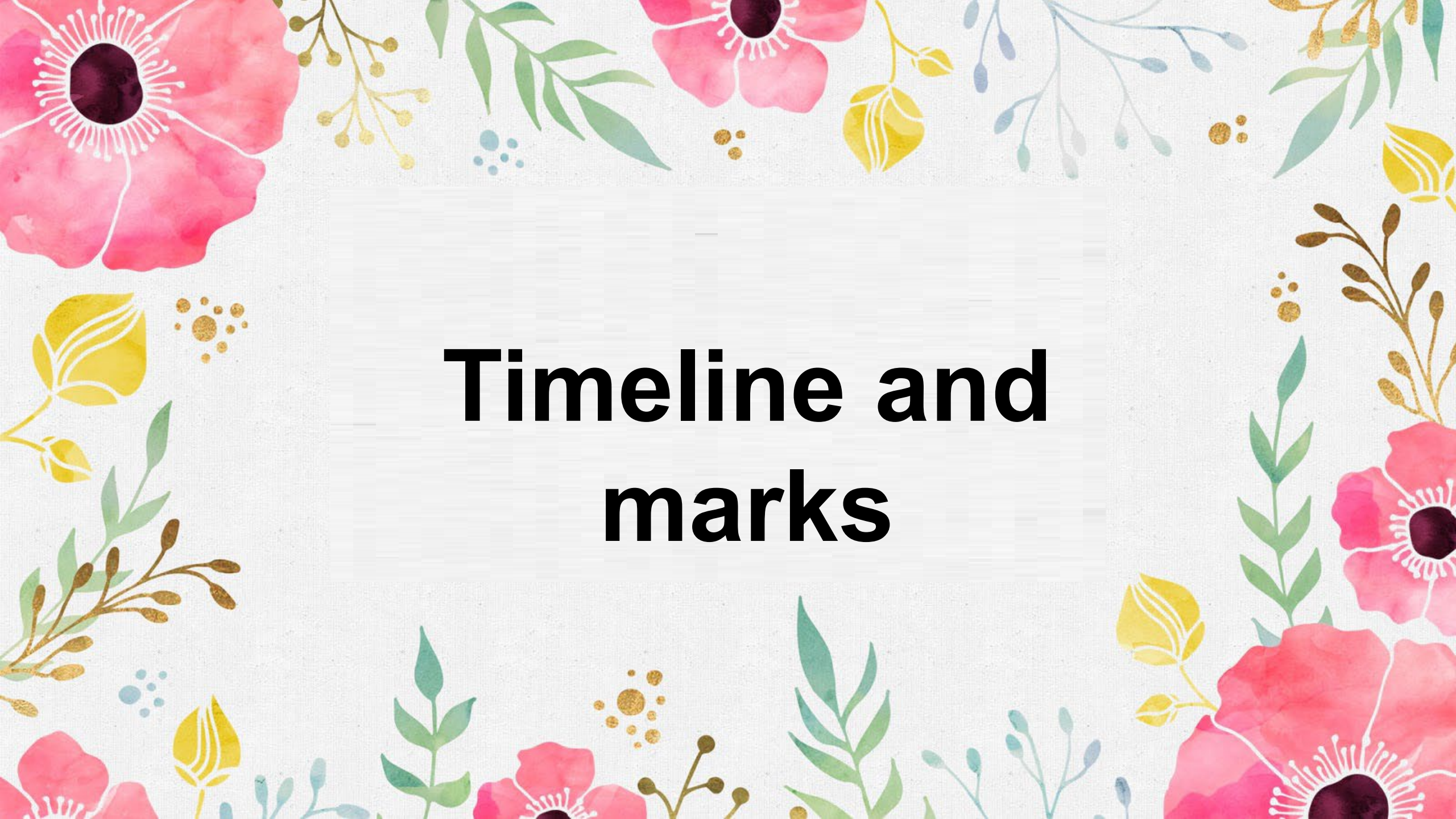


Math PBLA stages



Timeline and marks

timeline

Suggested Block Based Period (2 periods per week - 90 min)

