SI Biology - Full Discipline Demo

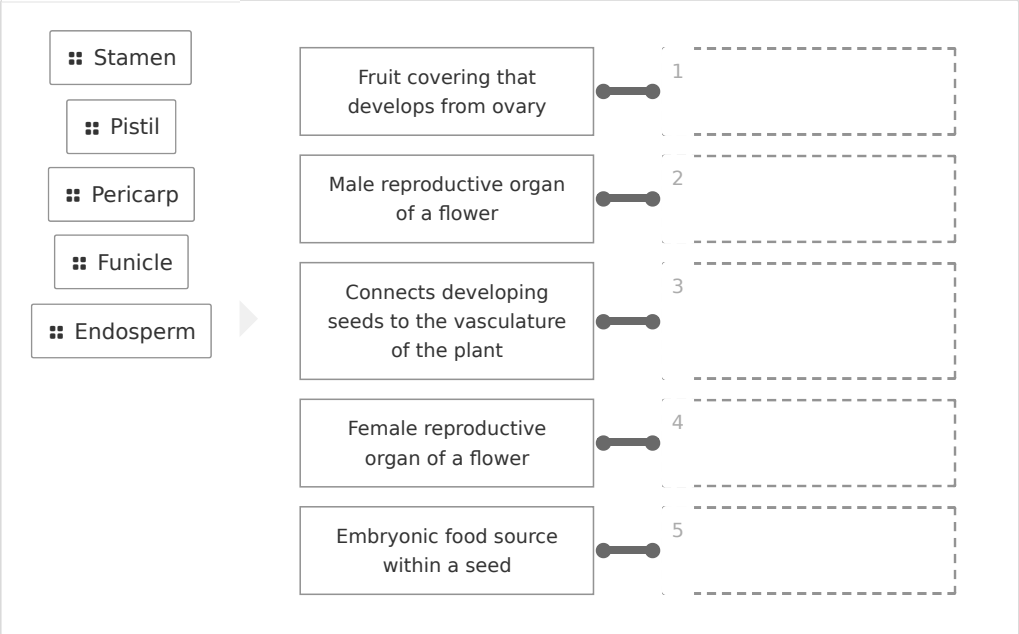
Angiosperms: Flowers and Fruits - Digital

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Biology - Full Discipline Demo
Course	SI Biology - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

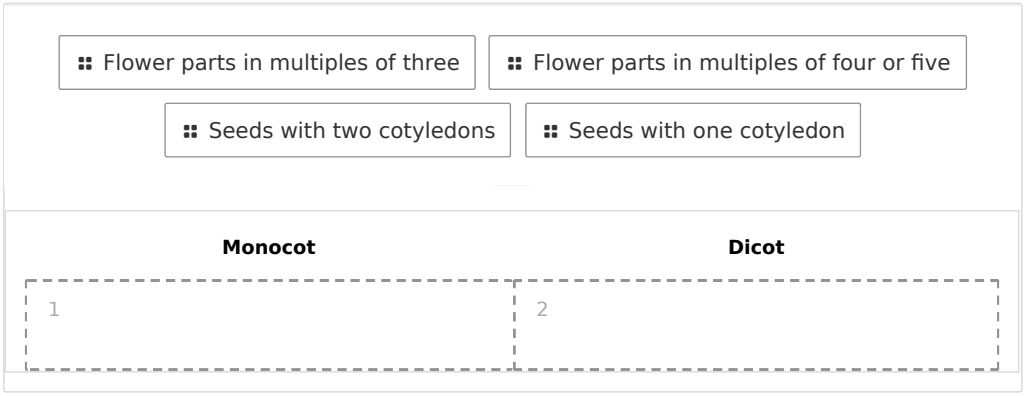
Match each term with the best description.



Correct answers:

1 Pericarp 2 Stamen 3 Funicle 4 Pistil 5 Endosperm

Differentiate between monocot and dicot characteristics.



