



# TWIST AND SOLVE

Develop & Discover

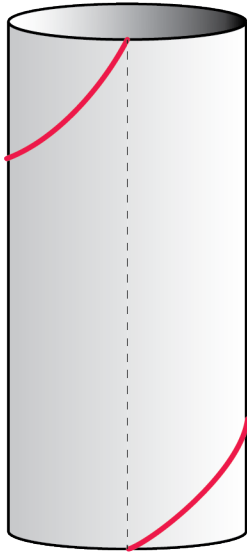


Figure 1: Single Wrap

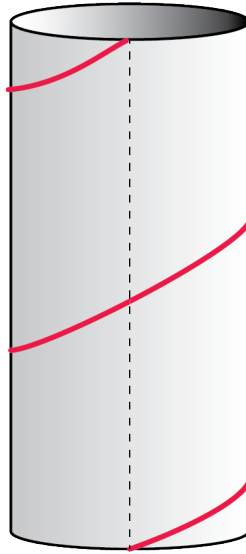


Figure 2: Double Wrap

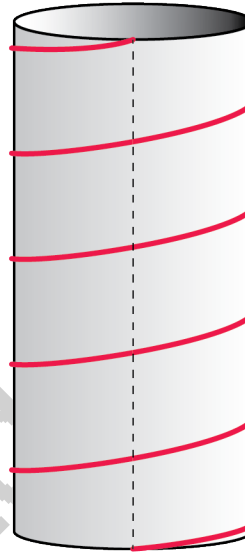


Figure 3: Five Wraps

## Try it with Values

1. In Figure 1, a string makes a single revolution around the cylinder. If the diameter of the cylinder is 5 cm and the height is 15 cm, what is the length of the string?
2. In Figure 2, the string makes two revolutions around the same cylinder as it spirals to the top. What is the length of the string?
3. How long would the string be that makes five revolutions?
4. Have the teacher initial your work: \_\_\_\_\_

## Make it a Formula

5. Develop an equation that shows how the total length of the spiraled string depends on the circumference of the cylinder ( $C$ ), the height ( $h$ ), and the number of wraps ( $N$ ).
6. Let  $C = 25$  cm and  $h = 20$  cm. If the total length of the string is 750.3 cm, how many wraps are there?
7. Look at your formula. As  $n$  gets very, very large, what does the equation for string length approach? Why does this make sense?