

# “Advancing Science Learning through Digital tools and AI Driven Technology”



## Exploring Digital Tools for Data Collection and Analysis

Day 2- December 2, 2025



# Data Matters in Science

From Guesswork to Evidence



Makes Inquiry Measurable



Identifies Patterns & Trends



Guides Student Discovery



\*\* Images are generated by AI(Gemini)

# Research Transformed

## "Before": The Analog Lab

- Scattered paper notebooks
- Data entry errors
- Hours spent manually compiling results



## "Now": The Digital Lab

- Centralized digital forms
- Fast and Correct Data Gathering
- Automatic analysis & visualization



\*\* Images are generated by AI(Gemini)

# Digital Tools: Helping Us Reach NEP Goals



Builds Scientific  
Temper

Focuses on Skill  
Building

Critical Thinking

Use of Technology



\*\* Images are generated by AI(Gemini)

# Benefits of Collecting Data Digitally

Easily Accessible



Instant Feedback for Students



Real-Time Results



Automated Analysis



\*\* Images are generated by AI(Gemini)

# The Science Learning Cycle

CREATE



COLLECT

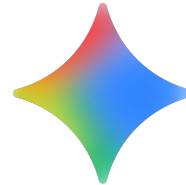
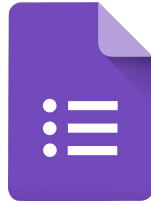


ANALYSE



\*\* Images are generated by AI(Gemini)

# Leveraging Data for Insightful Classroom through Forms, Sheets and Gemini

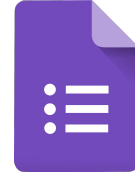


# Introduction to Google Forms

## Google Forms

**A tool** - Create online surveys, quizzes, and feedback forms

**Includes** - Multiple choice, short answer, image questions, and auto-grading



## Educational uses of Google Forms

A versatile tool for

- Creating formative quizzes, exit tickets, and surveys
- Collecting data
- Representing data through charts and graphs
- Automatic and manual grading

[Sample 1](#)  
[Sample 2](#)



## Features of Google Forms

### Form Setup

- Creating a new Form
- Naming a Form
- Menus
- Title and description
- Settings

### Collaboration & Sharing

- Add collaborator
- Sharing the Form

### Building the Form

- Adding questions
- All Question Types
- Making question compulsory
- Feedback

### Quiz Features & Response Logic

- Converting into quiz
- Add Answer key
- Limit to one response

AUTOMATIC SAVING



# Introduction to Google Sheets

**A tool** - Organize, analyze, and visualize data in spreadsheets

**Includes** - Cells, rows, columns, formulas, filters, and charts



## Educational uses of Google Sheets

A versatile tool for

- Managing data
- Analyzing quiz results
- Tracking student progress
- Converting data into charts

[Sample](#)



## Features of Google Sheets

### Sheet Setup & Formatting

- Cells, rows, columns
- Managing data
- Conditional formatting

### Data Analysis

- Organize and analyze data
- Formulas and Filters
- Analyzing quiz results
- Tracking student progress
- Sorting data

### Data Input

- Creating a response spreadsheet (from Google Forms)

### Data Visualization

- Visualize data
- Charts
- Convert data into charts

AUTOMATIC SAVING



## Creating a Form

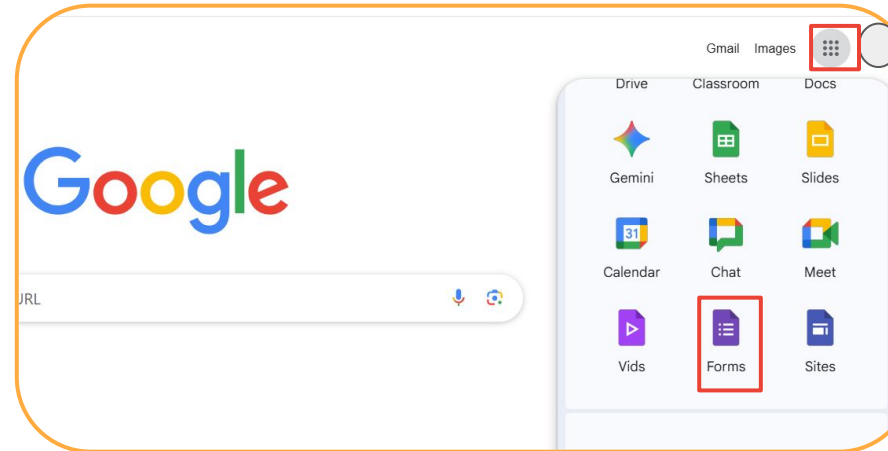
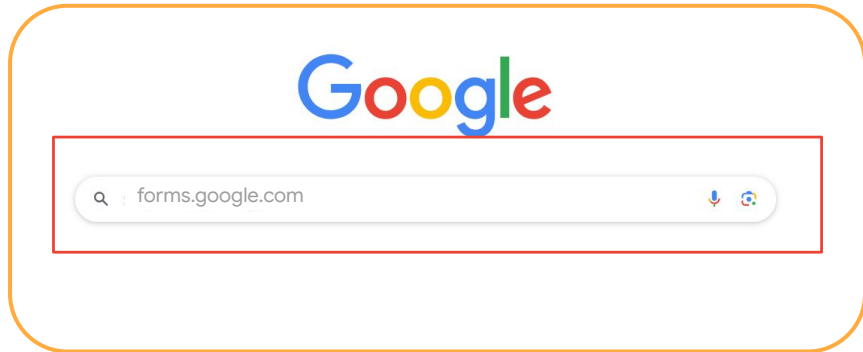
Open the browser

- Sign-in with gmail id
- Type forms.google.com

OR

If Google is the search engine:

