

Dear Families,

To assist students and families with some science learning opportunities, Worthington Schools has compiled these possible science investigations which can be completed at home. Many of these investigations use household items or things typical to central Ohio. If you do not have some of these items, skip those investigations, there are many other options. The goal would be to attempt one of the investigations each week.

These investigations are not step by step procedures for your student to follow to get one specific answer. There are many ways to investigate these items and many possible outcomes. The important aspect is to help students safely explore the world around using a scientific method or approach. This will help them build reasoning and problem solving skills.

To assist with the process, we have also provided four identical copies of the "Experiment Design" for grade K-1, and the "Steps to Inquiry" packet for grades 2-6. (More packets will be available upon request.) These forms will provide guiding questions to help ensure students are proceeding through a scientific approach towards an answer to their question. Your student may need assistance with understanding the form's questions depending upon their grade level. Please help the best you can, and please feel free to reach out to your student's teacher.

Remember, these are options to help students safely explore the world around them. If students start to become curious about observations other than the ones we provided, that is even better. This shows they are more curious and we are helping to equip them with the skills to learn. The "Observations" and "Wonderings" are provided to inspire students to start exploring.

3

Guiding Science Observations

Directions:

Each week, choose **one** "Observation" and one bulleted "Possible Wondering" for that observation and **then** complete the "Steps to Inquiry" form with that "Possible Wondering". Sample

3rd Grade:

Observations	Possible Wonderings
People often look like their parents.	<ul style="list-style-type: none">● In what ways do I look like my mom?● In what ways do I look like my dad?● In what ways do I look like my grandparents?
Dirt can look different in different places.	<ul style="list-style-type: none">● What is in the dirt near my house?
When I put water on some rocks the water will soak into the rock.	<ul style="list-style-type: none">● Do all rocks absorb water?● Can some rocks hold water?
Energy can be from different sources.	<ul style="list-style-type: none">● What is a source of energy that can be used over and over again?● What is a source of energy that can only be used once?

Investigation Design and Perform

Step 1: Observing & Questioning

Place sticky notes of the same colour in the space below.

WHAT DID I OBSERVE?
(What do you notice about the object or event?
Use your senses to describe the object or event.)

Place sticky notes of a new colour in the space below.

WHAT AM I WONDERING?
(What questions or predictions do you have about
the object or event?)

How can the questions be answered?
(Question Sort)

LABELLED DIAGRAM:

Experiment Design and Perform

Step 2(a): What could I measure or observe about the object, or event?

Brainstorm (Place sticky notes of the same colour in the space below.)

Possible Dependent Variables

Step 2(b): What could I change or vary about the object or event that may affect what I could measure or observe?

Brainstorm (Place sticky notes of a new colour in the space below.)

Variables

Experiment Design and Perform

Step 3(a): What will I change?

ONE VARIABLE I WILL CHANGE:

Independent Variable

(Place a sticky note from Step 2(b) here)

➔

I WILL MEASURE OR OBSERVE THIS RESULT:

Dependent Variable

(Place a sticky note from Step 2(a) here)

Step 3(b): What will I not change?

VARIABLES I WILL NOT CHANGE:

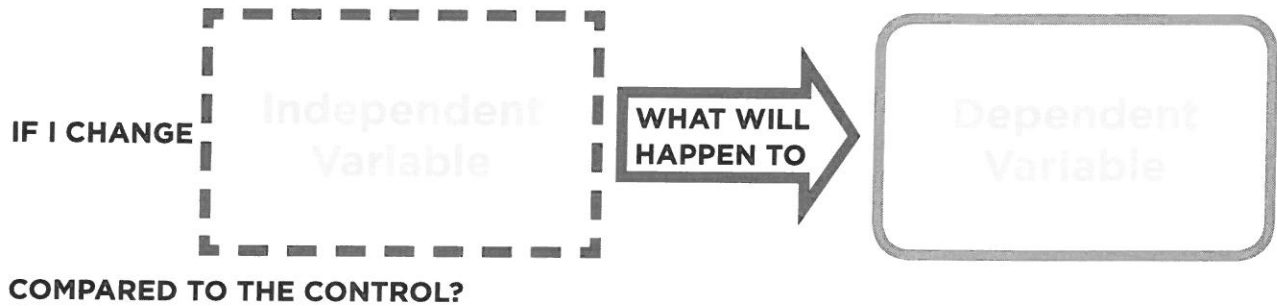
What conditions will be held constant so it is a fair test? Place remaining sticky notes from Step 2(b) here.

