

# Ask Questions to Make Data-Driven Decisions

## ★ Ask effective questions



Ask

### Step 1: Ask

It's impossible to solve a problem if you don't know what it is. These are some things to consider:

- Define the problem you're trying to solve
- Make sure you fully understand the stakeholder's expectations
- Focus on the actual problem and avoid any distractions
- Collaborate with stakeholders and keep an open line of communication
- Take a step back and see the whole situation in context

#### Questions to ask yourself in this step:

1. What are my stakeholders saying their problems are?
2. Now that I've identified the issues, how can I help the stakeholders resolve their questions?



## Prepare

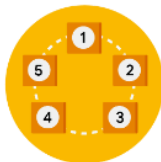
### Step 2: Prepare

You will decide what data you need to collect in order to answer your questions and how to organize it so that it is useful. You might use your business task to decide:

- What metrics to measure
- Locate data in your database
- Create security measures to protect that data

#### Questions to ask yourself in this step:

1. What do I need to figure out how to solve this problem?
2. What research do I need to do?



## Process

### Step 3: Process

Clean data is the best data and you will need to clean up your data to get rid of any possible errors, inaccuracies, or inconsistencies. This might mean:

- Using spreadsheet functions to find incorrectly entered data
- Using SQL functions to check for extra spaces
- Removing repeated entries
- Checking as much as possible for bias in the data

#### Questions to ask yourself in this step:

1. What data errors or inaccuracies might get in my way of getting the best possible answer to the problem I am trying to solve?
2. How can I clean my data so the information I have is more consistent?



## Analyze

### Step 4: Analyze

You will want to think analytically about your data. At this stage, you might sort and format your data to make it easier to:

- Perform calculations
- Combine data from multiple sources
- Create tables with your results

#### Questions to ask yourself in this step:

1. What story is my data telling me?
2. How will my data help me solve this problem?
3. Who needs my company's product or service? What type of person is most likely to use it?



Share

## Step 5: Share

Everyone shares their results differently so be sure to summarize your results with clear and enticing visuals of your analysis using data via tools like graphs or dashboards. This is your chance to show the stakeholders you have solved their problem and how you got there. Sharing will certainly help your team:

- Make better decisions
- Make more informed decisions
- Lead to stronger outcomes
- Successfully communicate your findings

### Questions to ask yourself in this step:

1. How can I make what I present to the stakeholders engaging and easy to understand?
2. What would help me understand this if I were the listener?



Act

## Step 6: Act

Now it's time to act on your data. You will take everything you have learned from your data analysis and put it to use. This could mean providing your stakeholders with recommendations based on your findings so they can make data-driven decisions.







### Questions to ask yourself in this step:

1. How can I use the feedback I received during the share phase (step 5) to actually meet the stakeholder's needs and expectations?

These six steps can help you to break the data analysis process into smaller, manageable parts, which is called **structured thinking**. This process involves four basic activities:

1. Recognizing the current problem or situation
2. Organizing available information
3. Revealing gaps and opportunities
4. Identifying your options

Data analysts typically work with six problem types

<b>1. Making predictions</b> 	<b>2. Categorizing things</b> 	<b>3. Spotting something unusual</b> 
<b>4. Identifying themes</b> 	<b>5. Discovering connections</b> 	<b>6. Finding patterns</b> 

Description

Using data to make informed decisions about how things may be in the future.

Problem type

Making predictions

Description

Grouping data based on common features.

Problem type

Categorizing things

Description

Identifying data that is different from the norm.

Problem type

Spotting something unusual

Description

Recognizing broader concepts and trends from categorized data.

Problem type

## Identifying themes

Description

Identifying similar challenges across different entities—and using data and insights to find common solutions.

Problem type

## Discovering connections

Description

Using historical data about what happened in the past to understand how likely it is to happen again.

Problem type

## Finding patterns

## ★ Craft Effective Questions(SMART)

Highly effective questions are SMART questions:

S M A R T



<b>Specific:</b> Is the question specific? Does it address the problem? Does it have context? Will it uncover a lot of the information you need?	<b>Measurable:</b> Will the question give you answers that you can measure?	<b>Action-oriented:</b> Will the answers provide information that helps you devise some type of plan?	<b>Relevant:</b> Is the question about the particular problem you are trying to solve?	<b>Time-bound:</b> Are the answers relevant to the specific time being studied?
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### Examples of SMART questions

Here's an example that breaks down the thought process of turning a problem question into one or more SMART questions using the SMART method: **What features do people look for when buying a new car?**

- **Specific:** Does the question focus on a particular car feature?
- **Measurable:** Does the question include a feature rating system?
- **Action-oriented:** Does the question influence creation of different or new feature packages?
- **Relevant:** Does the question identify which features make or break a potential car purchase?
- **Time-bound:** Does the question validate data on the most popular features from the last three years?

