

Name: \_\_\_\_\_

**The Spire School Biology summer packet.** Please complete this summer packet and be prepared to turn in during the first week of school for extra credit!

**Part 1:**

## Biology Prefix and Suffix Reference Sheet

Prefix/Suffix	Definition	Prefix/Suffix	Definition
<i>a-</i>	without	<i>multi-</i>	many
<i>ab-</i>	away from	<i>mut-</i>	to change
<i>ad-</i>	near	<i>myco-</i>	fungi
<i>aero-</i>	air	<i>neco-</i>	corpse
<i>alveus</i>	cavity	<i>neur-</i>	nerve
<i>arthron-</i>	joint	<i>nomen-</i>	name
<i>atrium-</i>	entrance room	<i>niga-</i>	black
<i>auto-</i>	self	<i>oculo-</i>	eye
<i>bacterio-</i>	bacteria	<i>oligo-</i>	few
<i>bi-</i>	two	<i>-oma</i>	tumor
<i>bio-</i>	life	<i>omni-</i>	all
<i>carnis-, carn-</i>	meat	<i>oo, ovum</i>	egg
<i>chele-</i>	claw	<i>osteo-</i>	bone
<i>chloro-</i>	green	<i>paleo-</i>	old
<i>chroma-</i>	color	<i>ped, pod</i>	foot
<i>-cide</i>	killer of	<i>peri-</i>	around
<i>con-</i>	with	<i>pestis</i>	plague
<i>cytis-</i>	pouch	<i>phaeo-</i>	brown
<i>-cyte, cyto-</i>	cell	<i>phage-</i>	to eat
<i>dermis-, derm-</i>	skin	<i>-phore</i>	bearer
<i>di-</i>		<i>photo-</i>	light
<i>ecto-</i>	two	<i>-phyll</i>	
<i>endo-</i>	on the outside	<i>-phyte,</i>	leaf
<i>epi-</i>	inner, inside	<i>phyto-</i>	plant
<i>eu-</i>	upon	<i>pino-</i>	to drink
<i>exo-</i>	true	<i>plankto-</i>	drifting
<i>feto-</i>	outside of	<i>poly-</i>	many
<i>gastro-</i>	fetus		

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<b><i>-gen</i></b>	stomach	<b><i>pseudo-</i></b>	false
<b><i>geo-</i></b>	producing	<b><i>primordis-</i></b>	original
<b><i>gymno-</i></b>	earth	<b><i>pro-</i></b>	first
<b><i>halo-</i></b>	naked	<b><i>renes-</i></b>	kidney
<b><i>hemato-</i></b>	salt	<b><i>reptilis-</i></b>	crawling
<b><i>hemi-</i></b>	blood	<b><i>rhiza, rhizo-</i></b>	root
<b><i>herb-</i></b>	half	<b><i>rodere</i></b>	to gnaw
<b><i>hetero-</i></b>	plant	<b><i>sacchrum</i></b>	sugar
<b><i>histo-</i></b>	other	<b><i>sapros-</i></b>	rotten
<b><i>homo-</i></b>	tissue	<b><i>-scopy</i></b>	observation
<b><i>hydro-</i></b>	same, like	<b><i>soma-</i></b>	body
<b><i>hyper-</i></b>	water	<b><i>sonus-</i></b>	sound
<b><i>hypo-</i></b>	over	<b><i>sperma-</i></b>	seed
<b><i>inter-</i></b>	under	<b><i>spirare</i></b>	breathe
<b><i>intra-</i></b>	between	<b><i>-stasis</i></b>	position
<b><i>iso-</i></b>	within	<b><i>taxis</i></b>	arrangement
<b><i>-itis</i></b>	equal	<b><i>telo-</i></b>	end
<b><i>karyo-</i></b>	infection	<b><i>thallus</i></b>	green shoot
<b><i>leuco-</i></b>	nucleus	<b><i>therm-</i></b>	heat
<b><i>locus</i></b>	white	<b><i>thrombos</i></b>	clot
<b><i>-logy</i></b>	place	<b><i>trans-</i></b>	across
<b><i>lysis</i></b>	study of	<b><i>tri-</i></b>	three
<b><i>macro-</i></b>	to loosen, break	<b><i>troph-</i></b>	feed
<b><i>maxilla</i></b>	large	<b><i>umbilicus</i></b>	navel
<b><i>mentis</i></b>	jaw	<b><i>uni-</i></b>	one
<b><i>meso-</i></b>	month	<b><i>vasculum</i></b>	vessel
<b><i>meta-</i></b>	middle	<b><i>vor-</i></b>	to eat, devour
<b><i>micro-</i></b>	between	<b><i>xero-</i></b>	dry
<b><i>mono-</i></b>	small	<b><i>zoo-, zoa-</i></b>	animal
<b><i>morph-</i></b>	one	<b><i>zygon-</i></b>	yoke
	form	<b><i>-ase</i></b>	enzyme
		<b><i>-ose</i></b>	sugar

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**Part I Instructions:** Define the following terms using your prefix-suffix reference sheet. Underline the prefix &/or suffix in each biological term. Use a separate sheet of paper if necessary.

