

Ask Testable Questions from Observations

How to use: Print first for the main practice. Then use the device to repeat activities and save progress.

LEARNING OBJECTIVES

- 1 Describe what makes a science question testable
- 2 Turn an everyday observation into a testable question
- 3 Rewrite a vague question as a specific, measurable one
- 4 Sort questions as testable or not testable

MINI LESSON

Every science investigation begins with a question. But not every question can be answered by an experiment. A testable question is one you can answer by observing or measuring something. It points to a clear comparison, a measurable outcome, and a fair way to collect data. Learning to spot the difference between a testable question and an opinion question is the first move of every real scientist.

What Makes a Question Testable

- It can be answered by measuring something — height, time, mass, temperature, count.
- It compares two or more conditions clearly (with vs without, hot vs cold, more vs less).
- It avoids opinion words like best, prettiest, nicest, or most fun.
- It is specific enough that two scientists would set up the same experiment.
- It can be repeated and the result can be checked again.

From Observation to Testable Question

A good testable question almost always begins with an observation. You notice something happening in the world, you wonder why, and then you turn that wonder into a question you can actually test. The trick is to keep narrowing it down until every word in the question can be measured or compared.

1. Observe — notice something specific. Example: my plant near the window grew taller than the one in the closet.
2. Wonder — ask yourself what might be causing the difference. Example: maybe sunlight matters.
3. Draft — write a first question. Example: do plants like sunlight?
4. Sharpen — replace opinion words with measurable ones. Example: do bean plants near a sunny window grow taller in 2 weeks than bean plants kept in a closet?

Testable vs Not Testable

- TESTABLE: Does fertilizer make tomato plants grow taller in 4 weeks?
- NOT TESTABLE: Are tomatoes the best vegetable? (opinion)
- TESTABLE: Which paper towel brand absorbs the most water in 30 seconds?
- NOT TESTABLE: Which paper towel is the prettiest? (opinion)
- TESTABLE: Does temperature affect how fast sugar dissolves in water?
- NOT TESTABLE: Is sugar nicer than salt? (opinion)

! Tip: if a question contains a word like best, nicest, prettiest, or most fun, it is probably an opinion. Replace those words with something you can measure (taller, faster, more grams, more seconds).

VOCABULARY

observation Something you notice using your senses or a measuring tool.

testable question A question that can be answered by measuring or comparing something.

measurable Something you can count, weigh, time, or measure with a tool.

opinion A personal view that cannot be proven with measurements.

comparison Looking at two or more conditions to see how they differ.

Testable vs Not Testable

Testable

Can be measured

- ✓ Does fertilizer make plants grow taller?
- ✓ Which paper towel absorbs the most water?
- ✓ Does temperature affect how fast ice melts?
- ✓ Do magnets attract every type of metal?

Not Testable

Opinion or feeling

- ✗ Are flowers pretty?
- ✗ Which fruit tastes the best?
- ✗ Is space exploration a good idea?
- ✗ Are dogs nicer than cats?

Rewrite a Question to be Testable

Vague

Cannot measure.

Are plants healthy in my room?



Specific

Better, but vague.

Do plants in my room grow well?



Testable

Measure height in cm.

Do bean plants near a window grow taller in 2 weeks than ones in a closet?

VOCABULARY

observation Something you notice using your senses or a measuring tool.

testable question A question that can be answered by measuring or comparing something.

measurable Something you can count, weigh, time, or measure with a tool.

opinion A personal view that cannot be proven with measurements.

comparison Looking at two or more conditions to see how they differ.

GUIDED PRACTICE — WRITE YOUR RESPONSE

Read the prompt and use at least 6 of the vocabulary words below. Write at least 45 words.

Prompt

Write 3-4 sentences explaining what you have learned. Use at least 6 of the vocabulary words below.

VOCABULARY — USE AT LEAST 6

observation · testable · measurable · opinion · comparison · specific

Write at least 45 words.

