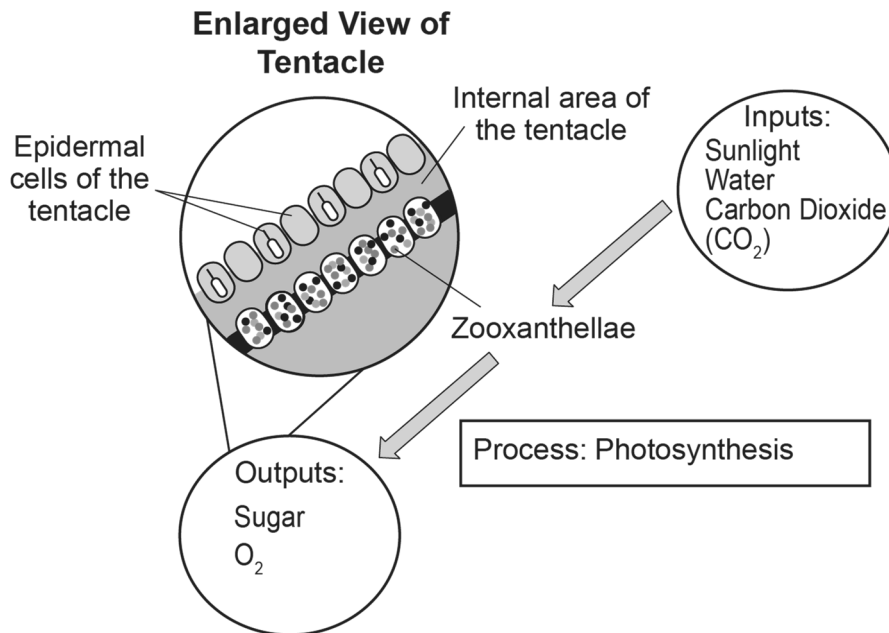


### Rating Guide Coral Reefs Sample Cluster

1 [1] Allow 1 credit for 4.

2 [1] Allow 1 credit. Acceptable responses include, but are not limited to:



3 [1] Allow 1 credit for 2.

4 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The graph shows that the ocean temperatures have increased in recent decades. Increased temperature causes the zooxanthellae to leave the polyp, which contributes to bleaching, decreasing the carrying capacity of the corals.
- As dissolved carbon dioxide has increased, ocean acidity has increased. Corals will not be able to build their shells. This decreases the carrying capacity of corals.
- Global warming has increased ocean temperatures, and coral reefs have experienced bleaching. The carrying capacity of coral would decrease.

5 [1] Allow 1 credit for 1.

6 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- **Benefit:** More coral will survive to build up the reef.  
**Drawback:** If the temperatures continue to rise, even the heat-tolerant ones may not survive.
- **Benefit:** The selectively bred corals will restore the reefs, so tourism may increase in these areas.  
**Drawback:** One of the heat-tolerant corals from another reef may become an invasive species on the repaired reef.
- **Benefit:** The heat-tolerant corals and zooxanthellae will increase the biodiversity of the reefs.  
**Drawback:** The transplanted corals could disrupt existing food webs.
- **Benefit:** The selectively bred corals can restore some polyps.  
**Drawback:** Coral grows so slowly it may take too many years to repair the damage caused by stressing factors.
- **Benefit:** Heat-tolerant corals might thrive in warmer temperatures.  
**Drawback:** The process of transplanting them could be too difficult/expensive.

**Item Alignment**  
**Life Science: Biology**  
**Coral Reefs Cluster**

Item Number	Performance Expectation
1	HS-LS-2
2	HS-LS1-5
3	HS-LS2-2
4	HS-LS2-1
5	HS-LS4-4
6	ETS1-3

**Rating Guide**  
**Dinosaurs-Evolution Sample Cluster**

- 1 [1] Allow 1 credit for 3.
- 2 [1] Allow 1 credit for using evidence from the reading to either support or refute this claim. Acceptable responses include, but are not limited to:
  - There was less food available because the sun was blocked. Large, non-avian dinosaurs did not have enough food available to survive.
  - Most non-avian dinosaurs were very large, so they probably had a high energy requirement. The asteroid impact reduced the amount of sunlight reaching the Earth, photosynthesis declined, so the food web collapsed.
  - The non-avian dinosaurs had traits that were adapted to a warm environment and the temperature dropped 47°F.
- 3 [1] Allow 1 credit for 3.
- 4 [1] Allow 1 credit for 2.
- 5 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
  - **Increase in numbers**: After the impact, the number of different animals/plants increased over time.  
**New species**: New species of mammals/plants appeared following the K-T extinction.  
**Extinction**: The asteroid impact resulted in the extinction of the dinosaurs.
  - **Increase in numbers**: Following this dinosaur extinction, mammals and ferns increased in number.  
**New species**: As present global surface temperatures are increasing, some mammal species are changing in size. If these trends continue these mammals may evolve into new species.  
**Extinction**: The dinosaur environment changed drastically resulting in the extinction of non-avian dinosaurs.
  - **Increase in numbers**: The number of mammals that survived the asteroid impact increased in number  
**New species**: The two surviving plant species shown in the chart for question 3 evolved into more than 30 species.  
**Extinction**: The dinosaurs went extinct after the asteroid impact totally changed the environment.

**Item Alignment**  
**Life Science: Biology**  
**Dinosaurs-Evolution Cluster**

<b>Item Number</b>	<b>Performance Expectation</b>
1	HS-LS4-2
2	HS-LS4-5
3	HS-LS2-6
4	HS-LS4-4
5	HS-LS4-5

**Rating Guide**  
**Prostaglandins Sample Cluster**

- 1 [1] Allow 1 credit for 4.
  
- 2 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
  - Use the base-pairing rule to convert the DNA sequence (TCG) to an mRNA sequence (AGC). Then use the mRNA and the codon chart to locate the amino acid (Ser).
  - Match the DNA bases to produce an mRNA sequence (A to U, G to C). Use the codon chart to identify the amino acid that is coded for by the mRNA.
  
- 3 [1] Allow 1 credit for 2.
  
- 4 [1] Allow 1 credit for 3.
  
- 5 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
  - The change in the gene changes the enzyme and it will not work as well. The production of prostaglandins that cause inflammation and the chance of cancer will be reduced.
  - The amino acid sequence will be different. The enzyme may not function properly causing less inflammation and less cancer.
  - The shape of the enzyme will be different, and it will not connect correctly with the molecule that causes inflammation. There will be reduced inflammation.
  - The extra segment would interfere with the ability of the modified genetic code to attach to the ribosome. The production of enzymes will be reduced, reducing inflammation.
  
- 6 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
  - Using humans in the early stages of research raises ethical concerns.
  - The DNA of mice must be similar to human DNA, so the response of mice to this cancer research could be applied to humans.
  - It would cost significantly less to work with mice than with humans, so more mice could be used in each trial, increasing the reliability of the resulting data.

**Item Alignment**  
**Life Science: Biology**  
**Prostaglandins: One of the Most Important Molecules**  
**You Never Heard of Cluster**

<b>Item Number</b>	<b>Performance Expectation</b>
1	HS-LS1-1
2	HS-LS1-1
3	HS-LS3-2
4	HS-LS3-1
5	HS-LS1-1
6	ETS1-1