Correct answers:

1 Flower parts in multiples of three Seeds with one cotyledon

2 Flower parts in multiples of four or five Seeds with two cotyledons

Exploration

Monocots are angiosperms that produce flowers with petals in multiples of ____.

- two
- three ✔
- five
- seven

Pollen is produced by the ____ of the flower.

- anther ✔
- stigma
- ovary
- sepal

Fertilization occurs in the _____ of the flower.

- pedicel
- filament
- stigma
- ovary ✔

The _____ forms a protective barrier from water loss for the developing embryo and endosperm.

- funicle
- seed coat ✔
- zygote
- cotyledon

Exercise 1

How did the flower structures differ between the monocot and dicot examples dissected in this exercise? Reference Data Table 2 and Photos 1 and 2 in your explanation.

The monocot flower had stamens, petals, and sepals in multiples of three, whereas the dicot had these structures in multiples of five as recorded in Data Table 2 and Photos 1 and 2. Students may also note differences in relative size and positions of anthers and stigma. Lastly, students may note that the sepals of one flower resembled petals, whereas those of the other resembled leaves.

Describe the processes of pollination and fertilization in flowers. Bold the structures that were labeled on your dissected flowers in your answer.

0 Word(s)

Data Table 1: Flower Structures

(SAMPLE ANSWER BELOW)

Structure	Function
Sepal	Located below the petals and function to protect the bud of the developing flower.
Petal	Modified leaves that surround the pistil and stamen of the flower and function to attract pollinators.
Stamen	Male reproductive organ of the flower, consisting of an anther located at the end of a thread-like filament.
Anther	Produces pollen which contains the male gametes.
Filament	Thread-like stalk that supports the anther.
Pistil	Female reproductive organ of the flower, consisting of a stigma, style, and ovary.
Stigma	Structure that receives pollen grains.
Style	Tubular structure that connects the stigma to the ovary.
Ovary	Structure that produces the female gametes.

Data Table 2: Monocot and Dicot Structure Numbers

(SAMPLE ANSWER BELOW)

	Monocot	Dicot
Common name	Lily	Campanula
Petal number	3	5
Stamen number	6	5

Photo 1: Monocot Flower

(SAMPLE ANSWER BELOW)