- **Example: THERMOMETER** – *therm means heat & meter means measure. Therefore, a thermometer is an instrument used to measure heat.*

1. Biology \_\_\_\_\_
2. Osteocyte \_\_\_\_\_
3. Dermatitis \_\_\_\_\_
4. Epidermis \_\_\_\_\_
5. Hematology \_\_\_\_\_
6. Herbicide \_\_\_\_\_
7. Neuritis \_\_\_\_\_
8. Protozoa \_\_\_\_\_
9. Carnivore \_\_\_\_\_
10. Polysaccharide \_\_\_\_\_
11. Hypertension \_\_\_\_\_
12. Hypodermic \_\_\_\_\_
13. Macronucleus \_\_\_\_\_
14. Pseudopod \_\_\_\_\_

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15. Intracellular \_\_\_\_\_

16. Osteocyte \_\_\_\_\_

17. Endoskeleton \_\_\_\_\_

**Part II Instructions:** Using your prefix-suffix reference, write the biological term for each of the following layman's terms. Use a separate sheet of paper if necessary.

- **Example: A bacteria killer** – *cide means killer so the term is bactericide.*

16. White cell \_\_\_\_\_

17. Outside skeleton \_\_\_\_\_

18. Middle layer of the leaf \_\_\_\_\_

19. Outside of the cell \_\_\_\_\_

20. Study of animals \_\_\_\_\_

21. Study of form \_\_\_\_\_

22. A one-celled organism \_\_\_\_\_

23. A term describing an organism made up of many cells \_\_\_\_\_

24. Green leaf \_\_\_\_\_

25. Person that studies cells \_\_\_\_\_

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## Part 2: Lab Safety

Read the following story about a science activity. Under the passage, rewrite the paragraph identifying and correcting the unsafe laboratory behaviors.

### A Story of First Period Science Lab


Sarah, Sean, and Tommy loved science class and could not wait to begin their lab. Before Mr. Smith arrived, Tommy lit a Bunsen burner and reached across the flame to give Sarah a beaker to start the experiment. Once Mr. Smith came, the students took a lab quiz, but Michael failed because he did not read the protocol the night before. During the lab, Terry observed a sample substance. He noticed that the substance had a sweet smell, so he decided to take a big whiff of it. John was bored during the lab, so he decided to dare his partner Jodi to put the lens of the cow eye they were dissecting into her mouth. Sam heated a chemical in a test tube over a Bunsen burner. The tube fogged over and he could not see that material in the tube, so he looked over into the tube with his goggles up on his head. He pointed the tube away from his body while he was heating it, but it was pointed directly at another group of students. While trying to open a sample container, Rachel cut her hand. It was not bleeding badly, so she wiped it with a tissue that she had in her pocket and put the tissue back in her pocket without telling Mr. Smith. When Jeff and Gina finished their lab exercise, they noticed that they had a lot of excess chemicals. They dumped the chemicals down the sink and ran the water for 2 minutes to wash them away. At the end of the lab, Ryan and Michelle were cleaning up and noticed a small crack in one of their test tubes. They were afraid that they would get blamed for it, so they secretly put it away with the others. Austin and Karen were working slowly and had just completed the testing of the last sample when the bell rang to dismiss them. Austin and Karen left for their next class because they were afraid they would be late for ELA.

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### Part 3: Analyzing Data

1. **Mouse Experiment:** An experiment studies the effects of an experimental drug on the number of offspring a mother mouse has. 10 female mice are given the drug and then impregnated. The number of mice in their litters is compared to the litters of mice that did not take the drug. Based on the data, what would you conclude about the drug, did it work?

	Number of Babies in Litter										
	Group A (drug)	5	6	4	8	5	2	7	13	12	8
	Group B (control)	4	4	6	6	5	6	4	7	5	3

2. **Cow Growth Rates:** A type of feed claims to boost the growth rate of cows. The feed is tested on two twin newborn cows. Bessie receives the experimental feed, and Bertha receives regular corn feed. Their weights are recorded below.