Questions should be **open-ended**. This is the best way to get responses that will help you accurately qualify or disqualify potential solutions to your specific problem. So, based on the thought process, possible SMART questions might be:

- On a scale of 1-10 (with 10 being the most important) how important is your car having four-wheel drive? Explain.
- What are the top five features you would like to see in a car package?
- What features, if included with four-wheel drive, would make you more inclined to buy the car?
- How does a car having four-wheel drive contribute to its value, in your opinion?

## Things to avoid when asking questions

**Leading questions:** questions that only have a particular response

- Example: **This product is too expensive, isn't it?**

This is a leading question because it suggests an answer as part of the question. A better question might be, "What is your opinion of this product?" There are tons of answers to that question, and they could include information about usability, features, accessories, color, reliability, and popularity, on top of price. Now, if your problem is actually focused on pricing, you could ask a question like "What price (or price range) would make you consider purchasing this product?" This question would provide a lot of different measurable responses.

**Closed-ended questions:** questions that ask for a one-word or brief response only

- Example: **Were you satisfied with the customer trial?**

This is a closed-ended question because it doesn't encourage people to expand on their answer. It is really easy for them to give one-word responses that aren't very informative. A better question might be, "What did you learn about customer experience from the trial?" This encourages people to provide more detail besides "It went well."

**Vague questions:** questions that aren't specific or don't provide context

- Example: **Does the tool work for you?**

This question is too vague because there is no context. Is it about comparing the new tool to the one it replaces? You just don't know. A better inquiry might be, "When it comes to data entry, is the new tool faster, slower, or about the same as the old tool? If faster, how much time is saved? If slower, how much time is lost?" These questions give context (data entry) and help frame responses that are measurable (time).



## The scenario

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You are three weeks into your new job as a junior data analyst. The company you work for has just collected data on their weekend sales. Your manager asks you to perform a thorough exploration of this data. To get this project started, you must ask some questions and get some information.

### SMART questions

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As a refresher, SMART questions are:

- **Specific:** Questions are simple, significant, and focused on a single topic or a few closely related ideas.
- **Measurable:** Questions can be quantified and assessed.
- **Action-oriented:** Questions encourage change.
- **Relevant:** Questions matter, are important, and have significance to the problem you're trying to solve.
- **Time-bound:** Questions specify the time to be studied.

Next, you will use the SMART framework to ask effective questions about the scenario above. Then, you will reflect on the topics your SMART questions should address.

### Ask the right type of questions

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You can apply the SMART framework to all types of questions. The type of questions you ask can help you explore deeper with your data. Consider the ways your questions help you examine objectives, audience, time, security, and resources.

Some common topics for questions include:

- **Objectives**
- **Audience**
- **Time**
- **Resources**
- **Security**

Think about how you can ask SMART questions about each of these topics.

## Reflection

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Consider the scenario above:

- Based on the SMART framework, which questions are most important to ask?
- How will these questions clarify the requirements and goals for the project?
- How does asking detailed, specific questions benefit you when planning for a project? Can vague or unclear questions harm a project?

Here are a few questions you might want to ask:

- When is the project due?
- Are there any specific challenges to keep in mind?
- Who are the major stakeholders for this project, and what do they expect this project to do for them?
- Who am I presenting the results to?

Here are some examples of questions you might ask based on the suggested topics:

- **Objectives:** What are the goals of the deep dive? What, if any, questions are expected to be answered by this deep dive?
- **Audience:** Who are the stakeholders? Who is interested or concerned about the results of this deep dive? Who is the audience for the presentation?
- **Time:** What is the time frame for completion? By what date does this need to be done?
- **Resources:** What resources are available to accomplish the deep dive's goals?
- **Security:** Who should have access to the information?

## Plan for the conversation




First, decide who you will speak with and how they might use data. Your goal is to plan for a successful conversation. Think about how much time you need and how you will use it. For this step, review the following advice:

- **Prioritize your questions:** Prepare to ask the most important and interesting questions first.
- **Make your time count:** Stay on subject during the conversation.
- **Clarify your understanding:** To avoid confusion, build in some time to summarize answers to make sure you understood them correctly. This will go a long way in helping you avoid mistakes. For example, in a conversation with a teacher, you might check your understanding with a statement like, “Just to double check that I understand what you’re saying correctly, you currently use test scores in the following ways...”

Depending on the field they are in, the person you chat with may not be comfortable sharing detailed data with you. That's okay! Be sure to respect what they are willing to share during your conversation.

## Create questions



Now, come up with questions to help you understand their business goals, the type of data they interact with, and any limitations of the data.

Use the SMART question framework to make sure each question you ask makes sense based on their field. Each question should meet as many of the SMART criteria as possible.

