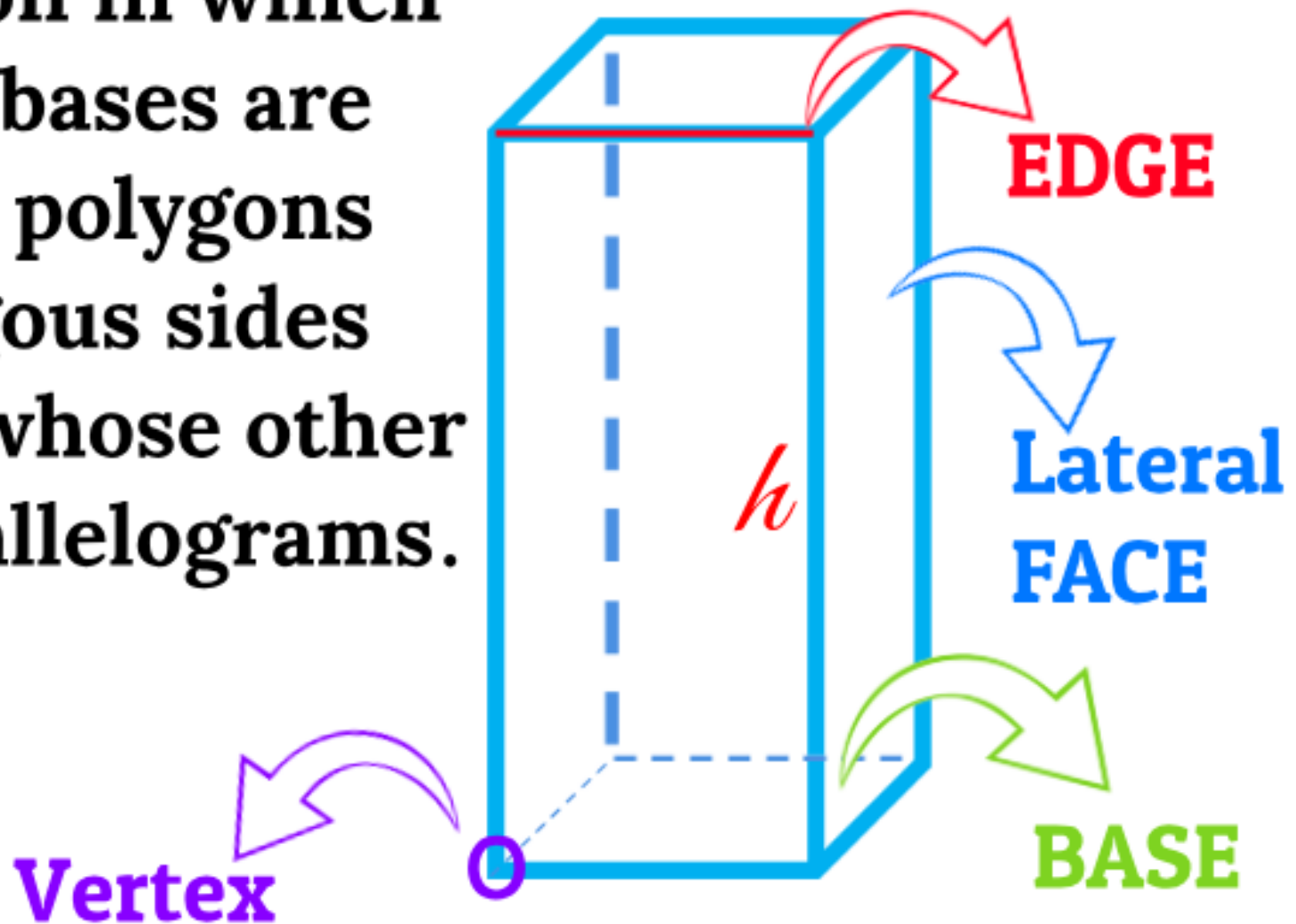# PRISM

Is a polyhedron in which two of whose bases are parallel equal polygons with homologous sides parallel, and whose other faces are parallelograms.

