Variables

- Independent
- Dependent
- Controlled

Science Task Cards

Created by Kelly Ann
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The Basics

These task cards can be used individually, in pairs, small groups, or even whole group. There are 28 cards in hopes that you will have at least 1 per student if you need a class set. It is best if they are printed on card stock and laminated (color or B&W) for durability and repeated use.

A few possible uses:
- Place the cards around the room and let the students rotate
- Work in pairs and discuss
- Teach students to complete them when they finish an assignment early
- Send them home as homework for practice
- Use in centers

What the students do:
Students read each card carefully, then write their response on the Student Answers Recording Sheet (or notebook paper). If you want them to self-check, place a copy of the answers in a designated location or have students come to you to view the answer key. The recording sheets can also be collected and scored as an assessment.

These task cards are intended for practice or review of content that has already been taught.
### Variables
Student Answer Recording Sheet

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Notes:
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<td>cause and effect</td>
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Experiments are a great way to observe cause and effect relationships.

By conducting an experiment, you are problem solving and looking for answers.

On your answer sheet, write cause and effect.

When planning an experiment, you must always consider your variables.

In science, a variable is something that can be changed, controlled, or measured.

On your answer sheet, write variables.

There are 3 types of scientific variables.

1. Independent (the cause)
2. Dependent (the effect)
3. Controlled (the constants)

On your answer sheet, write the 3 types of variables.

The independent variable is what you are going to change and test.

When you test an independent variable, you collect data by recording what happened.

On your answer sheet, write independent variable.
Controlled variables are the constant factors that do not change when conducting an experiment. For example, if you are comparing the growth of two different plants to see which one grows taller, you must keep certain factors the same for both plants. The amount of water and sunlight they each receive should be the same.

Write controlled variables on your answer sheet.

The dependent variable is what you measure or observe. In a cause and effect relationship, the dependent variable is the effect.

On your answer sheet, write dependent variable.

An experiment can only have one independent variable. This means that you should only change one factor at a time so that your results are valid.

Valid means accurate and reliable.

On your answer sheet, write valid.

Independent variable example:

If you are testing 2 different battery brands to see which one lasts longer, your independent variable is the brand of battery because you are using different brands.

On your answer sheet, write: independent variable = brand.
**VARIABLES**

Dependent variable example:
If you are testing 2 different battery brands to see which one lasts longer, your **dependent** variable is the **amount of time** it takes to use up the batteries, because it depends on the brand.

On your answer sheet, write:
**dependent variable = time**

Controlled variables example:
If you are testing 2 different battery brands to see which one lasts longer, one of your **controlled** variables could be the device you put the batteries in (ex. flashlight). You should use the same flashlight for each test to get valid results.

On your answer sheet, write:
**controlled variables = constants**

**Question to be tested:**
Does warm water or cold water dissolve salt faster?

Which is the **independent variable**?

a. temperature of water  
b. speed that salt dissolves  
c. amount of water

On your answer sheet, write the letter of the correct answer.

**Question to be tested:**
Does warm water or cold water dissolve salt faster?

Which is the **dependent variable**?

a. temperature of water  
b. speed that salt dissolves  
c. amount of water

On your answer sheet, write the letter of the correct answer.
Question to be tested: *Does warm water or cold water dissolve salt faster?*  
Which is a controlled variable?  
a. temperature of water  
b. speed that salt dissolves  
c. amount of water  
On your answer sheet, write the letter of the correct answer.

Question to be tested: *Which brand of laundry detergent works better to remove grass stains?*  
Which is the independent variable?  
a. type of clothing  
b. brand of detergent  
c. cleanliness of the clothes  
On your answer sheet, write the letter of the correct answer.

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17. Variables

Question to be tested:
Do tree frogs jump farther than blue dart frogs?

Which is the independent variable?

a. distance jumped
b. jumping conditions
c. type of frog

On your answer sheet, write the letter of the correct answer.

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On your answer sheet, write the letter of the correct answer.

20. Variables

Question to be tested:
Do sunflowers grow taller in direct sunlight or partial sunlight?

Which is the independent variable?

a. type of flower
b. amount of sunlight
c. height of the sunflowers

On your answer sheet, write the letter of the correct answer.
Question to be tested:
Do sunflowers grow taller in direct sunlight or partial sunlight?

Which is the dependent variable?
- a. type of flower
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On your answer sheet, write the letter of the correct answer.

Question to be tested:
Does the amount of water in a pot affect how fast it boils?

Which is the independent variable?
- a. how fast the water boils
- b. amount of water
- c. temperature of stove

On your answer sheet, write the letter of the correct answer.

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Question to be tested:
Which type of ball rolls down a 3-foot ramp the fastest?

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Write controlled variables on your answer sheet.

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On your answer sheet, write valid.

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