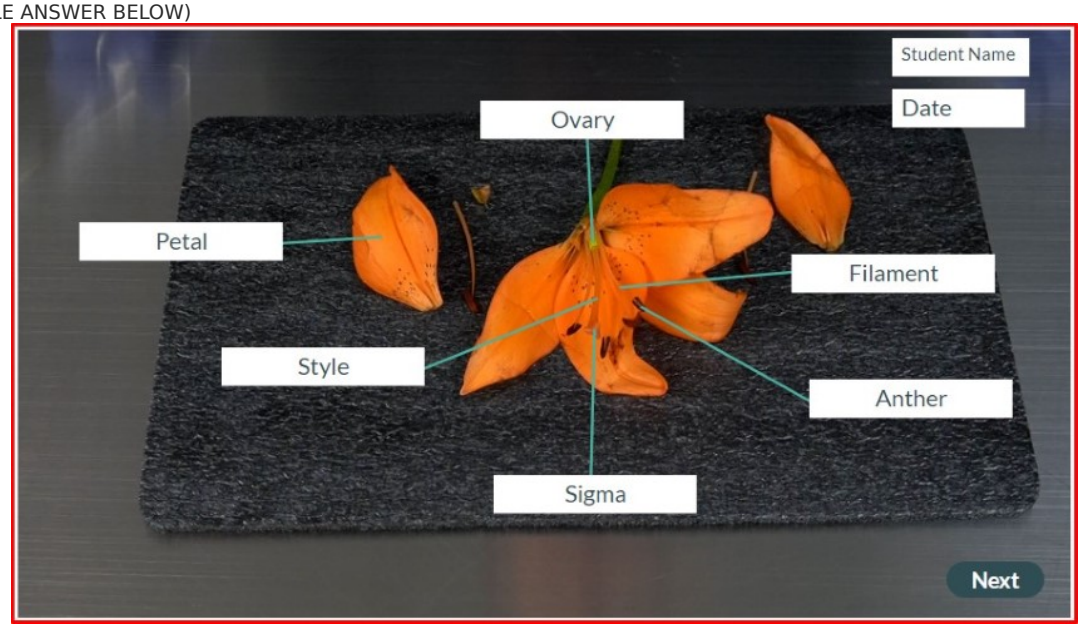
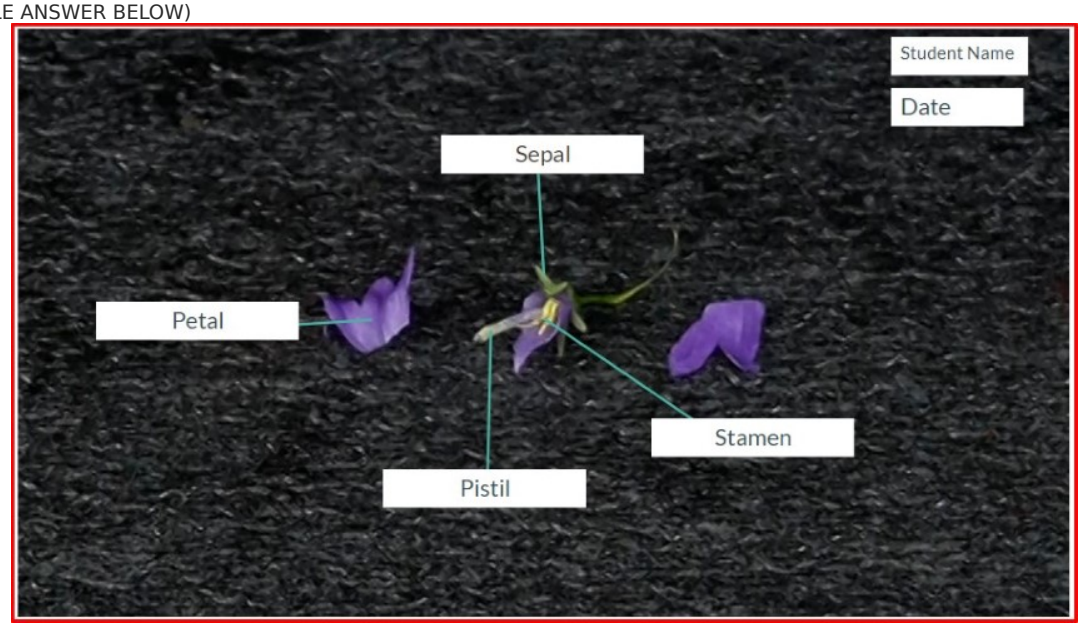


Photo 2: Dicot Flower

(SAMPLE ANSWER BELOW)



Exercise 2

How do fruits and seeds develop from flowers after fertilization?

After fertilization, the ovary of the flower grows to form the pericarp of a fruit, providing protection for the developing seeds. Seeds form from fertilized ovules, with the zygote becoming the embryo of the seed.

What are the differences between monocot and dicot seeds. Which type of developing seed was dissected in these procedures?

Monocot seeds consist of a seed coat, embryo, single cotyledon, and endosperm. Dicot seeds consist of a seed coat, embryo, and two cotyledons which contain energy stores. A dicot (the pea) was dissected in the procedures as it had two cotyledons.

Data Table 3: Fruit Structures

(SAMPLE ANSWER BELOW)

Structure	Function

Pericarp	Provides protection for the developing seed.
Endosperm	Supplies nutrients to the germinating seedling.
Cotyledon	Contains and protects the developing embryo
Embryo	Forms new plant upon germination of seed.
Funicle	Supplies water and nutrients to developing seeds within ovary
Seed	Contains and protects the embryo and energy stores that develops from a fertilized ovule

Photo 3: Intact Fruit
(SAMPLE ANSWER BELOW)

Photo 4: Dissected Fruit
(SAMPLE ANSWER BELOW)