- Click on nine dots(waffle)
- Select Forms

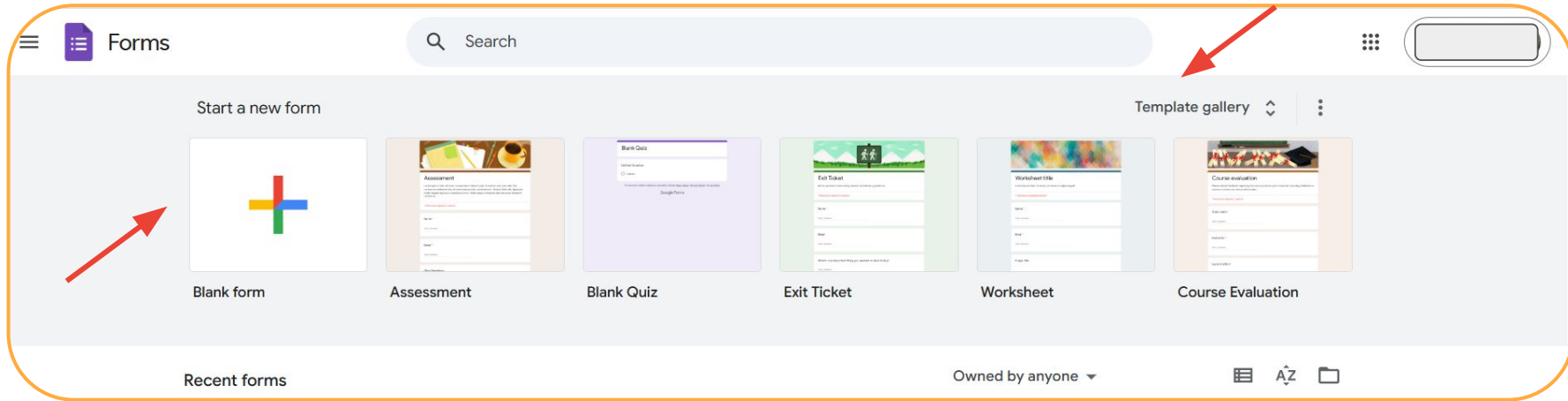


## Opening a blank doc

Open the Blank Document

OR

Select the Template from Template Gallery as per requirement



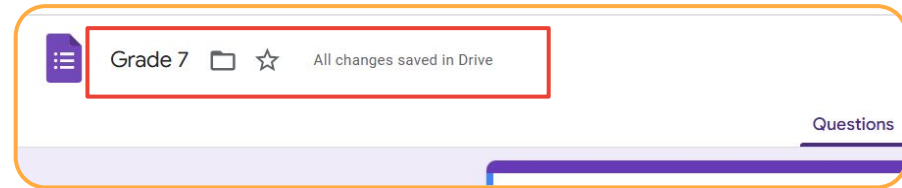
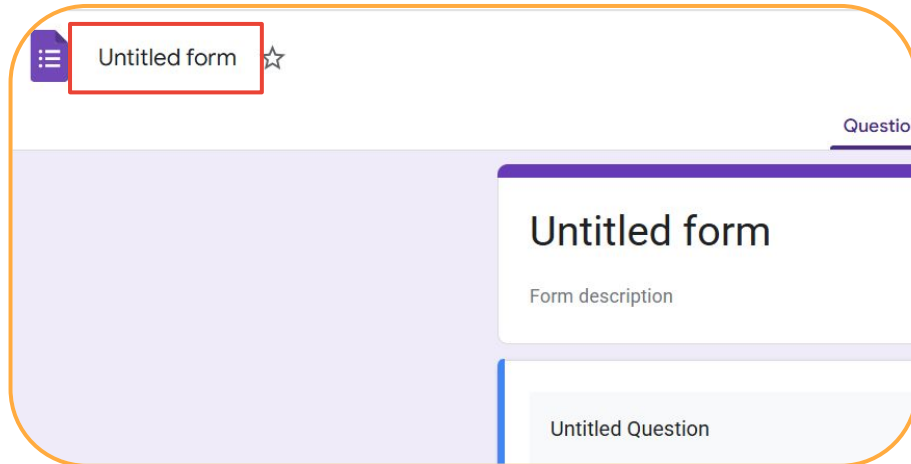
The screenshot displays the Google Forms interface. At the top left, there is a menu icon and the word "Forms". A search bar is located at the top center. On the right side, there is a grid icon and a mobile view toggle. Below the search bar, the "Start a new form" section is visible. A red arrow points to the "Blank form" template, which is represented by a white square with a colorful plus sign. Other templates shown include "Assessment", "Blank Quiz", "Exit Ticket", "Worksheet", and "Course Evaluation". A "Template gallery" dropdown menu is also visible on the right side of the "Start a new form" section, with a red arrow pointing to it. At the bottom of the interface, there are options for "Recent forms", "Owned by anyone", and icons for list view, sort order (AZ), and folder view.



## Naming your form for Drive

The name of form shows what the form is about to make it easier to find and open again later.