Term 2

Week 1

Understand

5th January
Term 2 Start

Week 2

Define

16th January
AlManhal CheckPoint

Week 3

Ideate

Week 4

'Model

Week 5

Test

30th January
AlManhal CheckPoint

Week 6

Present

20th February
AlManhal CheckPoint

Term 3



PBLA Recognition

Hold events to celebrate student work
organized by schools in Term 3

Marking

<i>(expected that a small number of struggling students will fall here)</i>		<i>(expected that most students will be shared across these two bands)</i>		<i>(only a few high-performing students expected here)</i>
Needs significant improvements (1-2)	Beginning (3-4)	Developing (5-6)	Proficient (7-8)	Exceeding (9-10)

Assessment Stage	Project substage	Sub-stage weighting
Stage One	Understand	15%
	Define	15%
Stage Two	Ideate	20%
	Model	20%
	Test	
Stage Three	Present	15%
	Collaboration	15%

How you will be marked

Grade	Needs significant improvement (1-2)	Beginning (3-4)	Developing (5-6)	Proficient (7-8)	Exceeding (9-10)
7-8	Does not identify any mathematical elements to the problem	Identifies vague mathematical elements; despite heavy reliance on guidance	Identifies some mathematical elements, provides basic relationships between observation and the identified elements with minimal guidance.	Independently identifies several clear mathematical elements, justifies realistic detailed relationships between observation and the identified elements.	Independently identifies a wide range of accurate mathematical elements, evaluates and justifies realistic relationships between observation and the identified elements.

In this project, I will do two types of work

Individual Work:



Things I do on my own.

Teamwork:



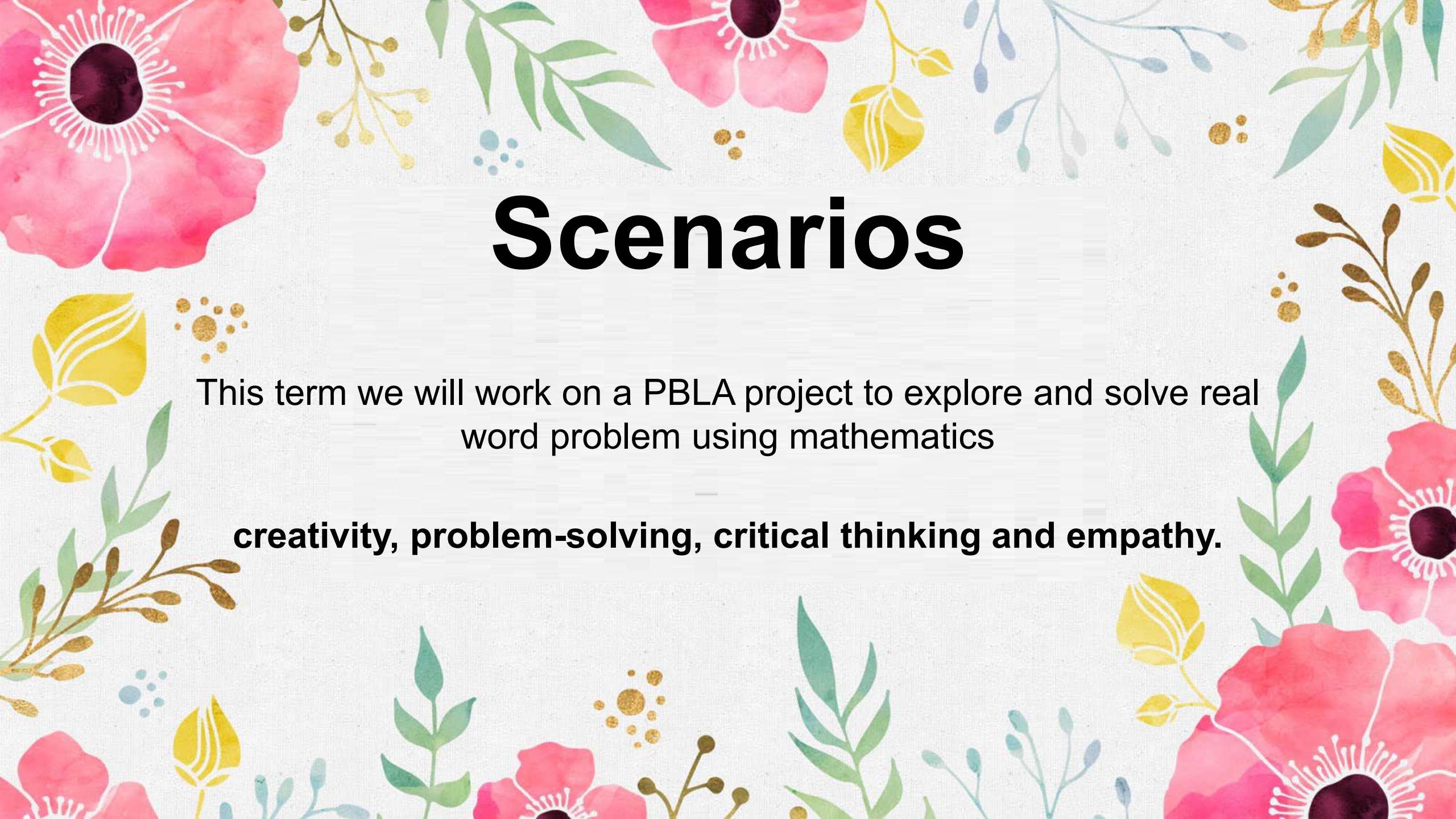
Things I do together with my classmates.

