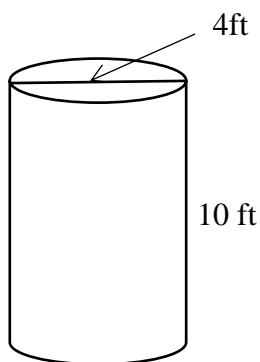### Right Prisms and Right Cylinders

1. Determine the surface area of a cylinder with a diameter of 4 feet and a height of 10 feet.

   Step 1: Draw and label a diagram.

   - *The height is 10 feet.*
   - *The diameter is 4 feet, therefore the radius is 2 feet.*

   4ft

   10 ft

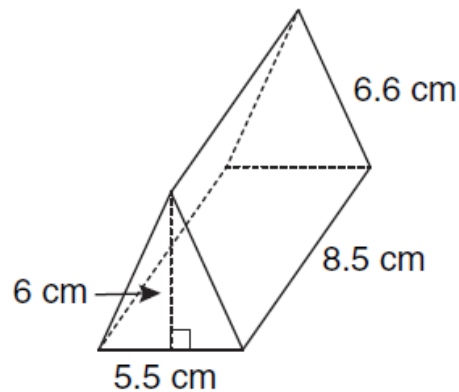   **Step 2: Choose the appropriate surface area formula.**

   $$SA_{cylinder} = 2\pi r^2 + 2\pi rh$$

   Step 3: Calculate the surface area.

   $$SA_{cylinder} = 2\pi \left(2\ ft\right)^2 + 2\pi \left(2\ ft\right)\left(10\ ft\right)$$
   $$= 25.1\ ft^2 + 125.7\ ft^2$$
   $$= 150.8\ ft^2$$

   The surface area of the cylinder is approximately 150.8 ft².

2. The right triangular prism shown is 8.5 cm long. The triangular base has a height of 6 cm, a base length of 5.5 cm, and two identical sides each measuring 6.6 cm. Determine the surface area of the prism, to the nearest square centimetre.

Step 1: Draw and label a diagram.
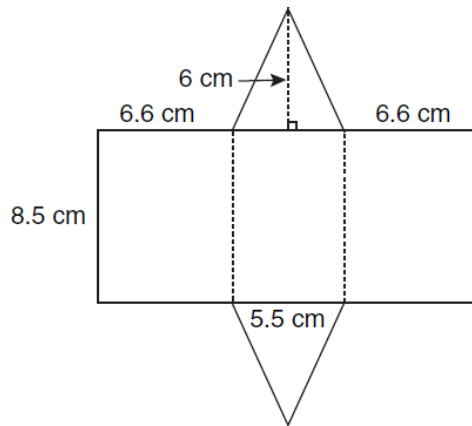
Step 2: Choose the appropriate surface area formula.

$$SA_{triangular\ prism} = ls + ls + lb + \cancel{2}\left(\frac{bh}{\cancel{2}}\right)$$

$$= 2ls + lb + bh$$

Step 3: Calculate the surface area.

$$SA_{triangular\ prism} = 2\times(8.5\ cm\times6.6\ cm)+(8.5\ cm\times5.5\ cm) + (5.5\ cm\times6\ cm)$$

$$= 2\times56.1\ cm^2 + 46.75\ cm^2 + 33\ cm^2$$

$$= 192\ cm^2$$

The surface area of the prism is approximately 192 cm².