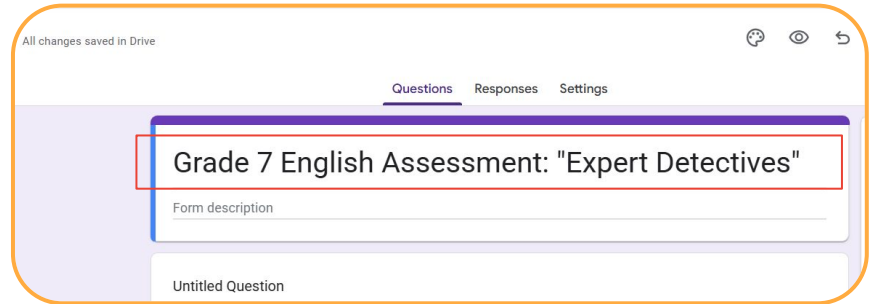
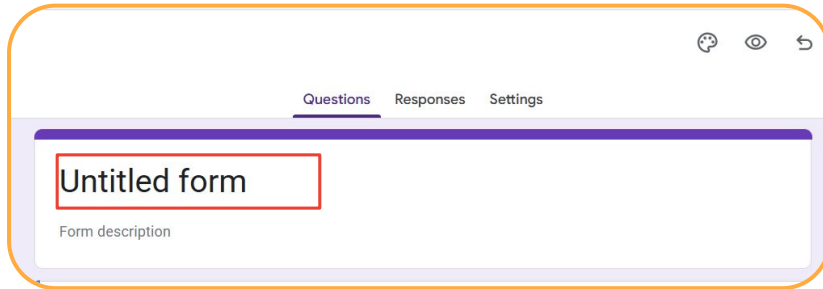
- Click **Untitled form** on the top left.
- Type in a name for your document then press **Enter** on your keyboard.
- Form name will be saved automatically.
- This will be the name for you to be saved in Google Drive



## Naming your form for Students

The name of form shows what the form is about to make it easier to find and open again later.

- Click **Untitled form**.
- Type in a name for your document for students then press **Enter** on your keyboard.
- This will be the name for your students.

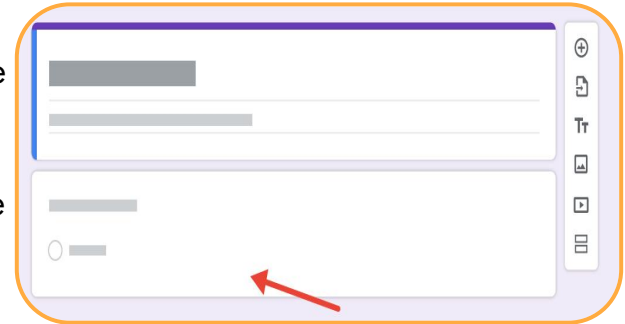


## Adding questions to form

When creating a form, it will already have a space for the first question.

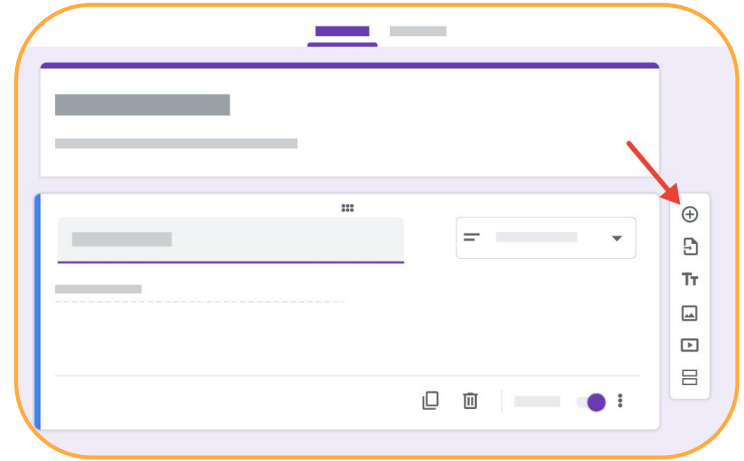
- This will always appear as a multiple choice type of question.
- There are many different question types you can use. Here are some of the most commonly used types:
  - Short answer - great for 1-2 word answers, for example, names.
  - Paragraph - when you want longer, paragraph or essay type answers.
  - Multiple choice - when you want to limit people to only one choice.
  - Checkbox - good for questions that people can give more than one answer to.

If want to edit / change the question, simply click anywhere in the white rounded rectangle.



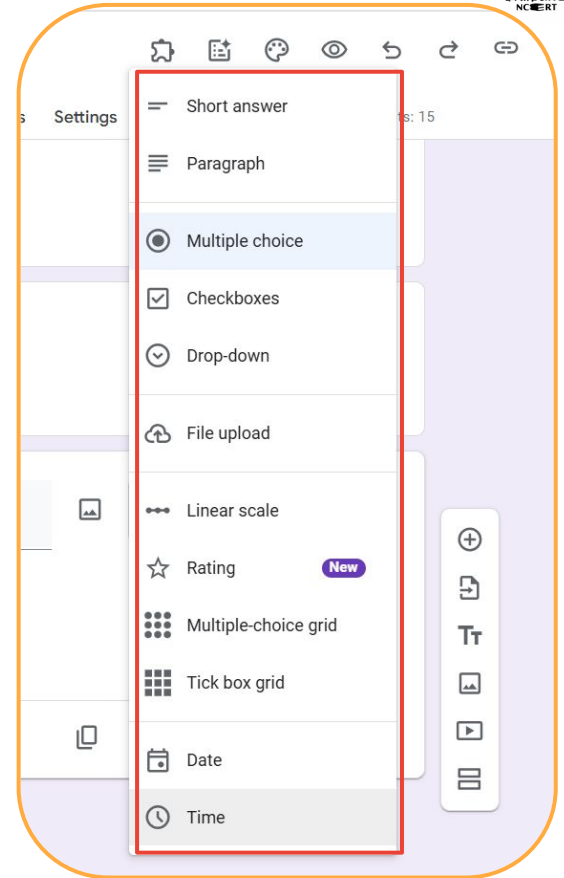
## Adding questions to form

- It's now time to **add your next question**. Click + on the floating menu on the right.
- A **new multiple choice question** will be added to the form, below previous question.