Controlled Variable	Controlled Variable	Controlled Variable
Controlled Variable	Controlled Variable	Controlled Variable

Level: 2

Experiment Design and Perform

Step 4: What is the question I want to explore?



Step 5: What is my hypothesis (what and why)?

BASED UPON MY QUESTION, I PREDICT THAT:

if the _____ is _____
Independent Variable How the independent variable will be changed
(e.g. increased or decreased, heated or cooled, stirred or not stirred...)

then the _____ will _____
Dependent Variable How the dependent variable will be affected
(e.g. increased or decreased, heated or cooled, stirred or not stirred...)

I think this will happen **because** _____

Results and Conclusions

Step 6: What is the result of my experiment?

Possible data table or other measurements

Step 7: What is my conclusion (what and why)?

Based upon my experiment I now know...

Handwriting lines for conclusion

Level: 2

Investigation Design and Perform

Step 1: Observing & Questioning

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(What do you notice about the object or event?
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(What questions or predictions do you have about
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Possible Dependent Variables


Step 2(b): What could I change or vary about the object or event that may affect what I could measure or observe?

Brainstorm (Place sticky notes of a new colour in the space below.)

Variables

Experiment Design and Perform

Step 3(a): What will I change?

<p>ONE VARIABLE I WILL CHANGE:</p> <div style="border: 2px dashed gray; padding: 20px; min-height: 150px; display: flex; align-items: center; justify-content: center;"> <p style="font-size: 2em; color: #ccc;">Independent Variable</p> </div> <p style="text-align: center; font-size: 0.8em;">(Place a sticky note from Step 2(b) here)</p>		<p>I WILL MEASURE OR OBSERVE THIS RESULT:</p> <div style="border: 2px solid gray; border-radius: 15px; padding: 20px; min-height: 150px; display: flex; align-items: center; justify-content: center;"> <p style="font-size: 2em; color: #ccc;">Dependent Variable</p> </div> <p style="text-align: center; font-size: 0.8em;">(Place a sticky note from Step 2(a) here)</p>
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Step 3(b): What will I not change?

VARIABLES I WILL NOT CHANGE:

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<div style="border: 2px dashed gray; padding: 10px; min-height: 100px;"> <p style="font-size: 1.5em; color: #ccc;">Controlled Variable</p> </div>	<div style="border: 2px dashed gray; padding: 10px; min-height: 100px;"> <p style="font-size: 1.5em; color: #ccc;">Controlled Variable</p> </div>	<div style="border: 2px dashed gray; padding: 10px; min-height: 100px;"> <p style="font-size: 1.5em; color: #ccc;">Controlled Variable</p> </div>
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Level: 2

Experiment Design and Perform

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I think this will happen **because** _____

Results and Conclusions

Step 6: What is the result of my experiment?

Possible data table or other measurements

Step 7: What is my conclusion (what and why)?

Based upon my experiment I now know...

Lined writing area for conclusion with a dashed border.

Level: 2

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Step 3(b): What will I not change?

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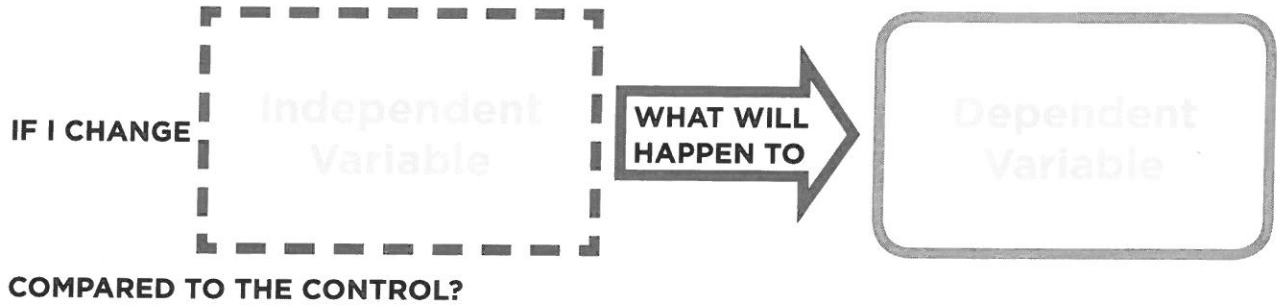
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