

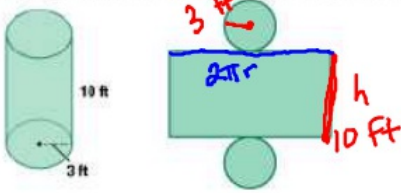






## p. 81 of spiral

<b>Cornell Notes</b> 	<b>Topic/Objective: Surface Area</b> Use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving cylinders.	<b>Name:</b> <b>Class/Period:</b> <b>Date:</b>
<b>Essential Question:</b> <span style="color: red;">How do I find surface area of cylinders?</span>		
<b>Questions:</b>	<b>Notes:</b> <div style="text-align: center;">  </div> <p>Surface Area of a cylinder is the <span style="color: red;">Sum</span> of the <span style="color: red;">area</span> of its circular bases and the area of its <span style="color: red;">curved</span> surface.</p> <ul style="list-style-type: none"> <li>→ The curved surface is actually a rolled up <span style="color: red;">rectangle</span>.</li> <li>→ Express units as <span style="color: red;">square</span> units since we are finding a type of area.</li> </ul> <p>A <span style="color: red;">net</span> is a pattern made when the surface of a 3-dimensional figure is laid out flat.</p> <ul style="list-style-type: none"> <li>→ Nets are a 2-dimensional representation of the solid that shows all the faces at once</li> <li>→ A cylinder's net is made of 2 <span style="color: red;">circles</span> and 1 <span style="color: red;">rectangle</span></li> </ul> <p>The <b>formula</b> for finding the <b>Total Surface Area</b> of a cylinder is <math>S = 2\pi rh + 2\pi r^2</math></p> <p>S is Total surface area    r is radius of base    h is height of figure</p> <p><math>2\pi rh</math> stands for the <span style="color: red;">circumference</span> times the <span style="color: red;">height</span> of the cylinder. <span style="color: red;">rectangle</span></p> <p><math>2\pi r^2</math> stands for the two <span style="color: red;">bases</span> of the cylinder <span style="color: red;">circles</span></p> <p>Find the total surface area of the cylinder using its net: <span style="color: red;">r = 3 ft    h = 10 ft</span></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Rectangle + 2 circles</p> <math display="block">A = 2\pi rh + A = 2\pi r^2</math> <math display="block">A = 2 \cdot \pi \cdot 3 \cdot 10 + A = 2 \cdot \pi \cdot 3^2</math> <math display="block">A = 60\pi + A = 18\pi</math> <math display="block">S = 78\pi \quad 78 \cdot 3.14 \approx 245 \text{ ft}^2</math> </div> </div> <p>The area of the rectangle in the net = height of cylinder • <span style="color: red;">circumference</span> of circular base</p>	

## p. 81 of spiral

	<p>The formula for finding the Lateral Surface Area of a cylinder is <math>S = 2\pi rh</math></p> <p>S is Total surface area    r is radius of base    h is height of figure</p>	
	<p><b>Remember:</b></p> <p>→ Total Surface Area is area of all surfaces, including bases (wrapping paper)</p> <p>→ Lateral Surface Area is area of all surfaces, excluding bases (label on a can)</p>	
	<div style="display: flex; align-items: flex-start;">  <div style="margin-left: 10px;"> <p>A web site advertises that it can turn your photo into an anamorphic image. To reflect the picture you need to cover a cylinder that is 32 mm in diameter and 100 mm tall with reflective material. How much reflective material will you need?</p> </div> </div>	
		<p><i>Lateral</i></p> $S = 2\pi rh$ $S = 2 \cdot \pi \cdot 16 \cdot 100$ $S = 3200\pi \approx 3200 \cdot 3.14 \approx 10048 \text{ mm}^2$
	<p>Find the lateral surface area and total surface area for each cylinder below:</p>	
	<p>1) </p> <p><math>d = 3 \text{ in}</math> <math>r = 1.5 \text{ in}</math></p>	<p>2) </p> <p><math>d = 11.4 \text{ yd}</math> <math>r = 5.7 \text{ yd}</math></p>
	<p><math>r = 1.5 \text{ in}</math> <math>h = 8.5 \text{ in}</math></p>	<p><math>r = 5.7 \text{ yd}</math> <math>h = 10.7 \text{ yd}</math></p>
	<p>Lateral surface area: <math>S = 2\pi rh</math></p> $S = 2 \cdot \pi \cdot 1.5 \cdot 8.5$ $S = 25.5\pi \approx 80.07 \text{ m}^2$	<p>Lateral surface area: <math>S = 2\pi rh</math></p> $S = 2 \cdot \pi \cdot 5.7 \cdot 10.7$ $S = 121.98\pi \approx 383 \text{ yd}^2$
	<p>Total surface area: <math>S = 2\pi rh + 2\pi r^2</math></p> $S = 2 \cdot \pi \cdot 1.5 \cdot 8.5 + 2 \cdot \pi \cdot 1.5^2$ $S = 25.5\pi + 4.5\pi$	<p>Total surface area: <math>S = 2\pi rh + 2\pi r^2</math></p> $S = 2 \cdot \pi \cdot 5.7 \cdot 10.7 + 2 \cdot \pi \cdot 5.7^2$ $S = 121.98\pi + 64.98\pi$
Summary:	$S = 30\pi \approx 94.2 \text{ m}^2$	$S = 186.96\pi \approx 587 \text{ yd}^2$