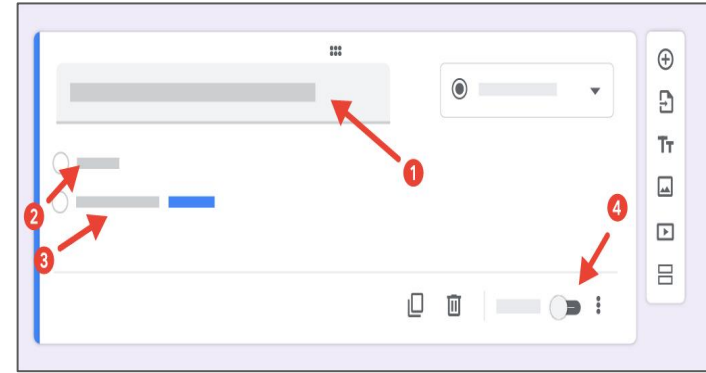
## Types of questions

- Short Answer
- Paragraph
- Multiple Choice
- Checkboxes
- Drop-down
- File upload
- Linear Scale
- Rating
- Multiple choice grid
- Tick box grid
- Date
- Time



## Multiple choice questions

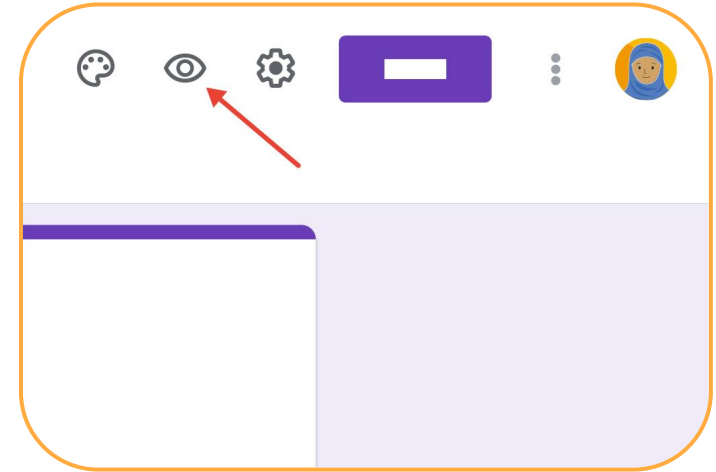
1. Type in the first question of quiz. After replacing the text, press **Enter** on your keyboard:
2. In the next step, add several answer choices, one being the correct answer and the others being incorrect options. Click Option 1. Now type in one possible answer to the question. Press Enter on your keyboard to add a second option.
3. Now type in the second answer option. Type the answer option, and it will replace 'Option 2'. Now press Enter on your keyboard to add a third answer option.  
Note: add as many options as you want to for each particular question!
4. Next, mark the question as required.  
Remember: if you mark it as required, respondent will only be able to submit the form after answering this question. Click the switch next to 'Required'.



## Preview form and make updates

Once done adding questions, it's always a good idea to preview the form and make sure there are no mistakes.

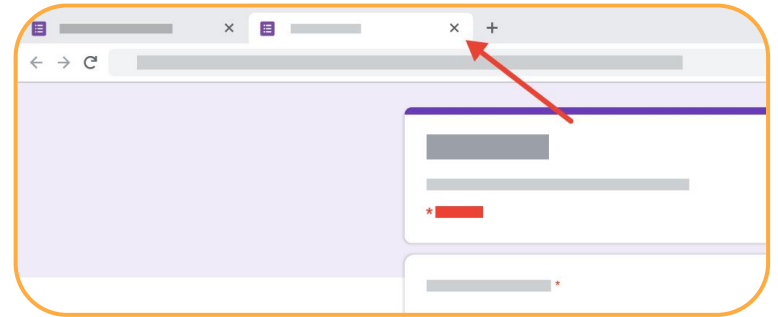
- Click **Preview** in the top right corner.
- This will open a preview of your form in a new browser tab.



Once you have checked form, close the preview. Click **X** on the Preview tab.

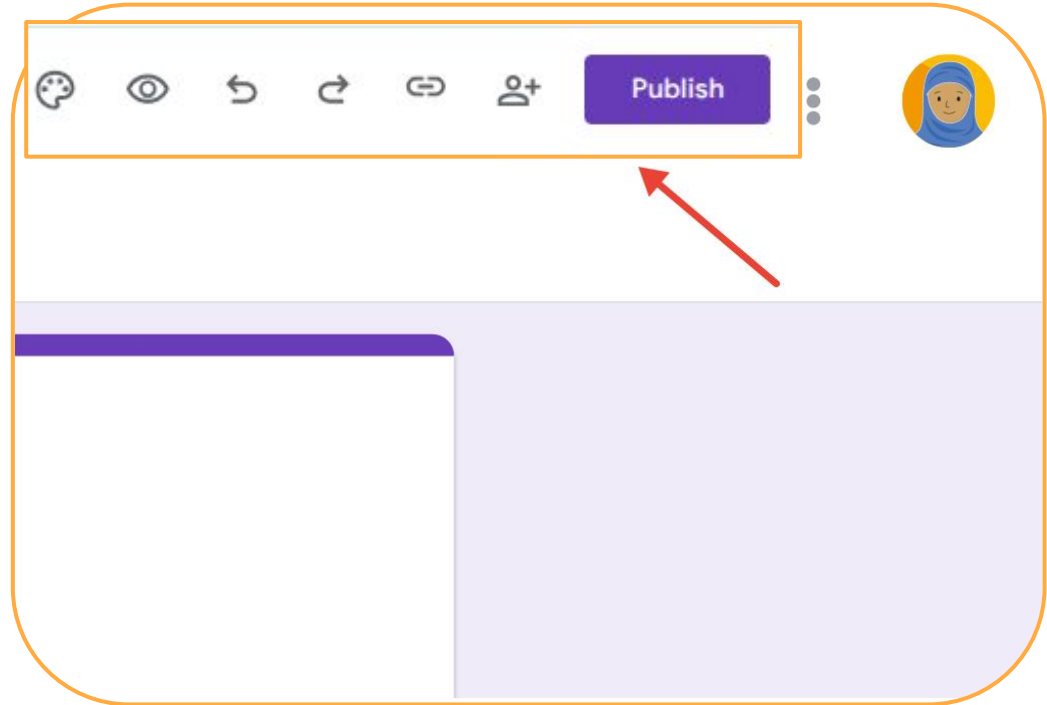
You should now be back in original form page, where you can still make changes to your form if needed.