EXERCISES — SORT & MATCH

Sort each question into Testable or Not testable.

SENTENCES TO SORT

1. Does fertilizer make plants grow taller in 4 weeks?
2. Are flowers pretty?
3. Which paper towel absorbs the most water in 30 seconds?
4. Which fruit tastes the best?
5. Does sugar dissolve faster in hot water than cold water?
6. Is space exploration a good idea?
7. Do magnets attract every type of metal?
8. Are dogs nicer than cats?
9. Does a heavier ball roll down a ramp faster than a light one?
10. Which planet in the solar system is the most beautiful?
11. How many seconds does an ice cube take to melt at room temperature?
12. Is science class more fun than art class?

Write the number of each sentence in the correct bucket below.

Testable

Not testable

“Flip the page upside down to see the answer key “

Testable: Does fertilizer make plants grow taller in 4 weeks? Which paper towel absorbs the most water in 30 seconds? Does sugar dissolve faster in hot water than cold water? Do magnets attract every type of metal? Does a heavier ball roll down a ramp faster than a lighter one? How many seconds does an ice cube take to melt at room temperature? | Not testable: Are flowers pretty? Which fruit tastes the best? Is space exploration a good idea? Are dogs nicer than cats? Which planet in the solar system is the most beautiful? Is science class more fun than art class?

EXERCISES — FILL IN THE BLANKS

Rewrite as a Testable Question — fill in each section in clear sentences.

1. Observation: _____
2. Vague question: _____
3. What makes it vague: _____
4. Testable rewrite: _____
5. How I would measure the answer: _____

PRACTICE — DICTATION / TYPING

Without looking, explain what makes a science question testable and give one example.

What makes a science question testable, and what is one example of a testable question?
Think: can the answer be measured or compared? Replace opinion words with measurable ones.

“Flip the page upside down to see the answer key “

testable / measure / observation / specific / compare

EXERCISES — WRITE YOUR ANSWER

Take a vague question and rewrite it as a testable one. Show how you would measure the answer.

Title

Observation

Vague question

What makes it vague

Testable rewrite

How I would measure the answer

EXERCISES — MULTIPLE CHOICE

Circle the best answer.

1. Which of these is a TESTABLE science question?

- Are sunflowers the prettiest flower?
- Do sunflowers grow taller in soil with fertilizer than soil without it?
- Is gardening a fun hobby?

2. A testable question must...

- Have an obvious answer everyone already knows
- Be answerable by measuring or observing something
- Be about a famous scientist

3. Which word in a question is a strong sign that the question is NOT testable?

- best
- taller
- faster

4. You observe that ice melts faster on the kitchen counter than in the fridge. Which is the BEST testable rewrite?

- Is melting ice fun to watch?
- How long does an ice cube take to melt at room temperature compared to in the fridge?
- Why is the kitchen the nicest place for ice?

5. Why does a testable question need to be specific?

- So that two scientists could set up the same experiment to check it
- So that it sounds clever in a report
- So that nobody else can answer it

6. Which question is NOT testable?

- Does temperature affect how fast sugar dissolves?
- Which class pet is the cutest?
- Do bigger seeds sprout sooner than smaller seeds?

7. A student asks: Are LED bulbs better than regular bulbs? How can they make this question testable?

- Replace better with a measurable comparison, like brightness in lumens or energy use in watts
- Make the question shorter
- Add the word science to the start

8. What is the BEST first step in turning an observation into a testable question?

- Pick the answer you already believe and write it down
- Look for opinion words and replace them with measurable comparisons
- Add as many big science words as possible

"Flip the page upside down to see the answer key"

1. b 2. b 3. a 4. b 5. a 6. b 7. a 8. b

ASSESSMENT

PARENT / TEACHER CHECKLIST

- Can describe what makes a science question testable
- Can turn an everyday observation into a testable question
- Can rewrite a vague question as a specific, measurable one
- Can sort science questions as testable or not testable
- Can explain why testable questions must be specific and repeatable