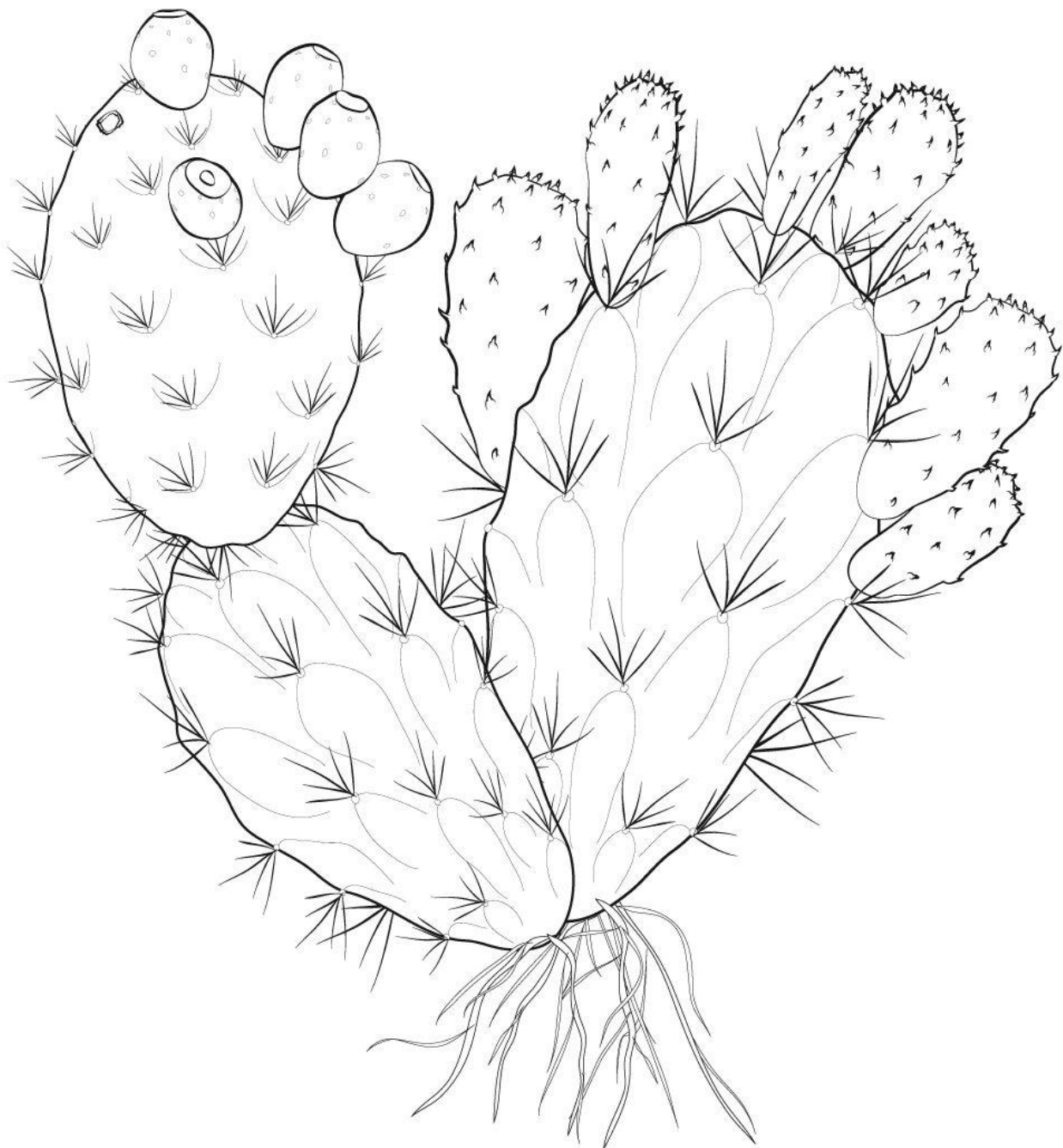


## Activity 6.1: Prickly Pear Worksheet

Draw and label arrows that represent the molecules that carbon atoms are in as they move into, through and out of the Prickly Pear as it moves and grows.

Label each arrow to show the kind of molecules that the carbon atoms are in: large organic molecules (LOM), small organic molecules (SOM), or carbon dioxide (CO<sub>2</sub>).



**Your ideas about a Prickly Pear's needs.** Four things that Prickly Pear's need to live and grow are water, soil nutrients, air, and sunlight. What are your ideas about what happens to those four things *inside* a Prickly Pear?

What happens to *water* inside a Prickly Pear?

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What happens to *soil nutrients* inside a Prickly Pear?

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What happens to *air* inside a radish Prickly Pear?

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What happens to sunlight *light* inside a Prickly Pear?

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**A. Investigating how a Prickly Pear grows and functions**

A class is investigating how Prickly Pears grow. The teacher asks the students, "Where does most of the mass of a Prickly Pear come from?"

a. Three students shared their ideas about what happened. Do you agree or disagree with what each student claims?

Agree	Disagree	Todd: "I think a growing Prickly Pear gains most of its mass from nutrients in the soil."
Agree	Disagree	Maria: "I think a Prickly Pear gains most of its mass from gases in the air."
Agree	Disagree	Adan: "I think a Prickly Pear gains most of its mass from the sunlight."

b. Provide an explanation. Why did you agree or disagree with each student's claim that you did?

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c. The class does an experiment to investigate how Prickly Pears grow. They started by selecting six **identical** Prickly Pears. Three of those Prickly Pears grown in regular soil. The other three plants had extra soil nutrients added to the soil in the pots. They put all six plants under **identical** conditions (i.e., the same light conditions, the same watering conditions) and let them continue growing for one month. At the end of the month, the class weighed each of the six Prickly Pears and recorded their weights in the table below. They also recorded the weight of the soil nutrients added to three of the pots.

Prickly Pears with regular soil		
Plant	Mass of nutrients added (grams)	Mass gained by plant (grams)
1	0	50
2	0	51
3	0	49
<b>Average</b>	<b>0</b>	<b>50</b>

Prickly Pears with regular soil plus soil nutrients		
Plant	Mass of nutrients added (grams)	Mass gained by plant (grams)
4	3	78
5	3	71
6	3	77
<b>Average</b>	<b>3</b>	<b>75</b>

Whose idea do you think is best supported by the data? (Circle one choice.)

- a. Todd's
- b. Maria's
- c. Adan's

Explain how the patterns in the data support the claim that you chose.

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d. What additional evidence would you collect to help you show that the claim you chose is the best claim?

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**B. A question about how Prickly Pears grow and function**

When a Prickly Pear is alive, it has energy stored in its living parts (roots, green body, spines). When the Prickly Pear dies all the parts are still there. How much of the energy stored in the living Prickly Pear is still there in the dead Prickly Pear?

- a. ALL of the energy
- b. MOST of the energy
- c. SOME of the energy
- d. A LITTLE of the energy
- e. NONE of the energy

Explain your answer.

What kinds of energy are stored in the living Prickly Pear? Where did they come from?

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What kinds of energy are stored in the dead Prickly Pear (if any)? How are they connected to the energy in the living Prickly Pear?

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### **C. Something interesting about Prickly Pears**

What is something interesting that you learned about Prickly Pears that makes this plant different from the radish plants you grew?

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