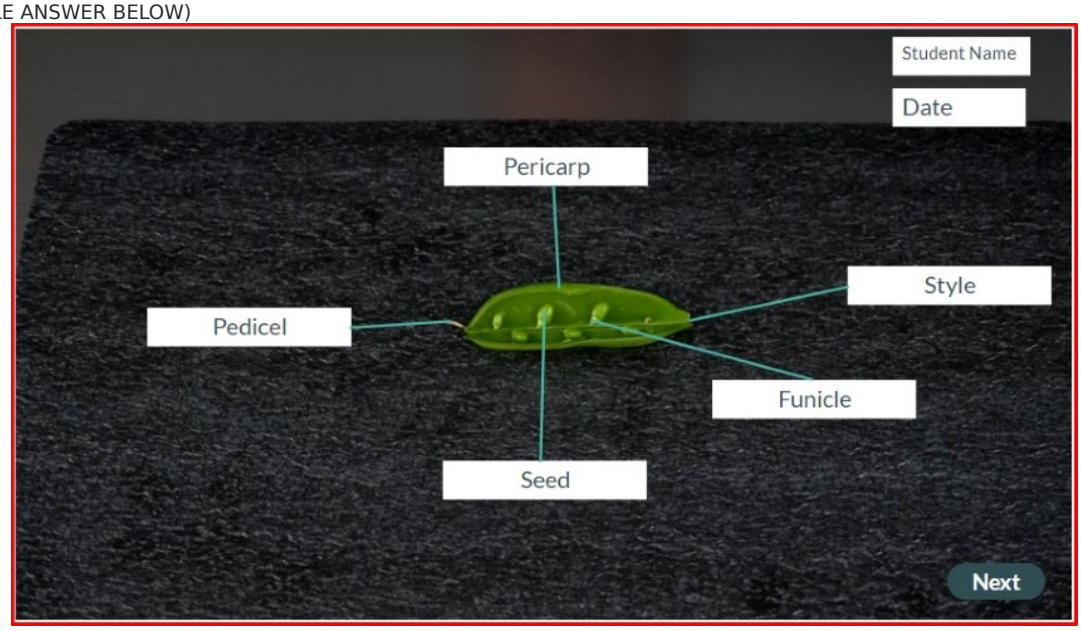
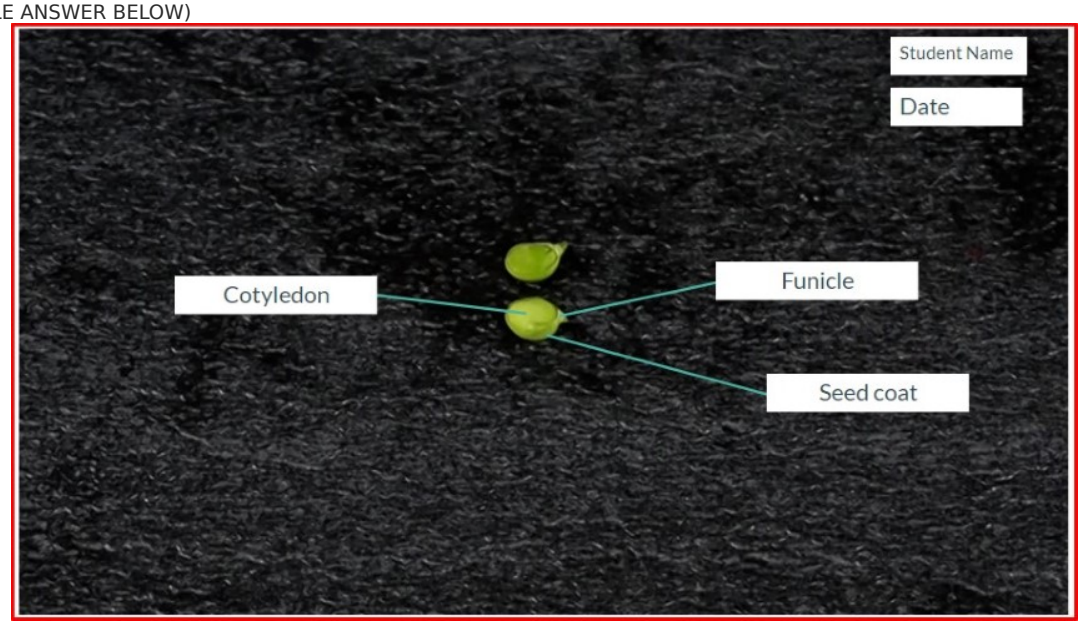