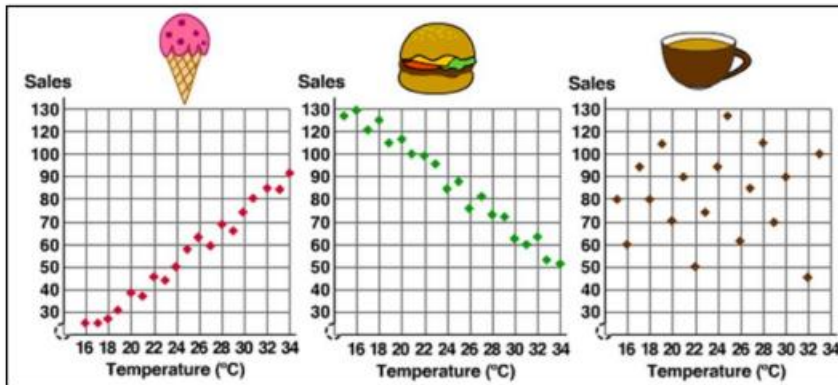
Month	April	May	June	July	Aug
Bessie	100 lbs	210 lbs	260 lbs	320 lbs	400 lbs
Bertha	100 lbs	250 lbs	290 lbs	340 lbs	400 lbs



- a. Graph the data; use a dotted line for Bessie and a straight line for Bertha. Make sure you label the X-axis and Y-axis
- b. Both cows ended at the same weight, but did the experimental feed change the way they gained weight at all? Describe your conclusions about the experimental feed and explain why it is important that the experiment used twin cows?

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3. Food Sales Scatterplot:



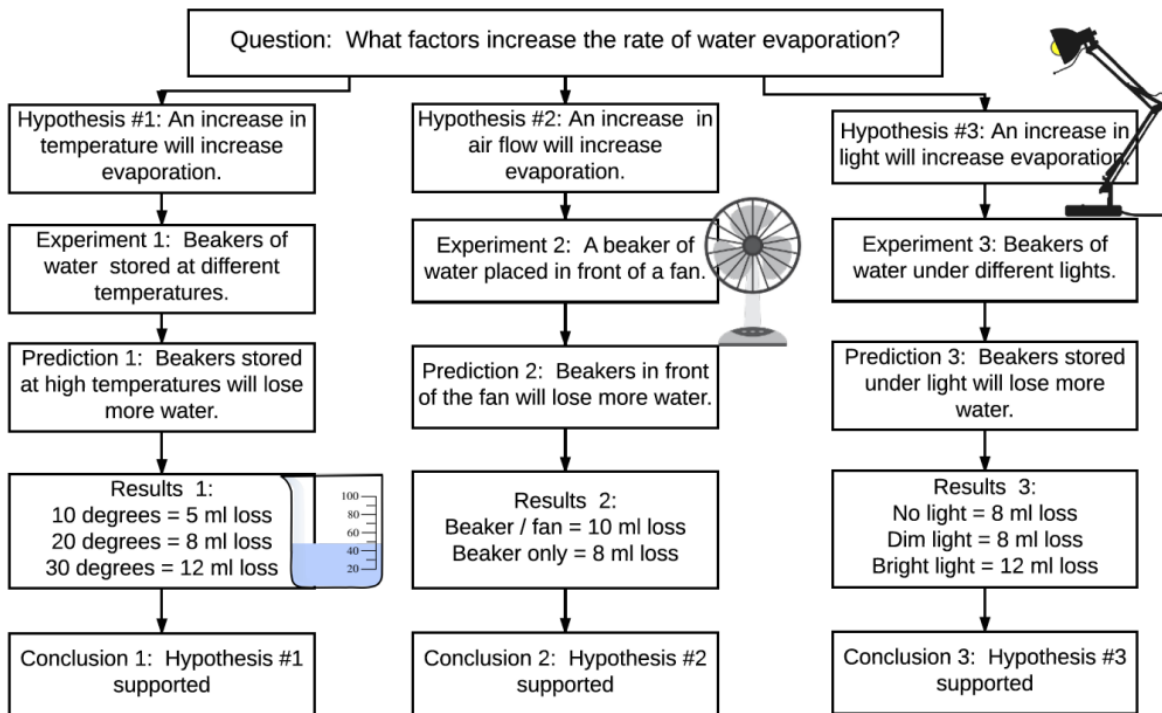
- a. A positive correlation occurs when one set of values increases, so does the other set of values. Which food shows a positive correlation between sales and temperature? Which shows no correlation?
- b. How could a park manager use this type of information?



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## Part 5: Scientific Method

Experimental rigor is important for maintaining the integrity of science. Look at the following question, hypotheses and theoretical experiments, then answer the questions below.



1. What are the independent and dependent variables in each of the experiments?
  - a. Experiment 1:
  - b. Experiment 2:
  - c. Experiment 3:
2. What information should be added to the diagram to give the reader a better understanding of how these experiments were conducted?
3. What items should have been CONTROLLED in the experiments?
4. How much confidence would you have in the conclusion of experiment 3 if you found out that the temperature was not controlled? Explain your reasoning.

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5. Create your own flow chart to answer a causal question.

**Thank you for completing the Biology summer packet. Please bring the completed packet to Biology class during the first week of school for extra credit! We look forward to seeing you then!**

Sincerely,

Mrs. Piro & Mrs. Gaumer