Individual



Teamwork



A decorative border featuring various watercolor-style flowers and foliage. Large pink flowers with dark centers are prominent in the corners. Smaller yellow and blue flowers, along with green leaves and gold-colored dots, are scattered throughout the border.

Scenarios

This term we will work on a PBLA project to explore and solve real word problem using mathematics

creativity, problem-solving, critical thinking and empathy.

Grade 8 Math Adv & General Reveal	
Module	Module 5 - Functions
Lessons	L1: Identify Functions L2: Function Tables L3: Construct Linear Function
Learning Outcomes	• Determine whether a relation is a function by identifying the number of outputs assigned to each input. • Generate function tables from function rules and use the sets of ordered pairs to graph the functions. • Write linear functions from graphs, tables, and verbal descriptions by finding the rate of change and initial value.
Theme	 <i>Artificial Intelligence: Technology and Human Jobs</i>  <i>Sustainability: Eco-friendly Communities</i>

Scenario 1: UAE AI Job Growth Model

In today's world, Artificial Intelligence (AI) is becoming part of everyday life — in phones, factories, hospitals, and schools. As technology grows, many jobs are changing some disappear, and new ones appear that need different skills.

This leads to an important question: **Should we start preparing and developing our AI skills now?**

You and your team will use the displayed data showing AI-related job postings from 2020 to 2025 to explore this problem. After analyzing your data and graphs, explain what your results suggest about future jobs, and discuss possible ways students and schools can prepare for these changes.

Use your math skills to: **Identifying** if the relation is a function, **finding** and **applying** a function rule to predict future job values (2026–2030), and presenting your results through tables, equations, and graphs.

UAE AI Job Growth Model	
Year	AI Related Job Postings
2020	3000
2021	4800
2022	6600
2023	8400
2024	10200
2025	12000

Scenario 2: AI in UAE Smart Classrooms

Education is shifting toward **AI learning platforms** that adapt practice to each student. You are a Platform Evaluator working with the MOE to review a new system that gives **AI Score** according to the Questions Completed.

Your Task: Using the provided dataset, you need to determine the score required for Level 10 (starting of **Level 10**), find the equation of the **function**, represent the relationship with a function table, and graph it.

Remember: while working, apply every math skill in the Learning Outcomes.

Finish with a concise recommendation to the MOE on how schools can use this AI system to support learning and include one **fairness/ethics note**.

AI in UAE Smart Classrooms		
Input- Questions Completed	Output- AI Score	Levels
0	0	1
5	25	
10	50	
15	75	2
20	100	
25	125	3
30	150	
35	175	4
40	200	
45	225	5
50	250	

Scenario 3: *Smart Water Saving*

You are a TAQA Water-Savings **Analyst** studying smart-meter data for a standard shower (**11.4 L/min**) that relates Shower Duration (minutes) to Water Used (liters). Using the provided table.

Your task is to predict the water used for a **20-minute** shower by finding the equation of the function, then representing the relationship with a function table, and finally graphing the relationship.

Next, apply one water-saving tool (e.g., low-flow showerhead, pause valve) and assume/define its flow rate. Using that rate, predict the **20-minute** usage, and compute the liters saved after using the water-saving tool.

As you work, apply every math skill in the Learning Outcomes (identify functions, determine rate and rule, make tables, graph, and explain).

Conclude with a concise, evidence-based recommendation to TAQA: propose an appropriate shower duration for households and list **2-3 practical ways** to save water, supported by your tables, graphs, and calculations.

