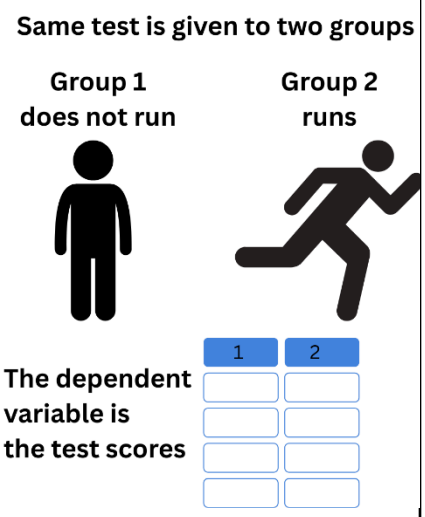
Science Experiment Terms and Activity

Term	Definition & Example
Variable (vair-ee-uh-buhl)	Variable comes from the word 'vary' which means to change. *Example* Weather can vary during a day, changing from rain to sunshine and clouds. A variable is anything that can change in a plan. When doing an experiment, it is something (a condition or factor) that can have an effect on the outcome. *Example* • Say you are making orange juice from freshly squeezed oranges. • You squeeze juice from 5 oranges and mix with a cup of water. • The oranges and the water are **variables** that can be changed. 
Manipulate (muh-nip-yuh-la yt)	To manipulate means to change something on purpose. In an experiment, a scientist will purposely change (manipulate) a variable. This is what is being tested.
Independent variable (in-di-pen-duhnt vair-ee-uh-buhl)	An independent variable is the variable being manipulated by the experimenters. The experimenters should change only one variable at a time. This way they can know that any possible changes are caused by that specific variable. *Example* Let's imagine that you didn't know how salt, sugar, and pepper flavoured your food (but you knew they were safe to eat). If you added all three to your food at the same time, you wouldn't be able to tell which ingredient did what. But if you added one at a time, you could tell what each one did individually.  This is why it's important to test just one variable at a time, independently

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Term	Definition & Example
Dependent variable (di-pen-duhnt vair-ee-uh-buhl)	A dependent variable is what is being tested for the effect of the change on the independent variable. The change being examined should be recorded as a quantity (number). *Example* Imagine an experiment where you measure the effects of running right before a test. You could compare two groups right before they take the same test. One group would run, and the other group would not. In this case, running is the independent variable. The **test scores are the dependent variable**, because you are measuring the test scores for the effect that running might have had. 
Control variable (kuhn-trohl vair-ee-uh-buhl)	A variable that is kept the same in an experiment.
Controlled experiment (kuhn-trohld Ik-sper-uh-muhnt)	A controlled experiment is an investigation in which one variable is changed and all other variables are kept the same.

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Science Experiment Terms and Activity

Term	Example of a Science Experiment
Question (kwes-chuhn)	This is what you want to learn about. This should include the variable you're manipulating (the independent variable), the variable you're observing (the dependent variable), and the relationship between them. *Example* What are differences in taste between orange juice made with 6 oranges and a cup of water compared to making it with 5 oranges and a cup of water?
Hypothesis (hy-poth-uh-sis)	Predict what the answer to your scientific question will be. *Example* Orange juice made from 6 oranges and cup of water will taste sweeter and more orange flavored than with only 5 oranges and a cup of water.
Materials (muh-tee-ree-uhlz)	This is a list of things required to complete the experiment, with the quantity of each item. Includes safety items. *Example* • 11 same sized oranges • A measuring cup for 1 cup of water • A knife to cut oranges in half to squeeze • An orange squeezer • 2 large cups to put the squeezed orange juice into • 2 jugs/containers that can hold about 2 cups of liquid (water and orange juice) • Large stirring spoon • 6 tasting cups and tape and a marker
Procedure (pruh-see-juh)	This is a step-by-step explanation of how to complete a scientific experiment. Steps should be written in sentence form, in the past tense. *Example* • Washed hands and all utensils • Set up workspace for two testing groups. Group 1 - 5 oranges. Group 2 - 6 oranges. • Cut oranges in half for both groups. • Squeezed the juice using the orange squeezer. #1 cup – juice from 5 oranges #2 cup – juice from 6 squeezed oranges • Measured 1 cup of water and poured into #1 jug. • Repeated for #2 jug. • Added orange juice from #1 cup to #1 jug and stirred.