Photo 5: Dissected Seed

(SAMPLE ANSWER BELOW)



Competency Review

Angiosperms are vascular plants that produce flowers and seeds surrounded by fruits.

- [x] True ✔
- [ ] False

The _____ is the male reproductive organ of the flower.

- [ ] pedicel
- [ ] pistil
- [ ] sepal
- [x] stamen ✔

_____ are modified leaves that function to attract pollinators.

- [ ] Anthers
- [ ] Filaments
- [x] Petals ✔
- [ ] Styles

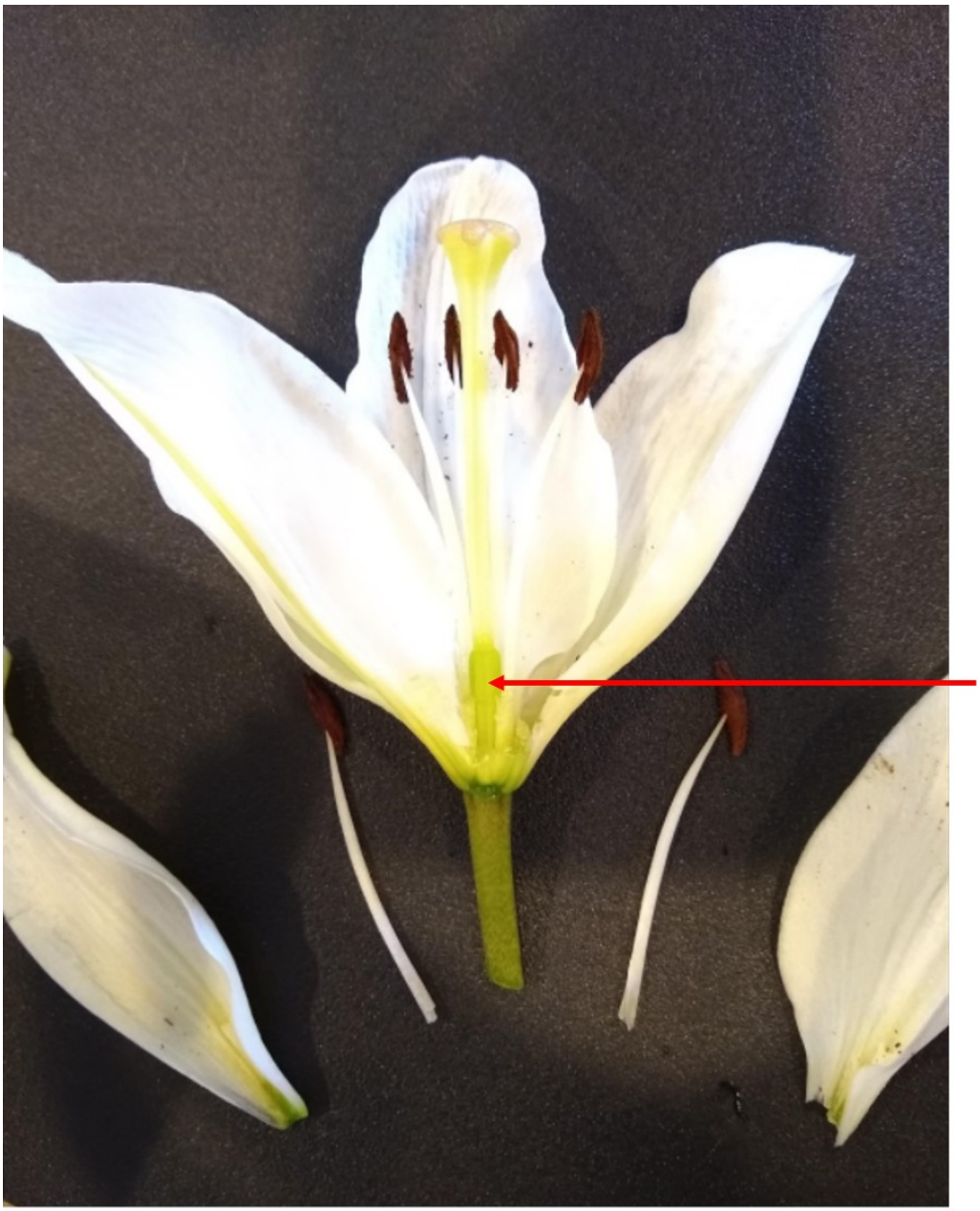
The _____ is the outermost layer of a fruit that provides protection for developing seeds.