Smart Water Saving	
Minutes	Liters
2	22.8 L
4	45.6 L
6	68.4 L
8	91.2 L
10	114.0 L
12	136.8 L

Scenario 4: *School Solar Power*

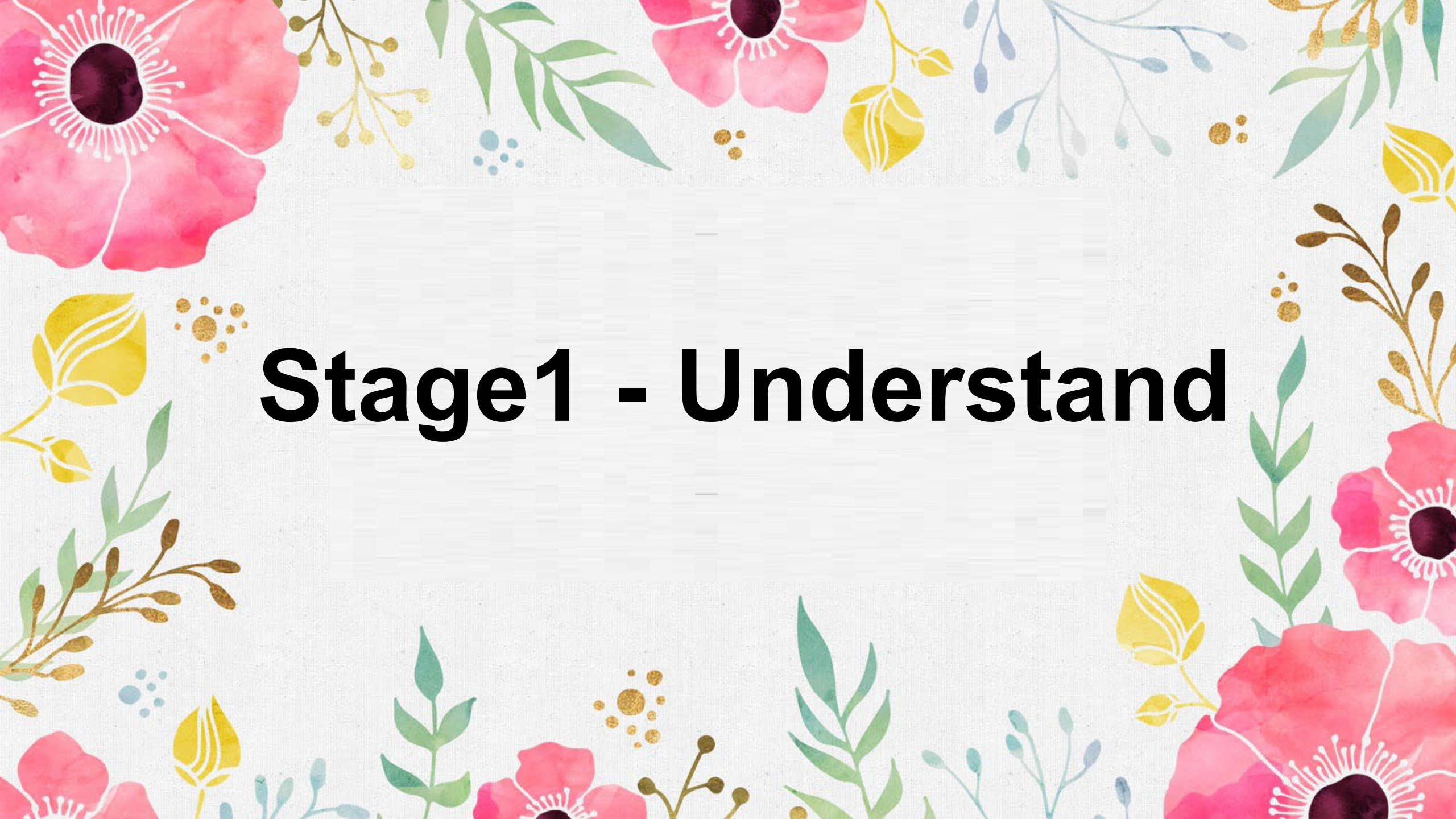
Schools in the UAE still rely heavily on fossil-fuel electricity, which is costly and increases carbon emissions; you are a **Solar Feasibility Evaluator** exploring solar energy as a cleaner alternative source and providing math-based evidence.

