

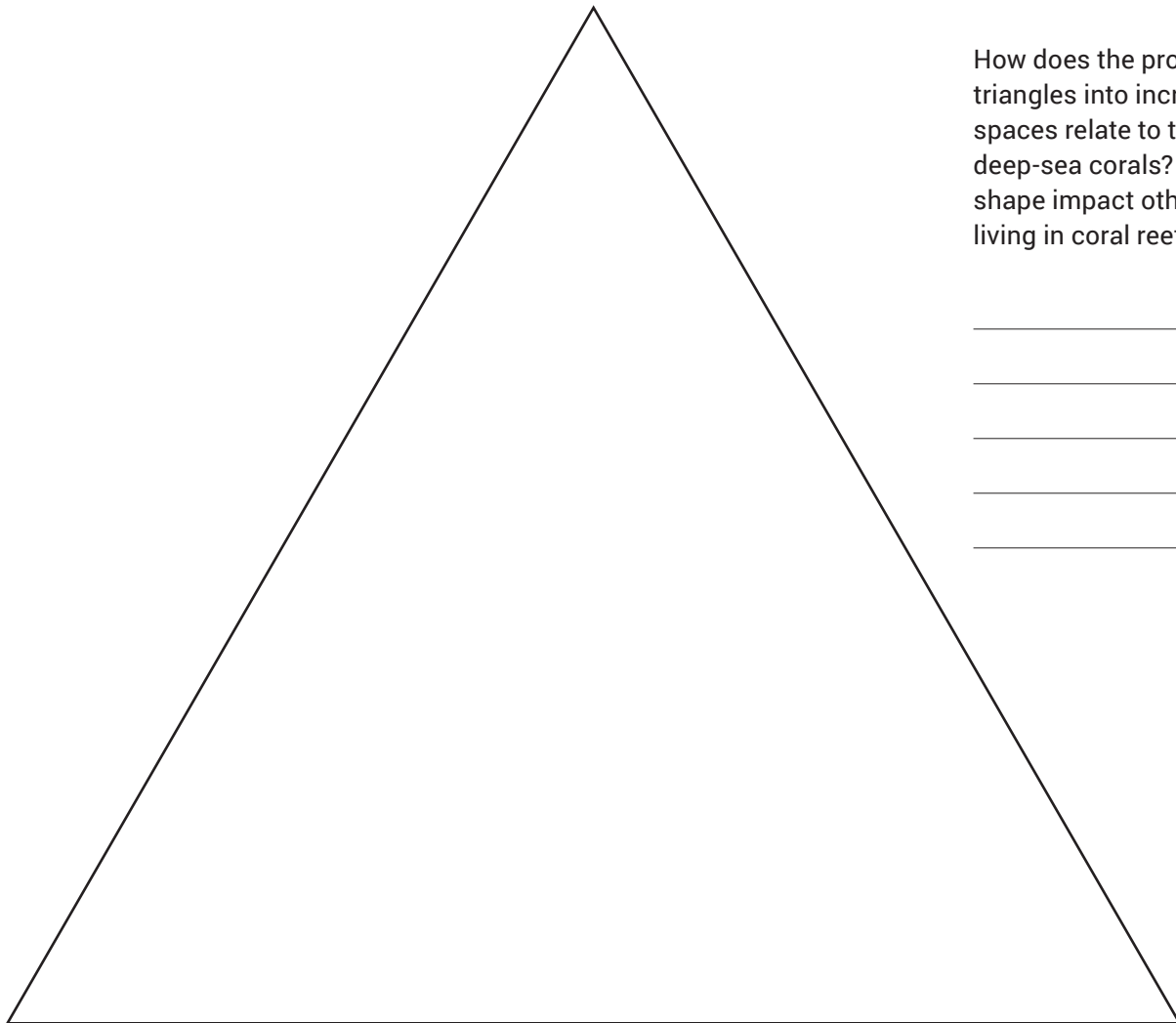


Sierpinski Triangle Activity: Student Instructions

One of the most important characteristics of many deep- and shallow-water corals is that they create habitat for other corals and a variety of other organisms. The branching growth form, in particular, contributes to this ecological function by providing numerous small spaces within the coral colonies that serve as sheltered areas where other organisms may live. The Sierpinski triangle is a great illustration of this effect.

Create your own Sierpinski Triangle:

1. Find a midpoint of each side of the triangle below.
2. Connect the midpoints on each side, forming a new triangle in the middle.
(note: the new, smaller triangle will point down).
3. Shade the new triangle in the middle of the larger triangle.
4. Now, find the midpoints of each side of the three outer triangles. Connect the midpoints together to form a new, smaller triangle within each outer triangle.
5. Shade in each of these new, smaller triangles.
6. Continue to repeat the process for three more iterations, until the midpoints measure 0.5 cm or less. Shade in the new, middle triangles after each iteration.



How does the process of dividing triangles into increasingly smaller spaces relate to the structure of deep-sea corals? How does this shape impact other organisms living in coral reef ecosystems?





Sierpinski Triangle Activity: Teacher Instructions

One of the most important characteristics of many deep- and shallow-water corals is that they create habitat for other corals and a variety of other organisms. The branching growth form, in particular, contributes to this ecological function by providing numerous small spaces within the coral colonies that serve as sheltered areas where other organisms may live. The Sierpinski triangle is a great illustration of this effect. Guide students through the step-by-step instructions to create their own Sierpinski Triangle model like the one shown below.

Directions to create a Sierpinski Triangle:

1. Find a midpoint of each side of the triangle (8cm).
2. Connect the midpoints on each side, forming a new triangle in the middle.
(note: the new, smaller triangle will point down).
3. Shade the new triangle in the middle of the larger triangle.
4. Now, find the midpoints of each side of the three outer triangles. Connect the midpoints together to form a new, smaller triangle within each outer triangle.
5. Shade in each of these new, smaller triangles.
6. Continue to repeat the process for three more iterations, until the midpoints measure 0.5 cm or less. Shade in the new, middle triangles after each iteration. *Theoretically this process can continue indefinitely.*

Once finished, ask students to connect their illustration back to the deep-sea coral structure and the role these organisms play in the deep-sea coral reef ecosystem. The basic principle is that repeatedly dividing a fixed space produces an infinite series of increasingly smaller spaces that in nature are potential habitats for a wide variety of organisms.

Key

