

SECTION 1-1**ENRICH**

Waves in the World Around You

You learned in Section 1 that there are three types of waves: longitudinal, transverse, and surface. You also learned how to generate and identify these types of waves in strings, springs, and water. As you may have noticed, waves are all around you, even in plants and animals. Have you ever looked closely at a slithering snake? Or a swimming eel? How do their bodies move? In this activity, you will use your knowledge of wave characteristics to identify waves in what may seem like unexpected places.

- ◆ The cowboy shown in Figure 1 is practicing his rope tricks. The whirling loop of the lasso spins in a circle just above the ground. As it spins, it develops a kink. This kink is a traveling wave.
- ◆ In Figure 2, the plastic frog jumps when the spring is compressed and then released. A wave travels through the spring with each jump the frog makes.
- ◆ The garter snake shown in Figure 3 is slithering across the ground. As it moves, two types of waves pass through its body. When the snake moves forward, its body makes an "S" describing a wave. In addition, contractions ripple down the snake's body as it slithers along. Muscles underneath the snake's skin extend from its head down its body towards its tail. These muscles contract and relax in a steady pattern in the direction of the arrow. The periodic contraction and relaxation of the snake's muscles propel it forward through the grass.

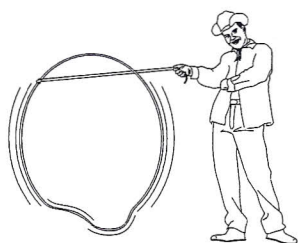


Figure 1

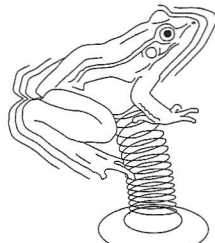


Figure 2

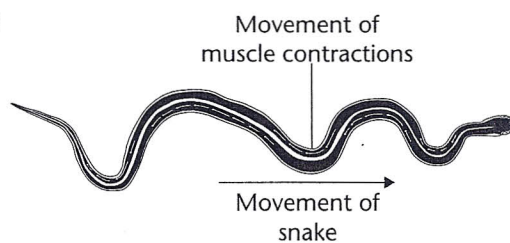


Figure 3

Answer the following questions on a separate sheet of paper. (Left side of spiral)

1. Does the kink in the lasso travel as a transverse or longitudinal wave? Explain your answer.
2. What type of wave passes through the spring in the frog toy? Explain your answer.
3. What type of wave does the shape of the snake's body make as the snake moves forward? Explain your answer.
4. What type of wave do the contractions of the snake's muscles make as the snake moves forward? Explain your answer.
5. Describe another plant or animal in which you can observe wave motion.