Remember: If you need to make changes to any question, simply click inside the question. This will allow you to change the question, the question type, the options, etc.

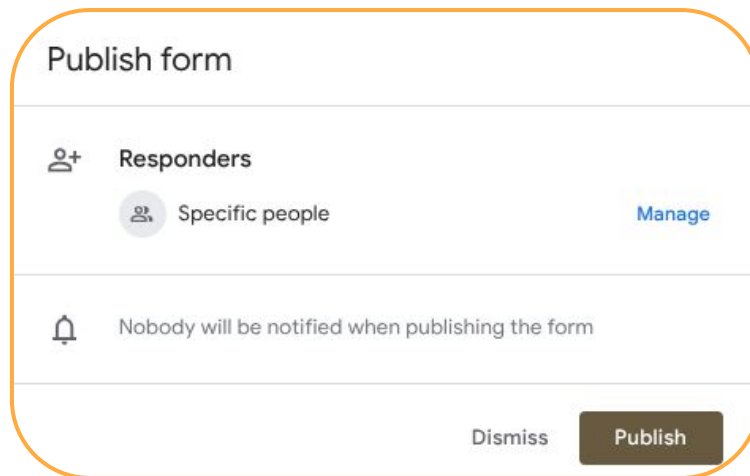


## Sharing the form

Now, for the final step - sending your form to your students to answer. Click **Publish** in the top right corner. This will open the 'Publish form' window.



- Click **Manage**. You can type in your students' email addresses in the 'Add People' box. You can type in more than one email address as long as you put a comma after each one.
- When done, click **Share**. An email will be sent to every address you listed, inviting them to fill in the form.
- **Publish** the form once, it is done.



Publish form

Responders

Specific people [Manage](#)

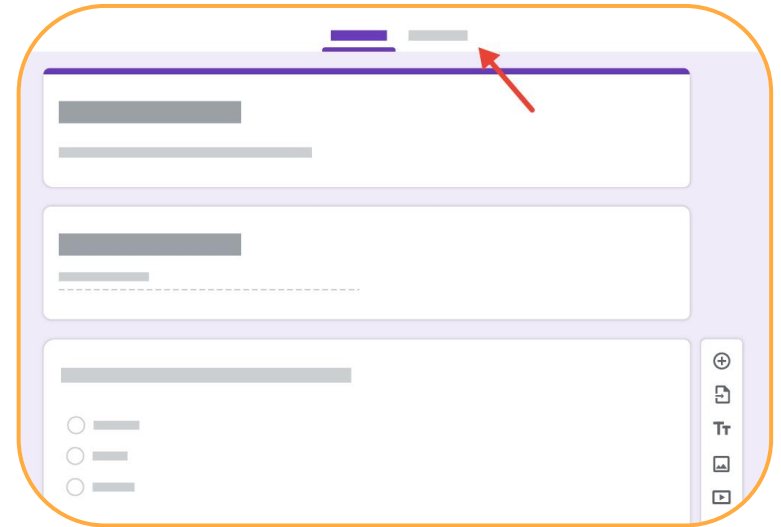
Nobody will be notified when publishing the form

Dismiss Publish

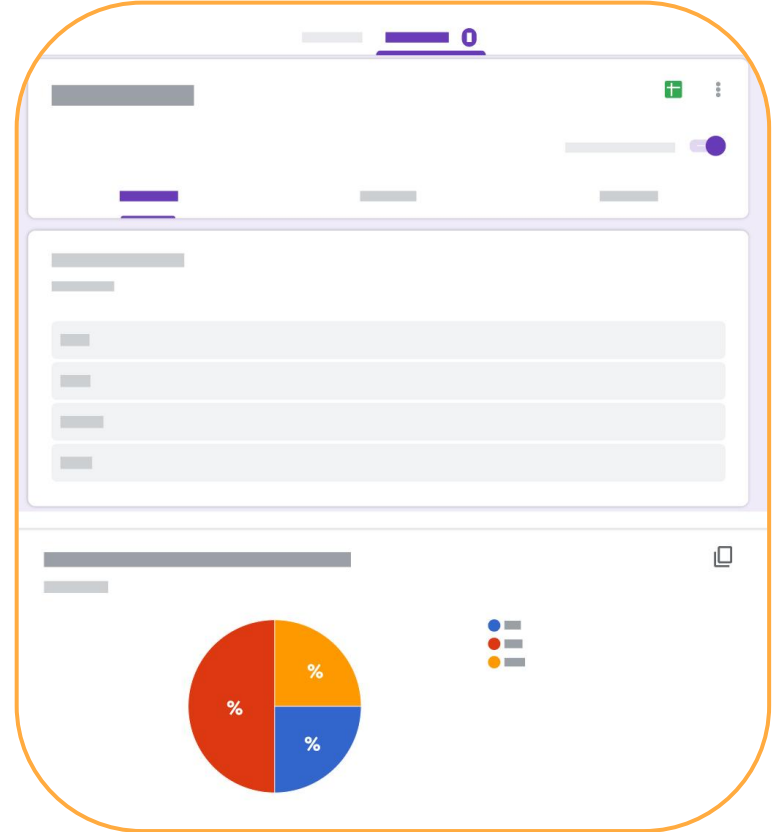


## Viewing responses

Once the form is filled, you will easily find all of their answers in the Responses section of the form. Click **Responses**.