Assume a reasonable daily energy demand for your school (state your kWh estimate), choose one installation space on campus (e.g., the main roof) and note its usable area, then select a solar panel model and search its **full-potential** daily energy per panel (ideal conditions).

Using these, build a function table (**Panels** $\rightarrow$ **Energy**) for $n = 1 \dots 10$ from your table, confirm the mapping is a **function**, identify the **rate of change**, and write the **equation**. Use the equation to find the number of panels needed to meet the school's demand.

Next, check the selected area and **decide** if the number of panels you computed can realistically (no calculation required) fit in that space.

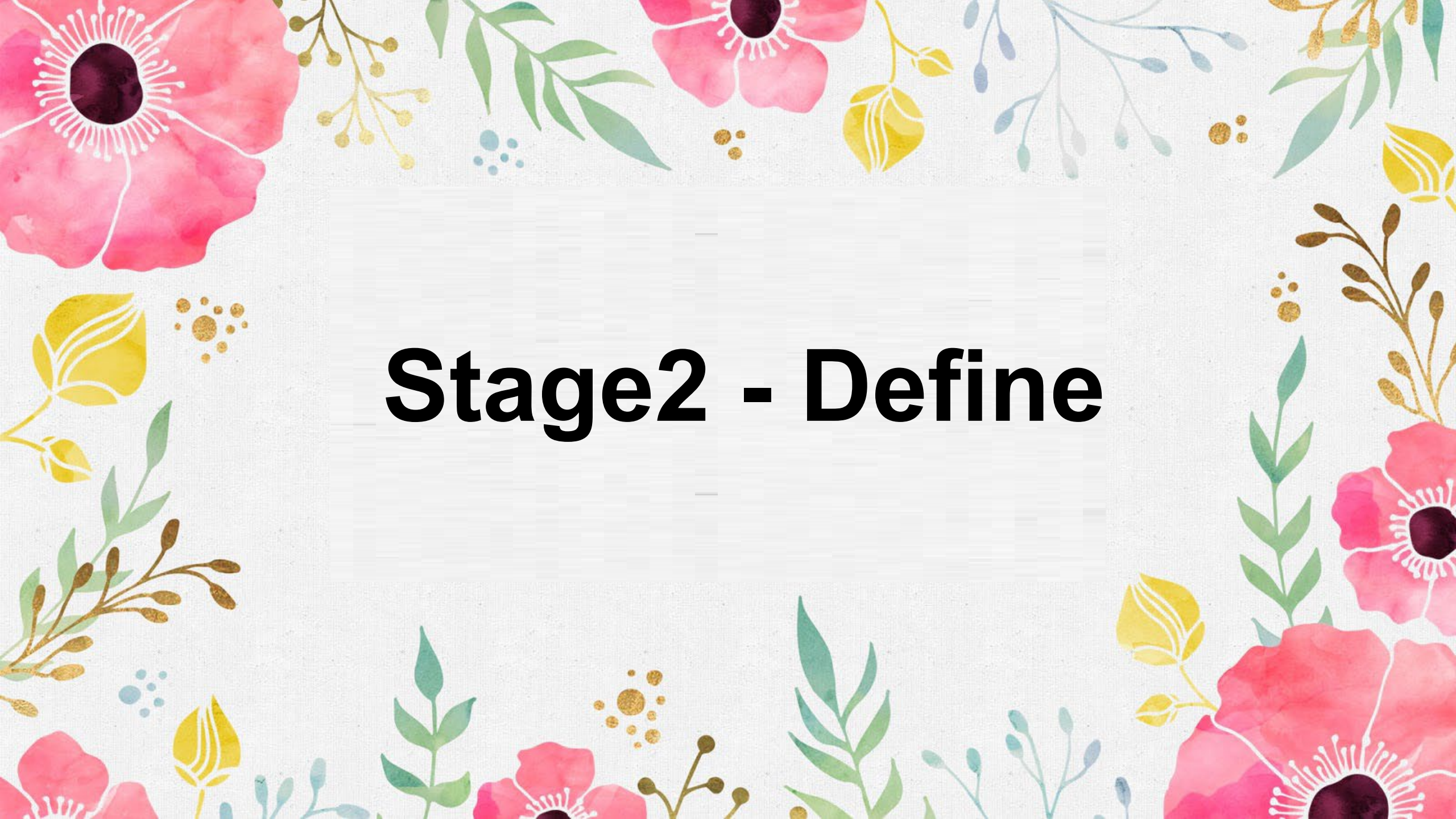
Represent & recommend after graphing the points for 1–10 panels, give a short, evidence-based recommendation on whether the school should adopt solar panels. As you work, apply every math skill in the Learning Outcomes (identify functions, create tables, write/interpret rules, graph relationships, and explain your reasoning).

