

## Sample Science Investigation Questions

The best question comes from your own wondering! If you need some ideas, the list below will help you get started! 😊

**Before choosing a testable question, ask yourself:**

1. Do I already have a good idea of the results? If so, that experiment is a waste of a good opportunity to grab your attention and answer a wondering. Choose something that you **are not** already aware of the results. This provides you the opportunity to question and wonder throughout the investigation.
2. Is the investigation manageable? Will it hold my attention throughout the process? (melting ice, evaporating water...hmmmm...)
3. Do I have or can I get the necessary materials? If I am doing 10 trials of three separate groups, do I have enough materials? (i.e. Experiments with plants require 10 plants for each group – control group, experimental group #1 and experimental group #2 – totaling 30 plants/seedlings.)
4. For Grades 3-5: Do I have a CLEAR understanding of my control group? Have I considered what might be defined as “under normal circumstances when choosing my independent variable?”
5. How will the results be measured? Will I be able to take accurate measurements? Do I have access to the appropriate measurement tool(s)?
6. Is there enough time to complete this investigation? (i.e. Growing plants takes time.)
7. In my experiment, do I truly have only one independent variable? Am I only changing ONE thing?

### **Force and Motion:**

Does the weight of a permanent magnet, 5g, 10g, or 15g, affect its strength, as measured in...?

Does the height of a ramp, 10cm, 20cm, 30cm, affect the distance a toy car will roll, as measured in...?

Does the mass of a car, 1g, 2g, or 3g, affect the distance it will roll from a ramp, as measured in...?

Does the material that the ramp is made of, wood, metal, or fabric, affect the distance a toy car will roll as measured in...?

Does the distance a rubber band is stretched, 0.25cm, 0.35cm, or 0.40cm, affect how far it will fly when released as measured in...?

Does the amount of weight suspended from a rubber band, 5g, 10g, or 15g, affect how far it stretches, as measured in...?

Does the surface of the ground, cement, wood, or tile, affect how far a ball will roll as measured in...?

Does the number of pulleys, 1, 2, or 3, affect the force necessary to lift a weight, as measured in...?

Does the length of a lever (from the fulcrum), 1cm, 2cm, or 3cm, affect the force necessary to lift a weight, as measured in...?

Does the length of a pendulum, 1cm, 2cm, or 3cm, affect its period (time it takes to swing), as measured in...?

Does the weight of a pendulum, 1g, 2g, or 3g, affect its period (time that it takes to swing), as measured in...?

### **Heat and Temperature:**

Does the kind of material used to insulate a refrigerated can of soda, bubble wrap, felt, or tin foil, affect its temperature change, as measured in...?

Does the color of a can, white, red, or black, affect the change in temperature when placed in the sun, as measured in...?

Does the kind of soil, sand, gravel, or clay, affect its change in temperature when placed in the sun, as measured in...?

Does the temperature of water, 10 °C, 25 °C, or 40 °C, affect the height at which an object floats, as measured in...?

### **Plants:**

Does the amount of fertilizer, 1 mL, 2 mL, or 3 mL, affect the height that a bean plant grows, as measured in....?

Does the kind of water, fresh, salt, or sugar, affect the height of a Marigold plant, as measured in....?

Does the type of seed, radish, lima bean, or tomato, affect the time it takes to germinate as measured in...?

Does temperature, 10 °C, 25 °C, or 40 °C, affect the time it takes for bean seeds to germinate, as measured in...?

Does the amount of sunlight, 1 hour, 2 hours, or 3 hours, affect time it takes radish seeds to germinate, as measured in...?

Does the amount of moisture, 1 mL, 2 mL, or 3 mL, affect the time it takes pepper seeds to germinate, as measured in...?

Does the type of music, country, rock, or classical music, affect the height of tomato plants, as measured in...?

Does the type of apple, Pink Lady, Granny Smith or Red Delicious, affect the number of seeds inside, as measured in...?

### **Non-Vertebrate Animals:**

Does the type of surface, tile, rug, or cement, affect the distance a meal worm travels, as measured in...?

Does the temperature, 25 °C, 35 °C, or 45 °C, affect the distance that a meal worm travels, as measured in...?

Does the amount of light, 1 hour, 2 hour, or 3 hours, affect the distance that a meal worm travels, as measured in...?

Does playing rock music, 1 hour, 2 hours, or 3 hours, affect the distance that a meal worm travels, as measured in...?

Does the number of earthworms in soil, 5, 10, or 15, affect the time it takes radish seeds to germinate, as measured in...?

Does temperature, 20 °C, 30 °C, or 40 °C, affect the number of "chirps" per minute that crickets make, as measured in...?

Does the color of light, natural light, green, or red, affect how far earthworms will travel, as measured in...?

Does the amount of water mixed in soil, 0 mL, 10 mL, or 30 mL, affect the distance an earthworm travels, as measured in...?

Does the color of light, white, orange, or blue, affect how many insects are attracted to it at night, as measured in?

### **Earth/Space and Environmental:**

Does the kind of soil, sand, potting, or clay, affect the amount of water erosion, as measured in...?

Does moisture, 10 mL, 20 mL, or 50 mL, affect the amount of heat produced in a compost pile, as measured in...?

Does the kind of ground material, soil, mulch, or sand, affect how much water it will hold (retain), as measured in...?

Does the time of the day, 10 am, 12 pm, or 2 pm, affect the length of a shadow, as measured in...?

**Think: How can I take the question/wondering that I am interested in and make it better? (Think outside the box and make it interesting!) For example, take this beginning idea: *Does the height of a ramp affect the distance a toy car will roll?* My NEW Experiment Question: *How does increasing the angle of a ramp, 15°, 30° and 45°, affect the distance a toy car will roll as measured in centimeters?***

***Below is a great site for generating ideas for an experiment!***

<https://www.education.com/science-fair/elementary-school/physical-science/>