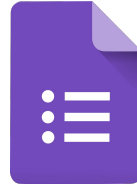


As the form is filled out, the Responses section will be updated automatically. You can see the number of responses and quick charts showing you a summary of the responses.



# Google Forms + Google Sheets

**Easy to collect responses**



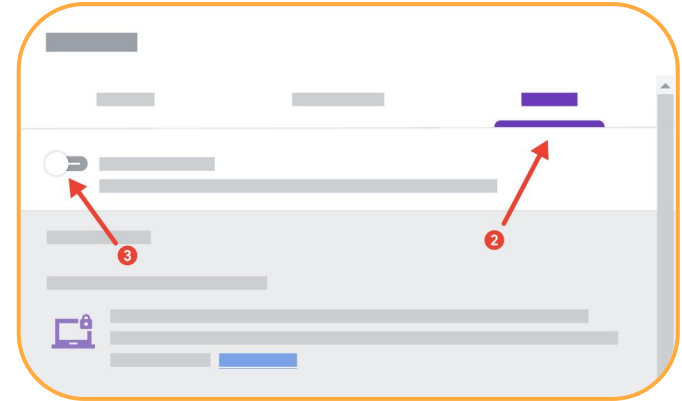
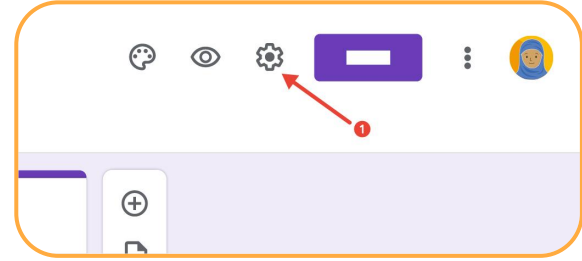
- Google Forms collects all answers in the Responses section.
- It automatically creates quick graphs to provide an overview of the collected data.
- Link Google Forms with Google Sheets.
- This action collects all the data into a spreadsheet, making it easy to organize and work with as needed.



## Changing a Form into a quiz

You can easily change a form into a quiz, allowing auto-grading.

1. In the top right click, **Settings** (gear icon).
2. In the Settings menu, click **Quizzes**.
3. Click on the **Make this a quiz** switch.



## Create your questions

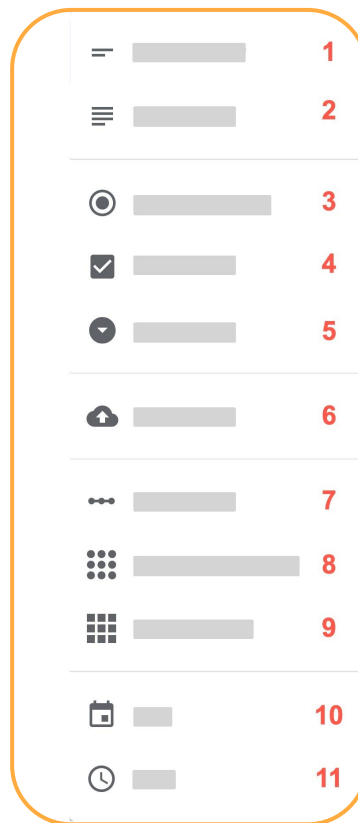
Start with a short answer question that collects students' names (e.g. 'Name')

If you wish for the quiz to be fully auto-graded and give a score to the students as soon as they finish, these are the question types that Forms can auto-grade:

- Short answer (1)
- Multiple choice (3)
- Checkboxes (4)
- Dropdown (5)
- Multiple choice grid (8)
- Checkbox grid (9)

The other types of questions will need to be graded manually or reviewed.

- Paragraph (2)
- File upload (6)
- Linear scale (7)
- Date (10)
- Time (11)

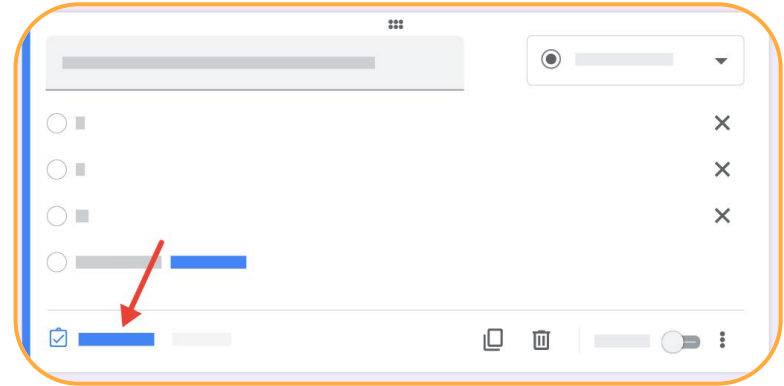


## Updating the answer key

Once you turn a Form into a quiz, every question will have an **Answer key** button on the bottom left-hand corner.

Click **Answer key**. This will allow you to choose the correct answer, decide how many points the question is worth and add answer feedback.

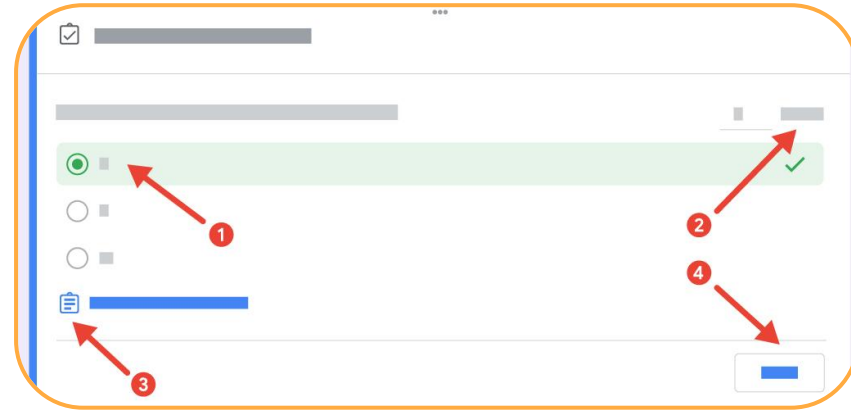
Tip: Do not add an answer key for questions that do not need to be automatically graded (e.g., the 'Name' question).