A decorative border featuring various floral elements in pink, yellow, and blue, including large flowers, leaves, and small buds, surrounding a central white rectangular area.

Stage1 - Understand

Tasks for today

- ✓ Scenario main topic questions and discussion.
- ✓ Read the scenario statement in groups to identify the **main problem , key ideas and information and identify mathematical elements**
- ✓ You (**Individually**) will use your math knowledge to write your notes and questions that help you understand the problem better and decide on the methodology for collecting information – **page 7&8**
- ✓ Discuss within the **group** and draft guiding questions needed to collect more information (**divide the methods/sources between you to find more information**) – **page 9**
- ✓ Completing **page 10 now** or you will come with your finding **next week** , after collect the information needed and fill it there.

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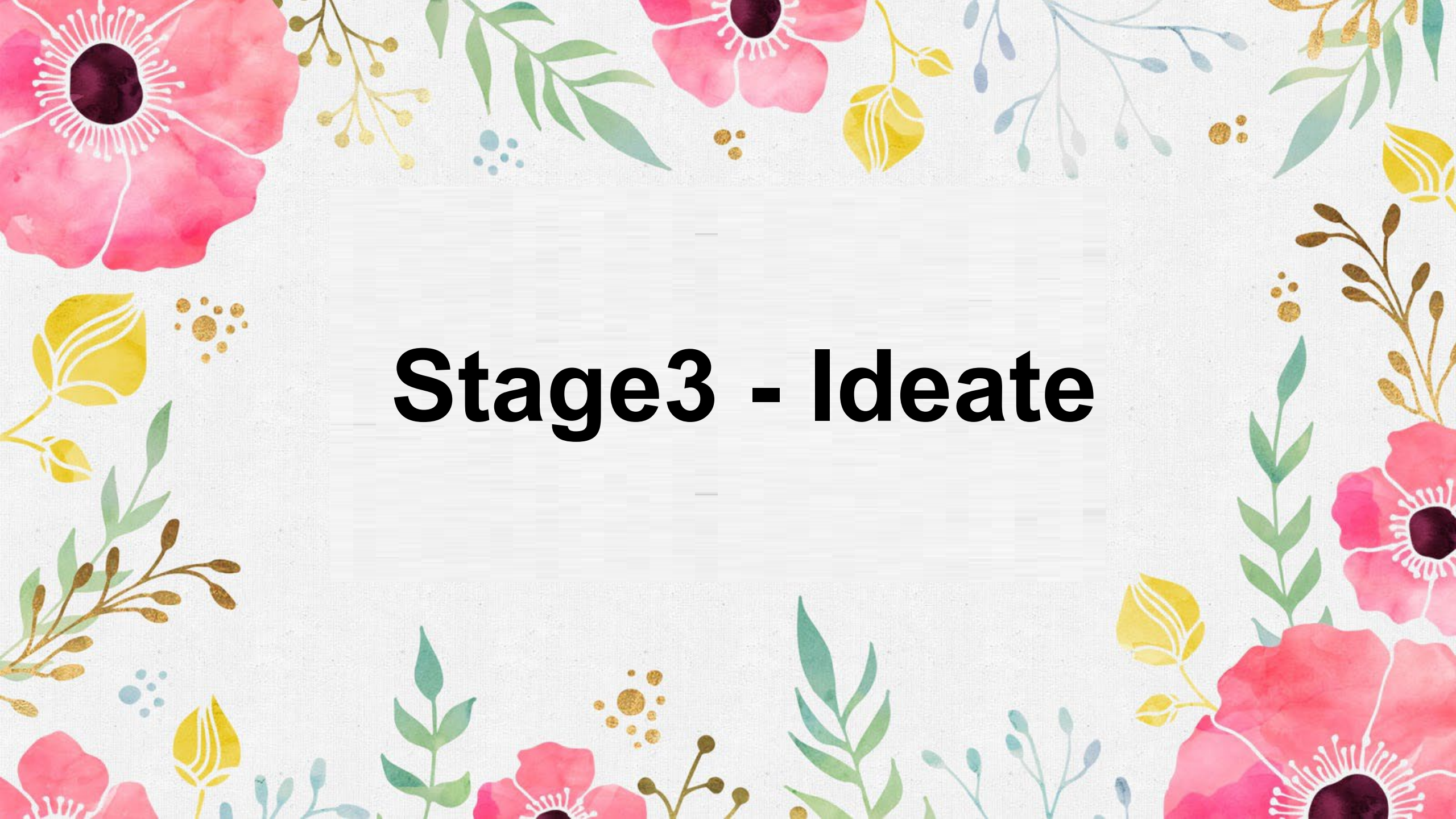
Stage2 - Define

