Questions: 1 Grade 8 Science (0 out of 6) GUEST (Student ID: GUEST) GUEST SESSION

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The following question has two parts. First, answer part A. Then, answer part B.

Part A

Titan is one of Saturn's moons. Scientists have gathered information about Titan using a variety of technologies. Views from some of these technologies are shown in the Images of Titan diagram.

Images of Titan

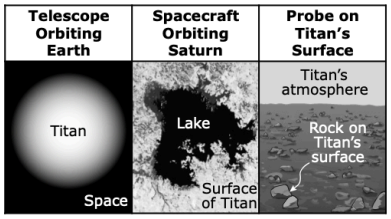

Diagram not to scale

Move each property of Titan into the table to order the properties from the smallest scale to the largest scale.

Properties of Titan

Smallest scale	1	
	2	
	3	
	4	
Largest scale	5	

- Diameter of Titan
- Distance between Titan and the sun
- Minerals in the rocks on Titan
- Shape of large landforms
- Titan's orbital path around Saturn

Part B

Select a box to identify the technology that is **most** appropriate for observing each property of Titan.

Property of Titan	Telescope Orbiting Earth	Spacecraft Orbiting Saturn	Probe on Titan's Surface
Diameter of Titan	☐	☐	☐
Distance between Titan and the sun	☐	☐	☐
Minerals in the rocks on Titan	☐	☐	☐
Shape of large landforms on Titan	☐	☐	☐
Titan's orbital path around Saturn	☐	☐	☐

Section 1—Sea Star Reproduction

Read the information and answer the questions.

Sea stars reproduce both asexually and sexually.

Asexual reproduction requires a single parent sea star. The parent sea star splits into two parts and each part develops into an offspring sea star. The Asexual Reproduction in Sea Stars diagram models this process.

Asexual Reproduction in Sea Stars

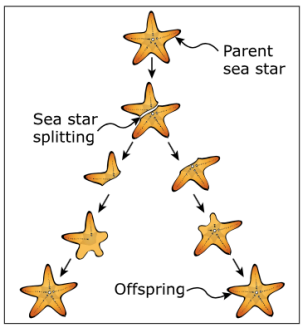

Diagram not to scale

Sexual Reproduction in Sea Stars

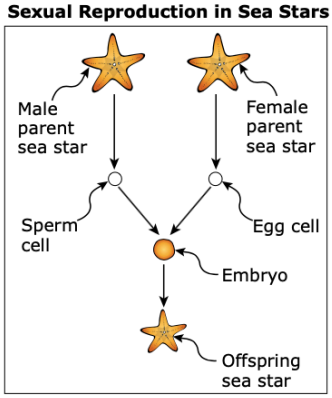

Diagram not to scale

2

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Make a model to show how the two alleles are passed to sea star offspring during asexual and sexual reproduction.

Move the alleles onto the offspring to model **all** possible genetic combinations in the offspring.

- Alleles may be used more than once.
- Not all alleles or offspring may be used.

Delete

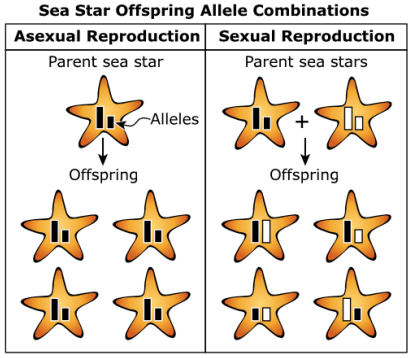
Asexual Reproduction	Sexual Reproduction
Parent sea star	Parent sea stars
Alleles	+
Offspring	Offspring

Section 1—Sea Star Reproduction

Section 2—Sea Star Reproduction

The Sea Star Offspring Allele Combinations model shows the possible allele combinations in the sea star offspring for asexual reproduction and sexual reproduction.

Sea Star Offspring Allele Combinations



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The following question has two parts. First, answer part A. Then, answer part B.

Part A

Based on the Sea Star Offspring Allele Combinations model, select a box to identify whether each statement describes asexual reproduction, sexual reproduction, or both.

Statement	Asexual Reproduction	Sexual Reproduction	Both
All offspring have the same traits.	☐	☐	☐
Genetic information is transferred to the offspring.	☐	☐	☐
Different combinations of genetic information in the offspring are possible.	☐	☐	☐
Each offspring has two alleles for every trait.	☐	☐	☐

Part B

Which statement describes a reason for the sexual reproduction answers in part A?

Ⓐ The two alleles are identical in every offspring.

Ⓑ Offspring can inherit alleles from either of two parents.

Ⓒ There is a single source of genetic information for all offspring.

Ⓓ The genetic information in offspring depends on their environment.

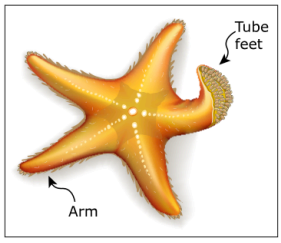
Section 1—Sea Star Reproduction

Section 2—Sea Star Reproduction

Section 3—Sea Star Reproduction

Sea stars have tube feet for walking, climbing, and grasping. The Sea Star External Anatomy diagram shows the appearance and location of tube feet on a sea star.

Sea Star External Anatomy



There are cells in the tube feet of sea stars that produce a protein that acts like glue. The protein makes the tube feet sticky.

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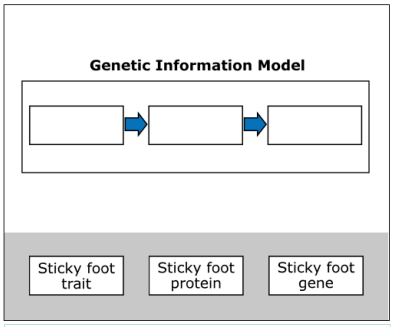
Move the labels into the boxes to show the flow of genetic information in the tube feet cells.



Section 1—Sea Star Reproduction

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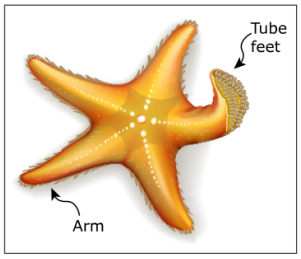
Sea Star External Anatomy



There are cells in the tube feet of sea stars that produce a protein that acts like glue. The protein makes the tube feet sticky.

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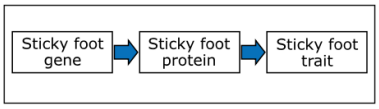
Last Saved: 8:08 AM GUEST

The Genetic Information Model diagram shows how information in genes results in traits like the sticky foot trait in sea stars.

Genetic Information Model



Click each box and select a word to describe how a mutation could result in a change to the sticky foot trait.

A mutation changes the structure of the gene, which can change the structure and function of the gene.

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A mutation occurs that causes the sticky foot protein to become less sticky. Describe how this mutation could affect the sea star.

Choose **one**:

- ○ Harmful mutation
- ○ Beneficial mutation

Describe how **that** mutation could affect the sea star.