## Choosing the correct answers

Once you've clicked **Answer key**, you can:

1. Click on the correct answer. Notice the green tick marking the correct answer.
2. Decide how many points the question is worth - choose any value.
3. Optional: you can add answer feedback.
4. Click **Done** when ready. Edit any of these options later by clicking **Answer key** again.



## Optional: Adding answer feedback

Adding feedback to a question is a way of deciding what the students will see when they look at their quiz results. You can add one feedback for correct answers and a different feedback for incorrect answers. In the **Add feedback** menu you have several options:

- You can add written feedback (1).
- You can add a link (2) to a website, revision guide, Classroom assignment etc.
- You can add a link to a YouTube video (3).

Click **Save** when done (4).



## Answer key for 'Short answer' questions

For 'Short answer' questions, you'll need to type in every answer you would accept as correct. Type in the first correct answer, then press **Enter** on your keyboard to type in another. You can add as many correct answers as you need.

It's important to remember that the answers are case sensitive, so if you will accept an answer with a capital letter and without, you'll need to type in both versions.

Remember to set a points value as you did with the multiple choice questions.



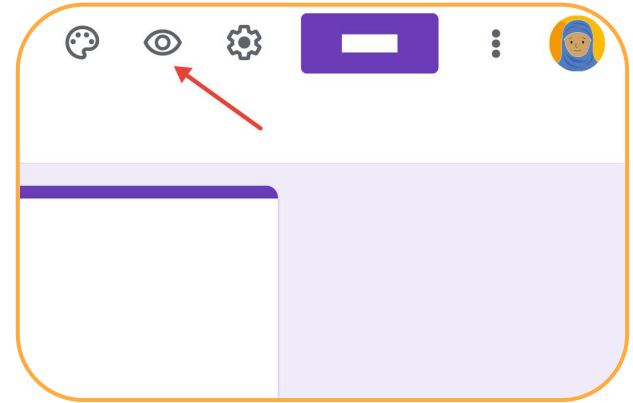
## Preview your quiz and make updates

Once done adding questions and updating the answer keys, it's always a good idea to preview the quiz and make sure there are no mistakes.

Click on the Preview button on the screen's top right-hand corner. This is the button that looks like an eye.

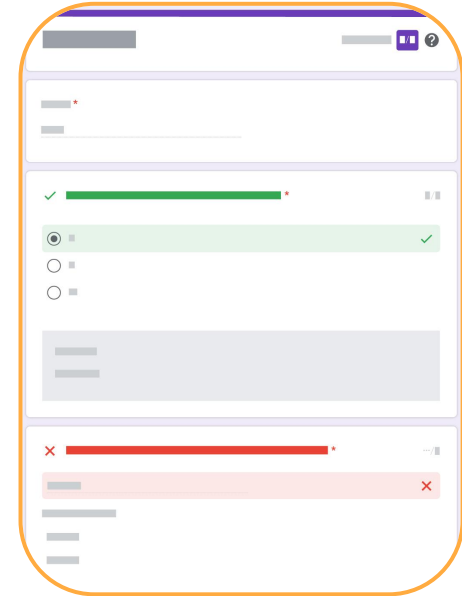
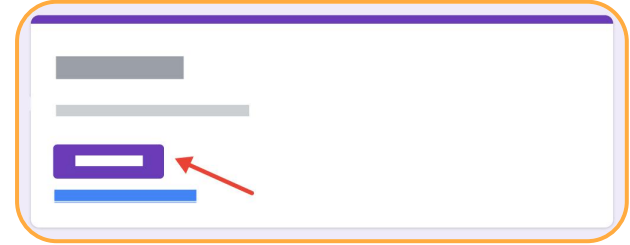
This will open a preview of your quiz in a new browser tab, just like you saw in the previous forms lesson.

Share the form with students by clicking on **Send**.



## Responder's View

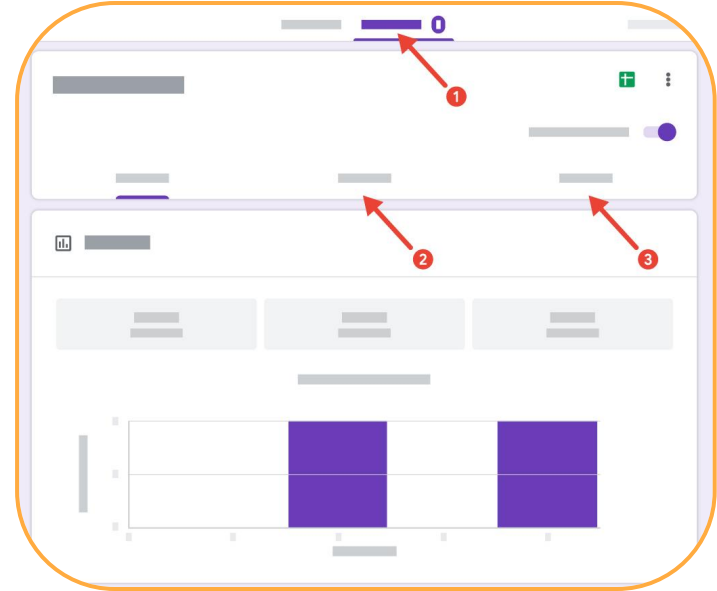
If you choose to let students see their results immediately, they can click on **View score** as soon as they've finished the quiz. Otherwise their results will be sent to them later, when you've finished reviewing their answers.



