

The Nature of Science

Benchmarks consist of 25% of the questions (items) on the Science FCAT test

Science Inquiry Skills

observing, hypothesizing, measuring, classifying, collecting and interpreting data, predicting, experimenting, inferring and communicating

Research Question

Does _____ affect _____?

Prediction

Listing 3 ways the
experiment might end up

Hypothesis

state the prediction you
think will most likely
happen

Manipulated Variable

the **ONE** thing you will
change in the experiment

Responding Variable

what you will measure to see if it is effected

Set-Up Conditions

list all the things that you will keep constant to ensure a fair trial

Materials

list each of the items that will be used. Include size, quantity, and descriptions such that someone else could duplicate your project

Experiment Directions

step-by-step list of what you did with each item in your materials list, in the exact order it was done

Data Collection

a organized and complete account of everything that was measured and observed in your experiment, using metric units

Graph

Mathematical picture of the data, using (mean) averages to plot your graph

Experiment
Results

Use your data and graphs to
tell what happened in the
experiment.

Did your manipulated
variable affect your
responding variable?

Experiment
Conclusion

tell whether your data
supports, or fails to support
your hypothesis

Experiment Real
World Uses

A description of ways,
places, or situations where
information from your
experiment might be useful

Experiment
Reflections

include thoughts, concerns,
discoveries, further
questions to explore and
what you might do
differently next time

Science Content
Statement

A description of your topic
using scientific language

Topic
Sentence

I am interested in studying

What is the manipulated variable in this research question?

Does the amount of water affect the number of leaves on a bean plant?

amount of water

What is the manipulated variable in this research question?

Does the temperature affect the height that marigold plants will grow?

temperature

<p>What is the manipulated variable in this research question?</p> <p>Does the length of the ramp affect how far a tennis ball will roll?</p>	<p>length of ramp</p>
---	-----------------------

<p>What is the manipulated variable in this research question?</p> <p>Does the material the ramp is made of affect how long it takes a wooden block to slide down?</p>	<p>material the ramp is made of</p>
--	-------------------------------------

What is the manipulated variable in this research question?

Does the surface of the ground affect how far a ball will roll?

surface of the ground

What is the manipulated variable in this research question?

Does the distance a rubber band is stretched affect how far it will fly when released?

distance a rubber band is stretched

<p>What is the manipulated variable in this research question? Does the size of the surface area affect the evaporation rate?</p>	<p>size of surface area</p>
---	-----------------------------

<p>What is the manipulated variable in this research question? Does the circumference of a pumpkin affect the number of seeds inside?</p>	<p>circumference of pumpkin</p>
---	---------------------------------

What is the manipulated variable in this research question?

Does the amount of light affect the distance that a meal worm travels?

amount of light

What is the manipulated variable in this research question?

Does the color of light affect how far earthworms will travel?

Color of light

What is the responding variable in this research question?

Does the length of the ramp affect how far a tennis ball will roll?

how far a tennis ball will roll

What is the responding variable in this research question?

Does the color of water affect the time it takes to freeze?

the time it takes to freeze

What is the responding variable in this research question?

Does the length of a pendulum affect its period (time it takes to swing)?

Period (**time** it takes to swing)

What is the responding variable in this research question?

Does the color of a crayon affect its melting rate?

Melting rate

What is the responding variable in this research question?

Does the mass of a car affect the distance it will roll from the bottom of a ramp?

the **distance** it will roll

What is the responding variable in this research question?

Does the kind of soil (sand, gravel, clay) affect its temperature change in the sun?

Temperature change

What is the responding variable in this research question?

Does the kind of soil affect how much water it will hold (retain)?

how much water

What is the responding variable in this research question?

Does the kind of water (fresh or salt) affect how long it takes an ice cube to melt?

how long it takes an ice cube to melt

What is the responding variable in this research question?

Does the amount of sunlight affect the germination rate of pepper seeds?

germination rate

What is the responding variable in this research question?

Does classical music affect the height of tomato plants?

height of tomato plants

What is the responding variable in this research question?

Does the depth of water affect its evaporation rate?

evaporation rate

What is the responding variable in this research question?

Does the amount of air (pressure) in a football affect how high it bounces?

how high it bounces

<p>The responding variable in the question below would best be measured in what metric measurement?</p> <p>Does the length of the ramp affect how far a tennis ball will roll?</p>	<p>meters</p>
---	----------------------

<p>The responding variable in the question below would best be measured in what metric measurement?</p> <p>Does the color of water affect the time it takes to freeze?</p>	<p>minutes</p>
---	-----------------------

<p>The responding variable in the question below would best be measured in what metric measurement?</p> <p>Does the temperature of water affect its evaporation rate?</p>	<p>Celsius</p>
---	-----------------------

<p>The responding variable in the question below would best be measured in what metric measurement?</p> <p>Does the kind of water affect the height of a pepper plant?</p>	<p>centimeters</p>
---	---------------------------

<p>The manipulated variable in the question below would best be measured in what metric measurement?</p> <p>Does the amount of water affect the germination of cucumber seeds?</p>	<p>milliliters</p>
---	---------------------------

<p>The manipulated variable in the question below would best be measured in what metric measurement?</p> <p>Does the mass of a car affect the distance it will roll from the bottom of a ramp?</p>	<p>Kilograms or grams</p>
---	----------------------------------

<p>The manipulated variable in the question below would best be measured in what metric measurement?</p> <p>Does the amount of weight suspended from a rubber band affect how far it stretches?</p>	<p>Newton (spring scale)</p>
--	--

<p>The responding variable in the question below would best be measured in what metric measurement?</p> <p>Does the surface of the ground affect how far a ball will roll?</p>	<p>meters</p>
--	----------------------