Tasks for today

- ✓ Each group review their collected information from the “Understand” to start class discuss
- ✓ Now, Re-read the scenario (**Individually**) think critically to find the core issue, write the problem statement Mathematically , and identify the area of focus **page 12**
- ✓ What exactly are we trying to find or calculate?
- ✓ In **group**, define the mathematical problem you want to solve **page 13**
What exactly are we trying to find or calculate?

How you will be marked:

- Students can define the problem without completely relying on guidance?
- The problem communicated is clear and mathematically solvable, and the reasoning can be followed?

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Stage3 - Ideate

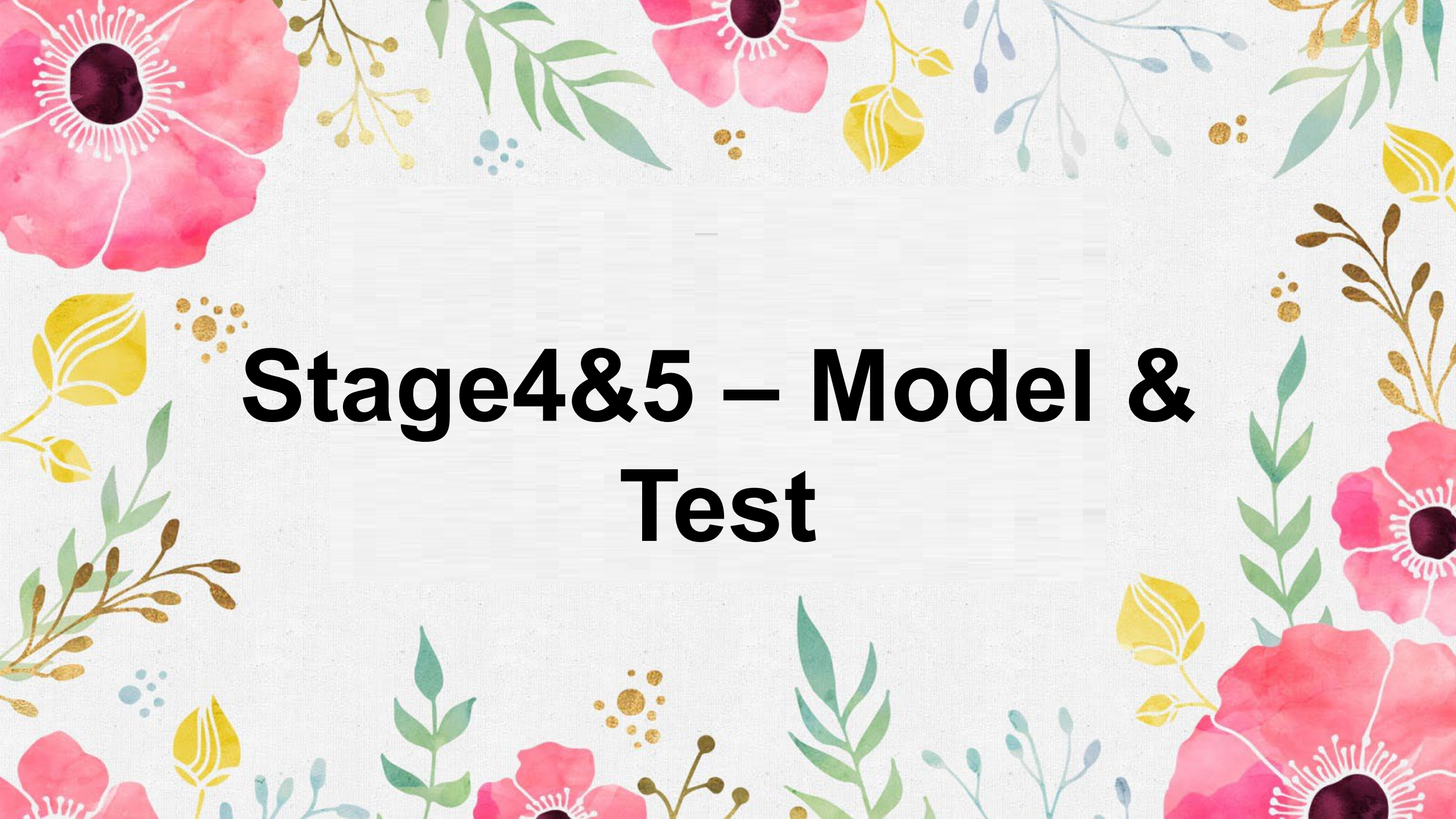
Tasks for today

understand the plan we will use before moving to actual data collection and calculations.

- ✓ You (**Individually**) brainstorming a good idea to solve the problem [page 15](#)
- ✓ In **group** choose the best ideas based on their practicality and reliability [page 16](#)
 - Which method is easier to carry out?
 - [Which method is likely to be more accurate?](#)
- ✓ In **group** plan and divide the steps (activities) between you to solve the problem and mention the best way to show your reasoning & what resources you will use [page 17/18](#)

How you will be marked:

- The solutions generated are realistic and the reasoning behind them can be followed?
- The students can compare and evaluate their solutions?
- student understand the group plan before moving to calculations stage?

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Stage4&5 – Model & Test

Tasks for today

apply the mathematical method you selected to end up with final math solution

What we expect
And you will be
grading for



- Students distribute the work among themselves
- Students work collaboratively in creating the solution
- show steps clearly
- Students explain whether and why their results make sense