For instance, if you have a conversation with someone who works in retail, you might lead with questions like:

- **Specific:** Do you currently use data to drive decisions in your business? If so, what kind(s) of data do you collect, and how do you use it?
- **Measurable:** Do you know what percentage of sales is from your top-selling products?
- **Action-oriented:** Are there business decisions or changes that you would make if you had the right information? For example, if you had information about how umbrella sales change with the weather, how would you use it?
- **Relevant:** How often do you review data from your business?
- **Time-bound:** Can you describe how data helped you make good decisions for your store(s) this past year?

If you are having a conversation with a teacher, you might ask different questions, such as:

- **Specific:** What kind of data do you use to build your lessons?
- **Measurable:** How well do student benchmark test scores correlate with their grades?
- **Action-oriented:** Do you share your data with other teachers to improve lessons?
- **Relevant:** Have you shared grading data with an entire class? If so, do students seem to be more or less motivated, or about the same?
- **Time-bound:** In the last five years, how many times did you review data from previous academic years?

If you are having a conversation with a small business owner of an ice cream shop, you could ask:

- **Specific:** What data do you use to help with purchasing and inventory?
- **Measurable:** Can you order (rank) these factors from most to least influential on sales: price, flavor, and time of year (season)?
- **Action-oriented:** Is there a single factor you need more data on so you can potentially increase sales?
- **Relevant:** How do you advertise to or communicate with customers?
- **Time-bound:** What does your year-over-year sales growth look like for the last three years?

### Take good notes



It is important to take good notes during your conversation. Your notes should be comprehensive and useful. To help you capture meaningful notes, you should stick to a process of asking a question, clarifying your understanding of their response, and then briefly recording it in your notes.

Remember: If a question is worth asking, then the answer is worth recording. Commit yourself to taking great notes during your conversation.

For example, if the previous SMART questions led the ice cream shop owner to propose a project to analyze customer flavor preferences, your notes might appear something like this:

- **Project:** Collect customer flavor preference data.
- **Overall business goal:** Use data to offer or create more popular flavors.
- **Two data sources:** Cash register receipts and completed customer surveys (email).
- **Target completion date:** Q2
- **To do:** Call back later and speak with the manager about the location of survey data.

The notes you will take will differ greatly based on the data conversation you have. The important thing is that your notes are clear, organized, and concise.

