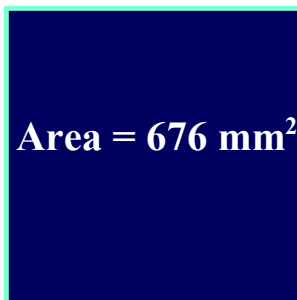


Warm Up Questions

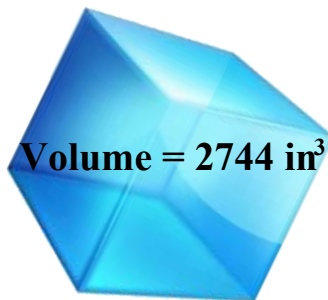
1.



Determine the side length of the square.

$$\begin{aligned}\sqrt{676} &= \sqrt{2 \cdot 2 \cdot 13 \cdot 13} \\ &= 2 \cdot 13 \\ &= 26\end{aligned}$$

2.



Determine the edge length of the cube.

$$\begin{aligned}\sqrt[3]{2744} &= \sqrt[3]{2 \cdot 2 \cdot 2 \cdot 7 \cdot 7 \cdot 7} \\ &= 2 \cdot 7 \\ &= 14\end{aligned}$$

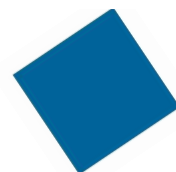
Tricky

Determine the side length of
a square if the area is $81x^4y^2$

$$\begin{aligned}\sqrt{81x^4y^2} &= \sqrt{3 \cdot 3 \cdot 3 \cdot 3 \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y} \\ &= 3 \cdot 3 \cdot x \cdot x \cdot y \\ &= 9x^2y\end{aligned}$$

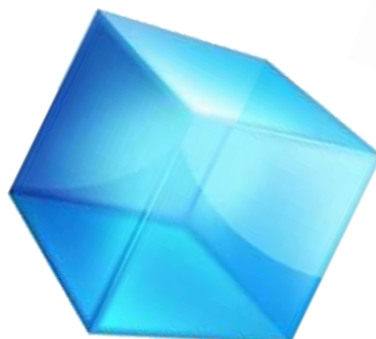
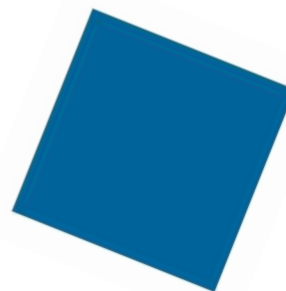


Area



Let's Take a Closer Look!!

Surface Area

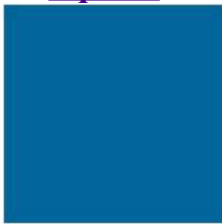


Volume



Formulas

Square



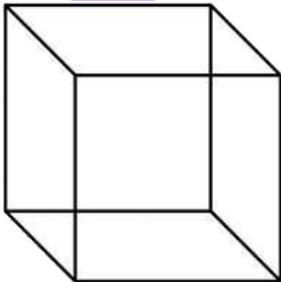
$$\text{Area} = l \times w$$

$$A = l \times l$$

$$A = l^2 \text{ (square)}$$

length and width are equal
(units²)

Cube



$$\text{Volume} = l \times w \times h = l^3$$

$$\text{Surface Area} = 6(l \times w)$$

$$= 6l^2$$

length, width and height are all equal
(units³)

$$\text{Area} = \frac{\text{Surface Area}}{6}$$

A cube has a surface area of 1944m². What is its volume?

① Find side length:

$$\text{Surface Area} = 6l^2$$

$$\frac{1944}{6} = \frac{6l^2}{6}$$

$$\sqrt{324} = \sqrt{l^2}$$

$$\sqrt{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 \cdot 3} = l$$

$$2 \cdot 3 \cdot 3 = l$$

$$\underline{18m = l}$$

② Find Volume:

$$V = l \times w \times h$$

$$V = l^3$$

$$V = 18^3$$

$$\boxed{9^x} \text{ or } \boxed{\wedge}$$

$$V = 18 \times 18 \times 18$$

$$\boxed{V = 5832m^3}$$

You Try!

A cube has a surface area of 864 m². What is its volume?

① Find side length
Surface Area = $6l^2$

$$\frac{864}{6} = \frac{6l^2}{6}$$

$$\sqrt{144} = \sqrt{l^2}$$

$$\sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3} = l$$

$$2 \cdot 2 \cdot 3 = l$$

$$\underline{\underline{12m = l}}$$

② Find Volume:

$$V = l \times w \times h$$

$$V = l^3$$

$$V = 12^3$$

$$V = 12 \cdot 12 \cdot 12$$

$$V = 1728 \text{ m}^3$$

A cube has a volume of 3375m^3 . What is its surface area?

① Find side length:

$$V = l \times w \times h$$

$$V = l^3$$

$$\sqrt[3]{3375} = \sqrt[3]{l^3}$$

$$\sqrt[3]{3375} = l$$

$$\sqrt[3]{\underline{5 \cdot 5 \cdot 5} \cdot \underline{3 \cdot 3 \cdot 3}} = l$$

$$\underline{5 \cdot 3} = l$$

$$\underline{15\text{m}} = l$$

② Find Surface Area:

$$SA = 6(l \times w)$$

$$SA = 6\underline{l^2}$$

$$SA = 6(15)^2$$

$$SA = 6 \times 15 \times 15$$

$$\boxed{SA = 1350\text{m}^2}$$

You Try!

A cube has a volume of 2197m³. What is its surface area?

① Find side length

$$V = l \times w \times h$$

$$V = l^3$$

$$\sqrt[3]{2197} = \sqrt[3]{l^3}$$

$$\sqrt[3]{2197} = l$$

$$\sqrt[3]{13 \cdot 13 \cdot 13} = l$$

$$\underline{13m = l}$$

② Find Surface area:

$$SA = 6(l \times w)$$

$$SA = 6l^2$$

$$SA = 6(13)^2$$

$$SA = 6 \times 13 \times 13$$

$$\boxed{SA = 1014m^2}$$



Funwork for Today

Pg. 147
9, 13, 17

Pg. 149
2d, 3f, 8df, 10

