Topic: Nets/Volume/Surface area of cylinders

Question: Find the volume of a right circular cylinder with base radius $10'$ and height $10'$, assuming $\pi \approx 3.14$.

Answer choices:

A $3{,}140\ \text{ft}^3$

B $314\ \text{ft}^3$

C $3.14\ \text{ft}^2$

D $1{,}413\ \text{ft}^3$

Solution: A

Plugging the dimensions of the cylinder we've been given into the formula for the volume of a cylinder, we get

$$V = \pi r^2 h$$

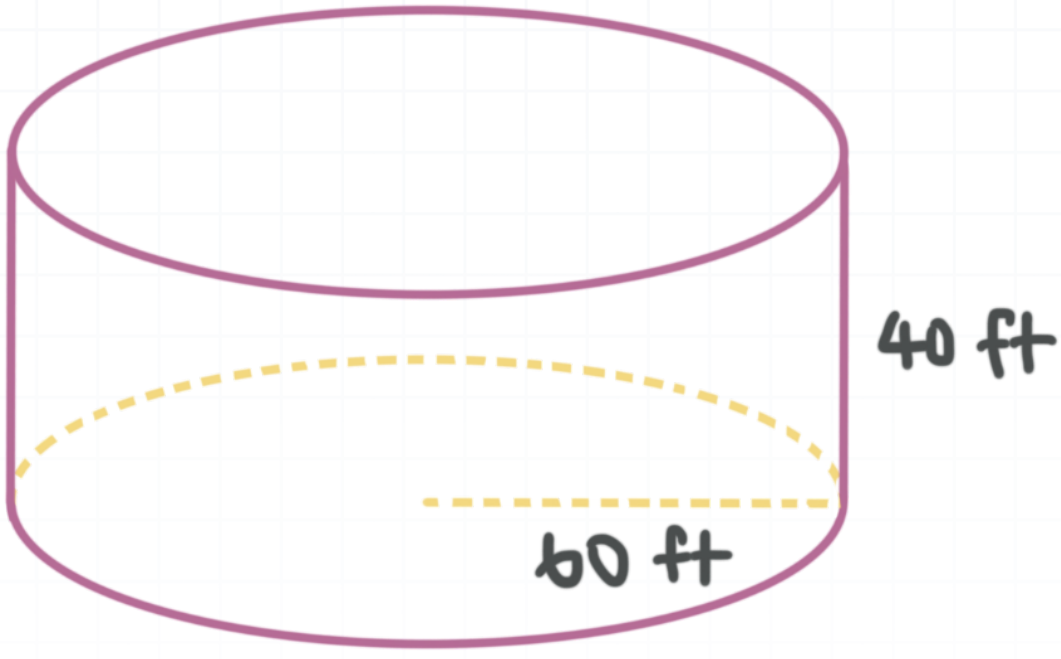
$$V \approx 3.14(10 \text{ ft})^2(10 \text{ ft})$$

$$V \approx 3.14(100 \text{ ft}^2)(10 \text{ ft})$$

$$V = 3{,}140 \text{ ft}^3$$

Topic: Nets/Volume/Surface area of cylinders

Question: How many square feet of steel will be needed to build a cylindrical steel tank with a height of 40 ft and a radius of 60 ft.



Answer choices:

A $8{,}000\pi$ ft^2

B $12{,}000\pi$ ft^2

C $18{,}000\pi$ ft^2

D $24{,}000\pi$ ft^2

Solution: B

Substituting the values we've been given into the formula for the surface area of a cylinder, we get

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

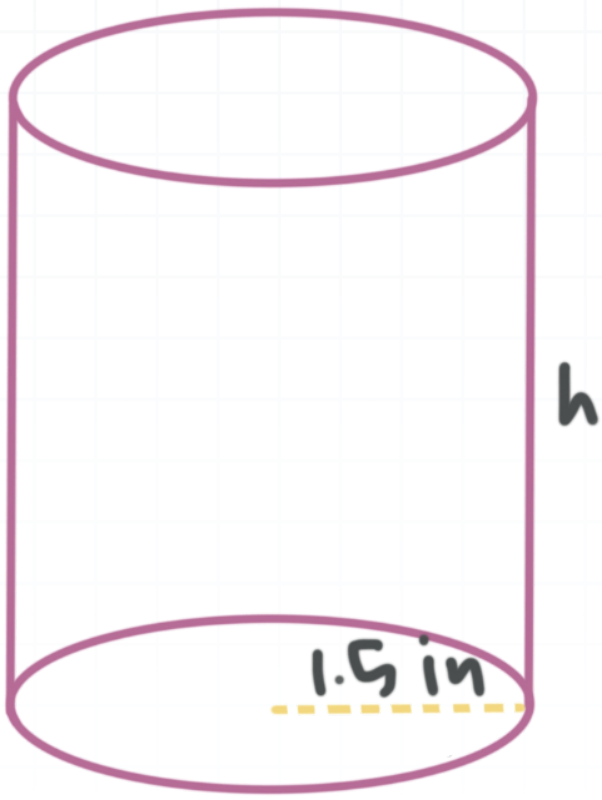
$$S = 2\pi(60 \text{ ft})(40 \text{ ft}) + 2\pi(60 \text{ ft})^2$$

$$S = 4{,}800\pi \text{ ft}^2 + 7{,}200\pi \text{ ft}^2$$

$$S = 12{,}000\pi \text{ ft}^2$$

Topic: Nets/Volume/Surface area of cylinders

Question: A cylindrical soup can has a surface area of 16.5π in^2 and a radius of 1.5 in. What is the height of the can?



Answer choices:

A 3 in

B 4 in

C 5 in

D 6 in

Solution: B

Plugging what we know into the formula for the surface area of a cylinder, we get

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

$$16.5\pi \text{ in}^2 = 2\pi(1.5 \text{ in})(h) + 2\pi(1.5 \text{ in})^2$$

$$16.5\pi \text{ in}^2 = (3\pi \text{ in})(h) + 4.5\pi \text{ in}^2$$

$$12\pi \text{ in}^2 = (3\pi \text{ in})(h)$$

$$4 \text{ in} = h$$