**The more questions you ask, the more you learn about your data, and the more powerful your insights will be.**

★ **Make data-driven decisions(understand the power of data)**

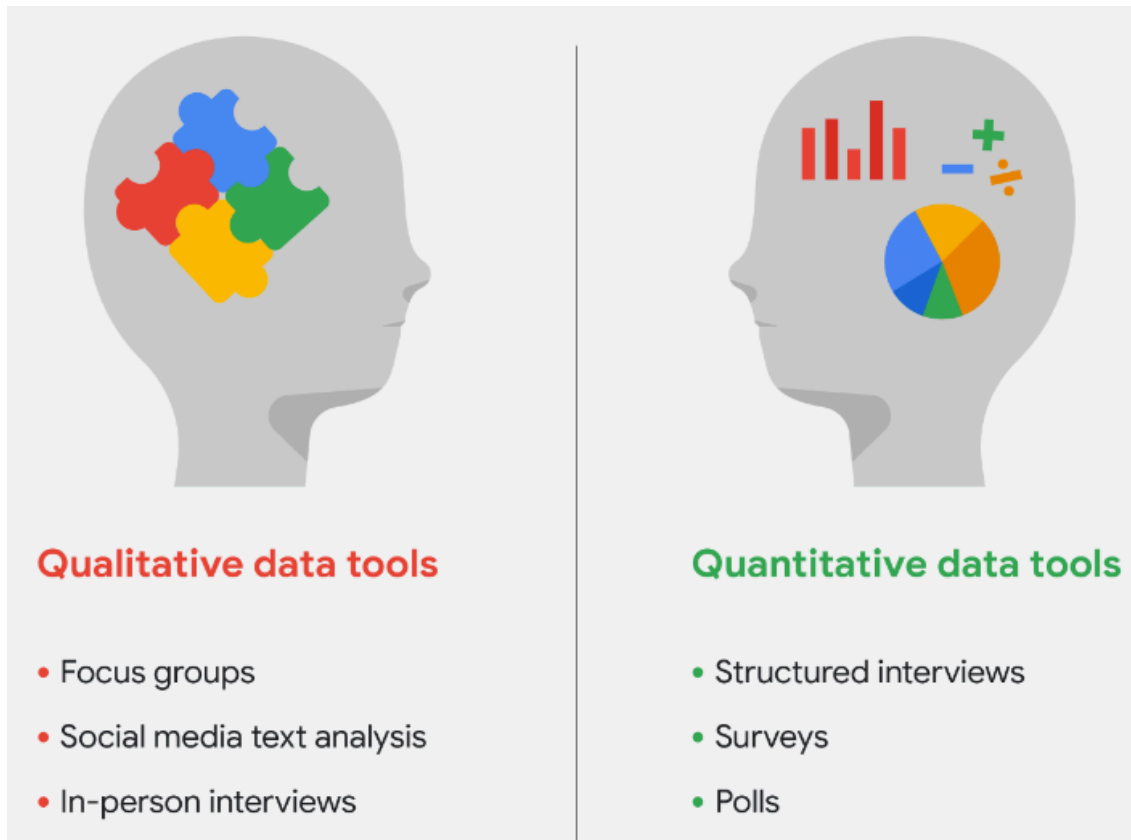
## Data-inspired decision-making

Explores different data sources to find out what they have in common

### Example of a data-driven decision

A/B testing is a simple example of collecting data for data-driven decision-making. For example, a website that sells widgets has an idea for a new website layout they think will result in more people buying widgets. For two weeks, half of their website visitors are directed to the old site; the other half are directed to the new site. After those two weeks, the analyst gathers the data about their website visitors and the number of widgets sold for analysis. This helps the analyst understand which website layout resulted in more widget sales. If the new website performed better in producing widget sales, then the company can confidently make the decision to use the new layout!

**In a data-inspired decision, a customer support center aims to improve customer satisfaction, analyzing CSAT scores and qualitative descriptions from customers. The manager also interviews support center staff for insights. Using this combined data, the manager formulates a strategy to address areas needing improvement, incorporating both quantitative and qualitative inputs.**



### The three (or four) V words for big data

When thinking about the benefits and challenges of big data, it helps to think about the three Vs: **volume**, **variety**, and **velocity**. Volume describes the amount of data. Variety describes the different kinds of data. Velocity describes how fast the data can be processed. Some data analysts also consider a fourth V: **veracity**. Veracity refers to the quality and reliability of the data. These are all important considerations related to processing huge, complex datasets.

Volume	Variety	Velocity	Veracity
The amount of data	The different kinds of data	How fast the data can be processed	The quality and reliability of the data

★ Spreadsheet magic

## Spreadsheet tasks

- Organize your data
  - Pivot table
  - Sort and filter
- Calculate your data
  - Formulas
  - Functions

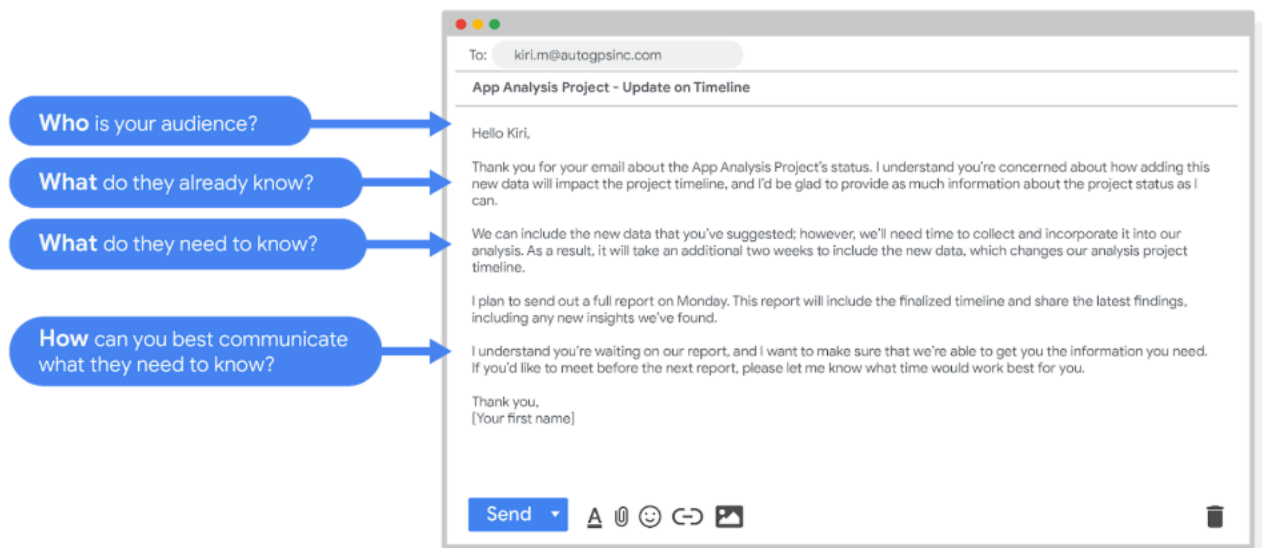
★ Always remember the stakeholders

1. Who are the primary and secondary stakeholders?
2. Who is managing the data?
3. Where can you go for help?

**Focus on what matters!**

## Before you communicate, think about

1. Who your audience is
2. What they already know
3. What they need to know
4. How you can communicate that effectively to them



**Think about your process and outcome!**