- [ ] pedicel
- [x] pericarp ✔
- [ ] sepal
- [ ] style

____ is stored starch and other nutrients inside a seed.

- Carpel
- Endosperm ✔
- Funicle
- Zygote

The _____ of the flower is indicated by the red arrow in the image below.

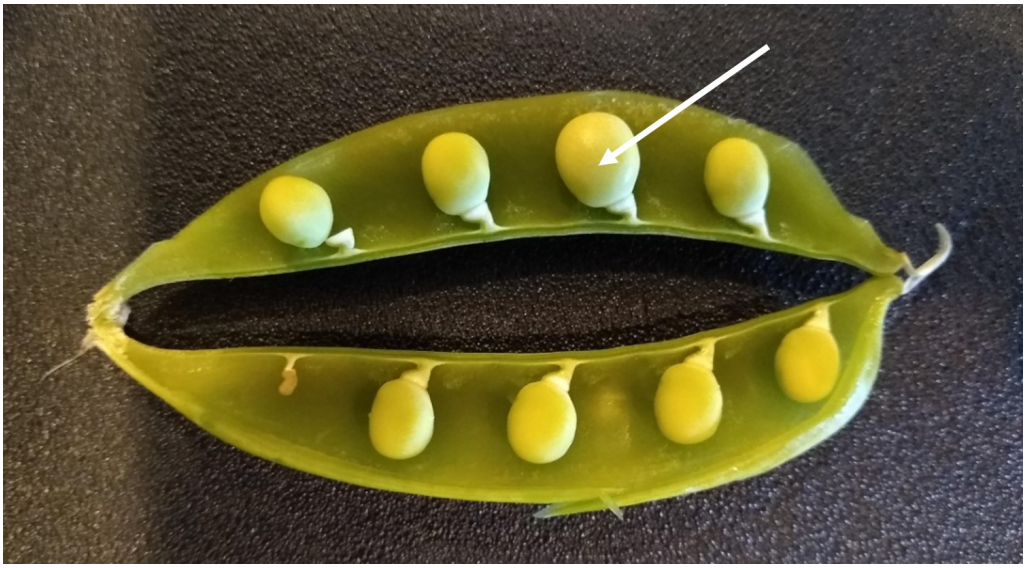


- anther
- filament
- ovary ✔
- sepal

A dicot flower is pictured in the image below based on anther and petal numbers.

- True
- False ✔

The structure indicated by the white arrow in the image below is formed from a fertilized _____.



- pedicel
- ovule ✔
- filament
- sepal

Extension Questions

Incomplete flowers lack at least one of the four typical flower structures. Examine the two incomplete flowers in the photo below and apply your knowledge of flower structure and function to predict if the flowers are pollinated by wind or pollinators. Explain your prediction by referencing the missing structure from each flower.

(SAMPLE ANSWER BELOW)

The two incomplete flowers lack petals, which are brightly colored modified leaves that function to attract pollinators. For this reason, the flowers are predicted to be wind pollinated.