- Students document their final results in their portfolio

1. Calculate the rate of change (**slope**) from the table.
2. Find the **y-intercept** from the table
3. Write the correct function **equation**.
4. Now **graph** on coordinate plane.

1. Do your research to create the **NEW** function
2. Write the correct function **equation**.
3. Create a **table** with Y,X values.
4. Now **graph** on coordinate plane.
5. **Explain** and **recommendations**

Tasks for today

apply the mathematical method you selected to end up with final math solution

✓ You (Individually) **page 21**

What worked well:

What needs improvement:

How we will improve:

A decorative border featuring various floral and foliage elements in shades of pink, yellow, green, and blue, surrounding a central white rectangular area.

Stage6 – Present

Tasks for today

Plan how to present your work

What we expect and you will be grading for

- ✓ choosing a creative **way/ways to present** your solution (poster, slideshow, short video, infographic (brochure/magazine))
- ✓ **clearly** presenting your **steps** of work – **entire process**, from "Understand" stage to the "Test" stage.
- ✓ Show your **mathematical findings clearly**, using both spoken explanation and visual representation (**tables, charts, models, diagrams**)
- ✓ **Pictures & visuals** are essential for effectively delivering content
- ✓ **distribute the work** among the group – which part of presentation for which student

brochure



magazine



short
video



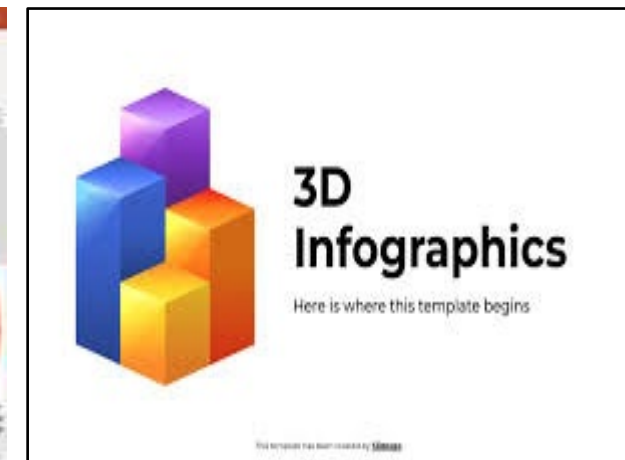
poster



slideshow



3D shape



**distribute the work among the group –
which part of presentation for which**

student
page 25/26/27

Introduction	Student A
Understand: the problem and data	Student B
Define: problem statement and importance	Student C
Ideate: selected idea and work plan	Student D
Model & Test: equation, table, graph, interpretation	Whole team
Final recommendation	Whole team

Reflection

What did I learn from this project?

If I did this project again, what would I change?