

CREATE A CYLINDER WITH VOLUME AND SURFACE AREA THAT HAVE EQUIVALENT VALUE

r = radius of the circular base

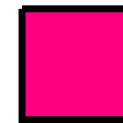
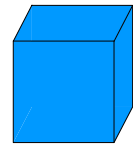
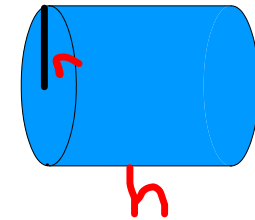
h = height of the cylinder

EXAMPLE: VOLUME OF 64 cubic inches π

SURFACE AREA OF 64 square inches π

* of course, volume and surface area can never be truly equivalent because volume always is measured in cubic units

and surface area is measured in square units



π

SET THE FORMULA FOR THE VOLUME OF A
CYLINDER EQUAL TO THE SURFACE AREA OF THE
CYLINDER AND SIMPLIFY IN TERMS OF RADIUS AND
HEIGHT

VOLUME

=

SURFACE AREA

$$\pi r^2 h = 2\pi r^2 + \pi 2rh$$

$$\frac{\cancel{\pi} r^2 h}{\cancel{\pi} \cancel{r}} = \frac{2\cancel{\pi} r^2}{\cancel{\pi} \cancel{r}} + \frac{\cancel{\pi} 2\cancel{r} h}{\cancel{\pi} \cancel{r}}$$

$$rh = 2r + 2h$$

NEXT STEP: plug in values for radius r and height h

$$r = 3$$

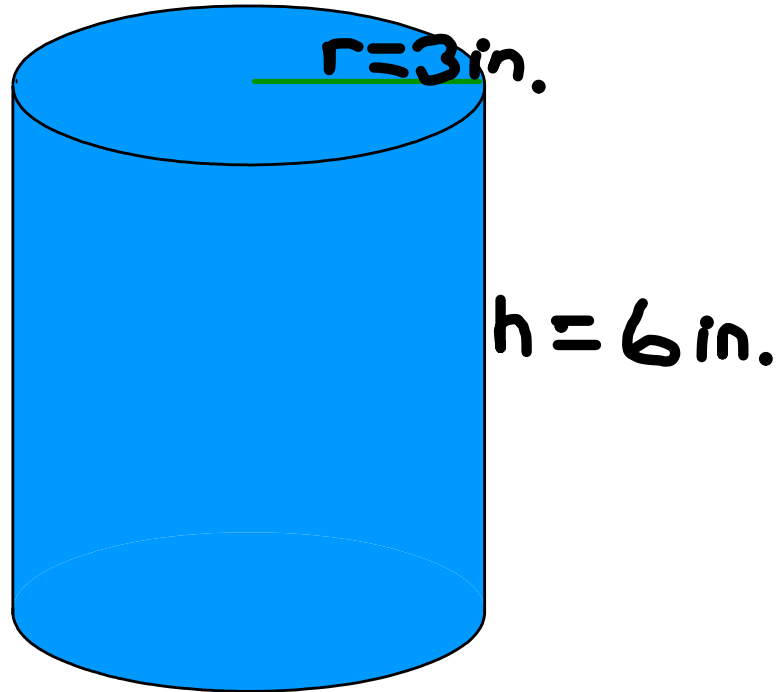
$$3h = 2 \times 3 + 2h$$

***subtract 2h from each side**

$$h = 6$$

**TRY h=3 and see what
your r would be**

r	h
1	2
2	0
3	6
4	4
100	$2\frac{1}{50}$



$$V = \pi 3^2 \cdot 6 = 54\pi \text{ in}^3 \sim 169.6 \text{ in}^3$$

$$\begin{aligned} \text{SA} &= 2\pi 3^2 + 2\pi 3 \cdot 6 = 18\pi + 36\pi \\ &= 54\pi \text{ in}^2 \sim 169.6 \text{ in}^2 \end{aligned}$$

**TRY TO CONSTRUCT A CYLINDER WITH
THESE PROPORTIONS**

THE EASIEST IS A $r=4$ and $h=4$

$r=3$ $h=6$ is more challenging

$r=6$ and $h=3$ is the most difficult

these are only the whole number solutions

try it with a $r=100$ and $h=2.02$

or a $h=100$ and $r=2.02$