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Science Experiment Terms and Activity

	• Repeat - #2 cup, #2 jug, stirred. • Poured ¼ cup #1 mix (5 oranges) into 3 tasting cups marked X. • Poured ¼ cup #2 mix (6 oranges) into 3 tasting cups marked Y. • Asked 3 people to drink all of both X and Y cups and record which they preferred for sweetness and orange flavour.
Results (ri-zults)	These are the recorded findings of the experiment based on the data, so this could be charts, graphs, and other quantitative data. Written or spoken comments (qualitative data) can also be collected as part of results. They can provide some extra details and helpful information. *Example* Tester#1 X = sweeter Y= more flavour Tester#1 Y = sweeter Y= more flavour Tester#3 Y = sweeter Y= more flavour
Analysis (uh-nal-uh-sis)	A condition or factor that can influence the outcome of an experiment.
Conclusion (uh-nal-uh-sis)	The conclusion answers the question. Evidence from a controlled experiment can be used to make conclusions about cause-and-effect relationships between variables. *Example* *With two of three taste testers preferring the juice mixture made of 6 oranges, this seems to be tastier and sweeter choice. This could be tested again using more people to see if the same results and conclusion are found.*

Match Terms to Definitions

Match the term to the definition.

Term	Definition
____ **Variable** (vair-ee-uh-buhl)	A. What is being tested for the effect of the change on the independent variable.
____ **Independent variable** (in-di-pen-duhnt air-ee-uh-buhl)	B. Findings of the experiment based on the data. Could be charts, graphs. Can include written or spoken comments (qualitative data).
____ **Dependent variable** (di-pen-duhnt vair-ee-uh-buhl)	C. An experiment in which one variable is changed and all other variables are kept the same.
____ **Control variable** (kuhn-trohl vair-ee-uh-buhl)	D. The list of things required to complete the experiment, with the quantity of each item.
____ **Controlled experiment** (kuhn-trohld Ik-sper-uh-muhnt)	E. A prediction of what the answer to your scientific question will be.
____ **Question** (kwes-chuhn)	F. A step-by-step explanation of how to complete a scientific experiment.
____ **Hypothesis** (hy-poth-uh-sis)	G. An explanation of what the results mean. Includes what you have learned based on the variables of the experiment and how they are related.
____ **Materials** (muh-tee-ree-uhlz)	H. Answers the question. Explains cause-and-effect relationships between variables.
____ **Procedure** (pruh-see-juhr)	I. Any factor or condition that can change in an experiment plan.
____ **Results** (ri-zults)	*J.* A variable that is kept the same in an experiment.
____ **Analysis** (uh-nal-uh-sis)	K. A variable being manipulated by the experimenters.
____ **Conclusion** (kuhn-kloo-juhn)	*L.* What you want to learn about. It includes the variable you're manipulating (the independent variable), the variable you're observing (the dependent variable), and the relationship between them.

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ANSWERS - Match Terms to Definitions

Term	Definition
I Variable (vair-ee-uh-buhl)	A. What is being tested for the effect of the change on the independent variable.
K Independent variable (in-di-pen-duhnt vair-ee-uh-buhl)	B. Findings of the experiment based on the data. Could be charts, graphs. Can include written or spoken comments (qualitative data).
A Dependent variable (di-pen-duhnt vair-ee-uh-buhl)	C. An experiment in which one variable is changed and all other variables are kept the same.
J Control variable (kuhn-trohl vair-ee-uh-buhl)	D. The list of things required to complete the experiment, with the quantity of each item.
C Controlled experiment (kuhn-trohld Ik-sper-uh-muhnt)	E. A prediction of what the answer to your scientific question will be.
L Question (kwes-chuhn)	F. A step-by-step explanation of how to complete a scientific experiment.
E Hypothesis (hy-poth-uh-sis)	G. An explanation of what the results mean. Includes what you have learned based on the variables of the experiment and how they are related.
D Materials (muh-tee-ree-uhlz)	H. Answers the question. Explains cause-and-effect relationships between variables.
F Procedure (pruh-see-juhr)	I. Any factor or condition that can change in an experiment plan.
B Results (ri-zults)	*J.* A variable that is kept the same in an experiment.
G Analysis (uh-nal-uh-sis)	K. A variable being manipulated by the experimenters.
H Conclusion (kuhn-kloo-juhn)	*L.* What you want to learn about. It includes the variable you're manipulating (the independent variable), the variable you're observing (the dependent variable), and the relationship between them.

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Create A Science Experiment

Name(s) _____

Steps	Science Experiment
Use the science experiment example to help plan your own.	
Write your **question.** *What is it you want to learn about? Make sure it is measurable.*	
Write your **hypothesis.** *What do you predict will happen in your experiment?*	
Writ a list of **materials.** *Make sure to include everything.*	
Write **procedure** steps. *Make sure it is in the order you will do the experiment.*	
Show your **results**. *What did you find out from your experiment? Can you use charts or to show your data?*	
Write a **conclusion.** *What kind of next experiment would help confirm results?*	

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