

2025-2026 Incoming 8th Grade Biology Science Summer Packet

Part IV- Scientific Method (Big Idea 123)

For the following experiments, define the independent variable, dependent variable, and control group.

Vocabulary Word	Definition	Example
Test Variable	<ul style="list-style-type: none">• The variable being changed.• Only one variable can be changed per experiment.	Height of dropping the ball
Outcome Variable	<ul style="list-style-type: none">• The variable being measured.• Must be numerical (such as height, mass, distance, volume, etc...)	Size of the Crater
Control	<ul style="list-style-type: none">• Not all projects will have a control.	None
Constants	<ul style="list-style-type: none">• The factors that stay the same.	The ball, the person dropping the ball, weather conditions, surface

1. You decide to clean the bathroom. You notice that the show is covered in a stange green slime. You try to get rid of this slime by adding lemonade juice. You spray half of the shower with lemonade juice and spray the other half of the shower with water. After 3 days of spraying equal amounts 3 times a day, there is no change in the appearance of the green slime on either side of the shower.

Independent Variable:

Dependent Variable:

Control Group:

2. You decide to clean your bedroom. You notice that your floor is covetred with clothes. You try to get rid of the clothes by throwing them into the air. You throw clothes from 1/3 of the room into the closet and a second 1/3 of the room straight up in the air. The last 1/3 of the room you leave the clothes on the floor. After 30 minutes of "cleaning" the floor of the room is now visible.

Independent Variable:

Dependent Variable:

Control Group:

3. You want to test which size of soccer ball is easiest to juggle with your feet. You test a size 3, size 4,

Name _____ Date: _____

and size 5 ball. You count the seconds the ball stays in the air for each of the trials. You allow yourself to use both of your feet, knees, and head to juggle the ball.

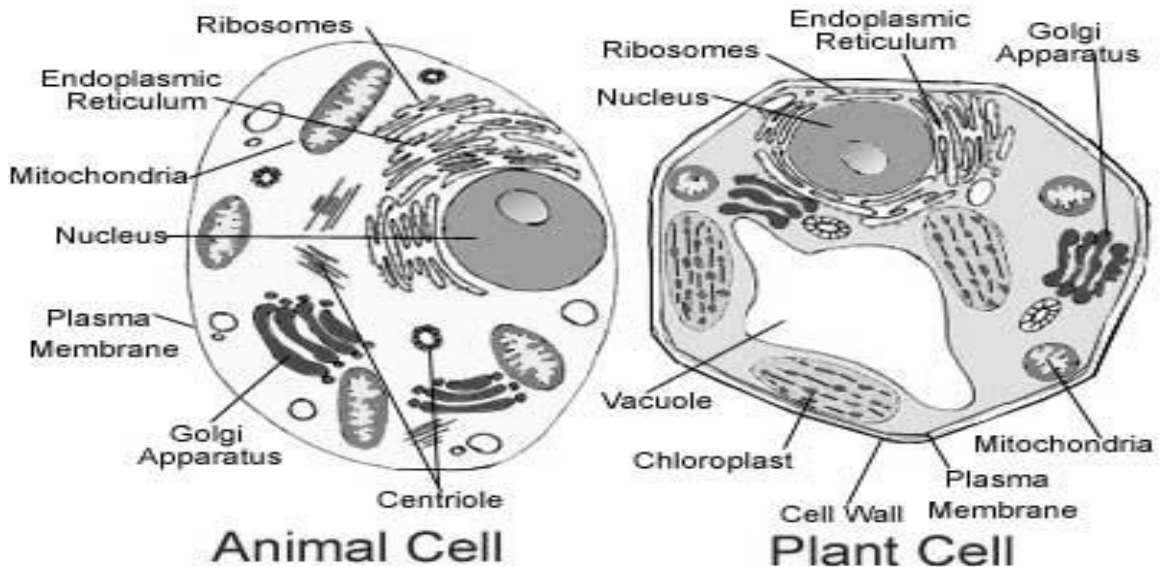
Independent Variable:

Dependent Variable:

Control Group:

PART I: PLANT AND ANIMAL CELLS (Big Idea 14)

Read the following information and then complete the exercise. Compare the plant and animal cells provided and use the picture to complete the framed paragraph below.



FRAMED PARAGRAPH:

Animal and plant cells are similar in that they both have _____ ,
_____ , _____ , _____

Name _____ Date: _____

_____. However, only
the plant cell has a _____, _____ and
_____. A _____ can be found only in the animal cell.

PART II: Comparing Mitosis and Meiosis (Big Idea 16)

Mitosis and Meiosis are both processes used in cell division, but they have different purposes. Read each statement below and determine if it is related to Mitosis or Meiosis. Write your answer on the line next to the statement.

1. _____ A 13 year old growing 2 inches in 1 year.
2. _____ Provides the cells that carry alleles from eachparent.
3. _____ Pollination of a flower
4. _____ Production of new red blood cells in the bone marrow.

Name _____ Date: _____

PART III: Punnett Squares (Big Idea 16)

1. Write if the following genotypes are homozygous or heterozygous.

a. BB _____

b. Bb _____

c. Tt _____

2. A geneticist was predicting the probability of different traits in rabbit offspring. He took a homozygous floppy eared female rabbit and mated her with a homozygous straight-eared male.

F = floppy ears

f = straight ears

What is the probability that the offspring of these 2 rabbits will have straight ears?

% Probability of straight eared offspring

What is the % Probability of a homozygous genotype?

PART IV: SYMBIOTIC RELATIONSHIPS (Big Idea 17)

Symbiotic relationships describe close interactions between two or more different species. Write the definition for the following terms and give an example of each. You may draw pictures for your examples.

Term	Definition	Example
Parasitism		
Mutualism		
Commensalism		

Name _____ Date: _____