## Viewing Responses

Once students start filling in your quiz, you will easily find all of their answers in the Responses section of the quiz:

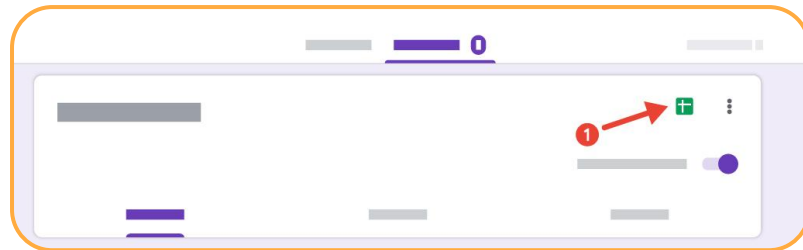
- Click **Responses** (1) to see the responses, including the **Insights** related to your students' performance.
- Click **Question** (2) to see your students' responses grouped based on question.
- Click **Individual** (3) to see all responses for individual students



## Creating a response spreadsheet

Students' answers will be collected directly in your quiz. You can also link your quiz to a Google Sheet and save all of their answers there. This allows you to analyze the data better.

1. Click on the Google Sheets Icon.
2. In the Select response destination, choose **Create a new spreadsheet** (the name should be automatically filled in).
3. Click on **Create**.

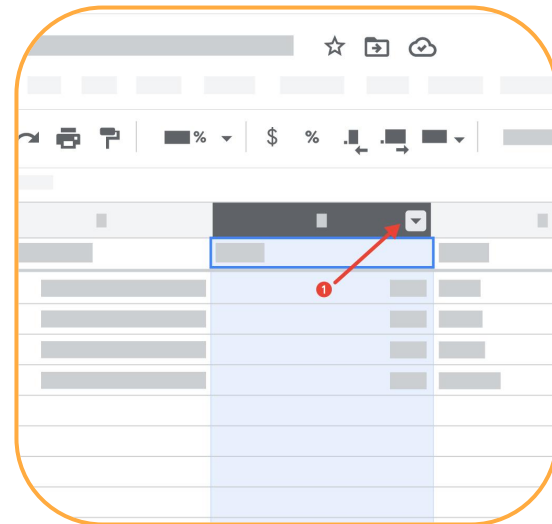


## Sorting your data in Google Sheets

This will create a Google Sheet that is connected to your quiz. All answers will be automatically saved in the sheet whenever a student submits their quiz.

In Google Sheets, you have greater flexibility when it comes to handling the collected data. You can choose to sort your students' scores, for example, so you can easily identify the students that might need extra support or who need extension work.

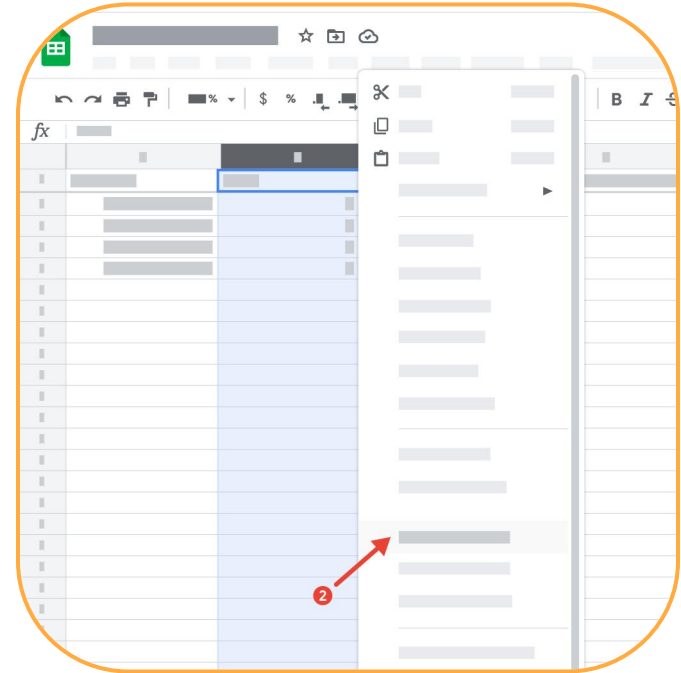
1. Hover over the letter above the word **Score** and click the small triangle button to bring up the menu.



## 2. Click **Sort sheet A → Z**.

This will sort your entire sheet based on the scores, in ascending order.

Tip: use **Sort sheet A → Z** when you want to sort in alphabetical or ascending order, and **Sort sheet Z → A** when you want to sort in reverse alphabetical or descending order.



## FAQs

- How can Gemini (AI) help me create questions for my language assessments?  
Gemini is a great time-saver. You can paste a passage or poem and ask it to "Create 5 multiple-choice questions" or "Generate 3 short-answer questions," letting you focus on fine-tuning.
- What is the main difference between Google Docs (which we saw yesterday) and Google Sheets?  
Google Docs is like a digital notebook, best for writing text like essays and lesson plans. Google Sheets is like a digital ledger, best for organizing and analyzing data in rows and columns.
- Can I print out the responses from Google Forms if I need a physical copy?  
Yes. You can print individual responses from the 'Responses' tab in Forms or print the entire Google Sheet of results, giving you flexibility.
- Is there a limit to how many people can fill out my Google Form or how much data I can collect in Google Sheets?  
For most school uses, you are highly unlikely to hit the limits. The limits are very generous—Forms can handle thousands of responses, and Sheets can store huge amounts of data.
- After students finish the test, where do all the answers go? Is it easy to see their scores?  
Answers are automatically collected in two places:
  - The 'Responses' tab in Google Forms (for summaries and individual scores).
  - A linked Google Sheet, which acts like a digital gradebook with all scores neatly organized.



Thank You!