EDGE

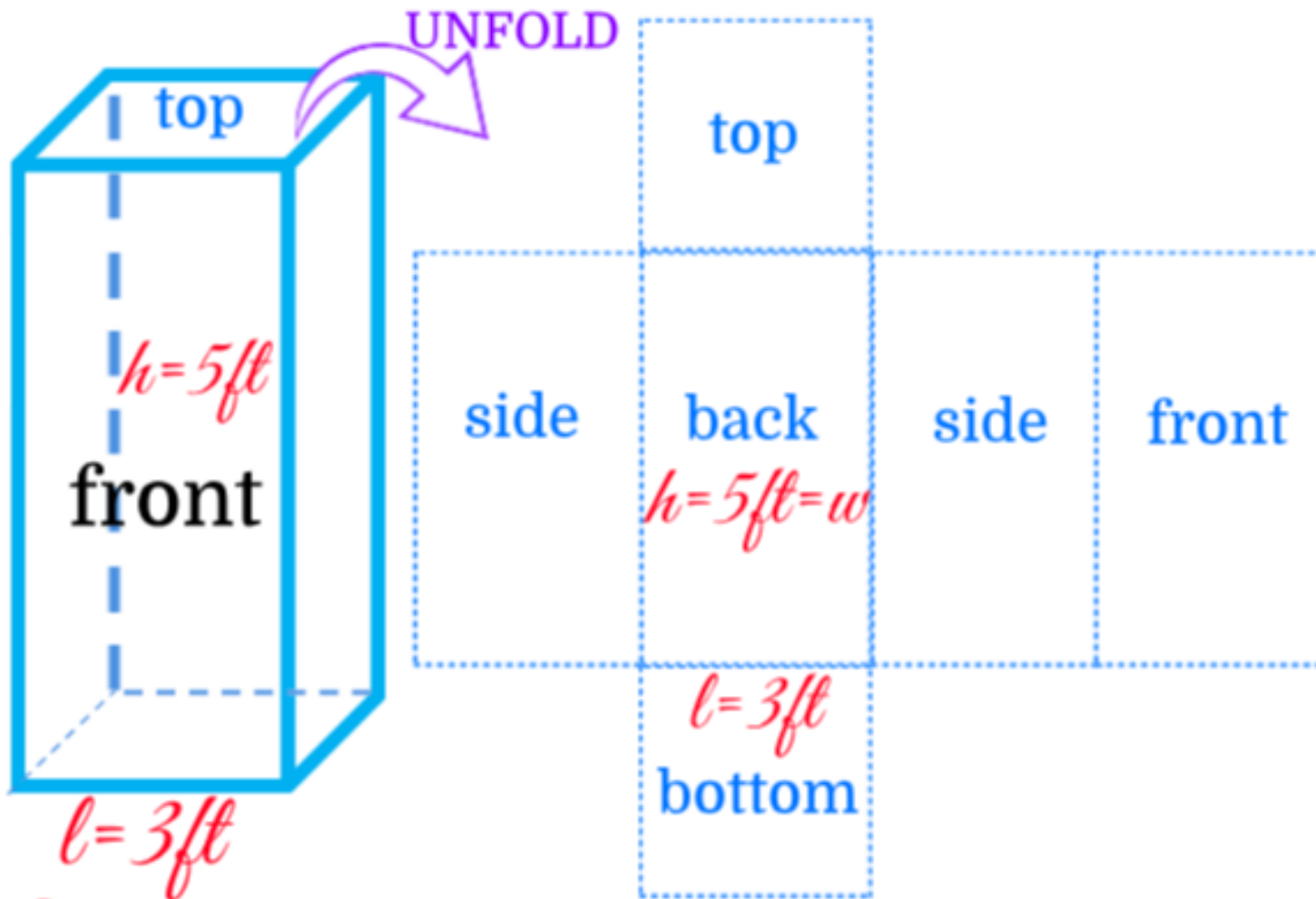**Lateral FACE**

h

Vertex

O

BASE

To find the surface area of a prism:
1) Find the area of a base.
2) Find the area of a lateral face.
3) Add the two areas of the bases with the areas of the lateral faces.

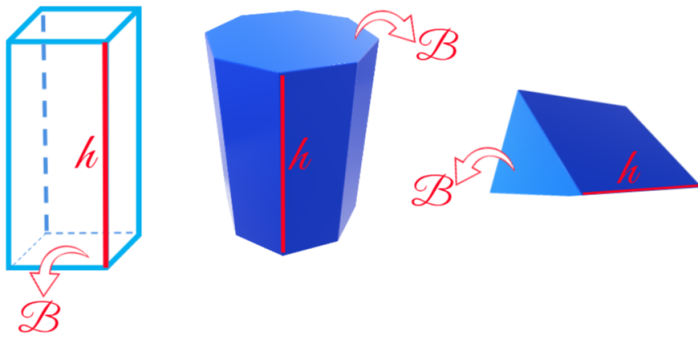EXAMPLE: Find the total surface area of a quadrangular prism with 3ft base length and 5ft height:

UNFOLD

top			
side	back $h=5ft=w$	side	front
	bottom $l=3ft$		

front $h=5ft$ $l=3ft$

1) Base Area:

Top
Bottom $\Big\}$ **SQUARES** $S = \ell^2$
2

2) Lateral Area:

Front
Back
Side
Side $\Big\}$ **RECTANGLES** $S = \ell \times w$
4

$$S_{Total} = 2(\ell^2) + 4(\ell \times w) = 2(3^2) + 4(3 \times 5) =$$
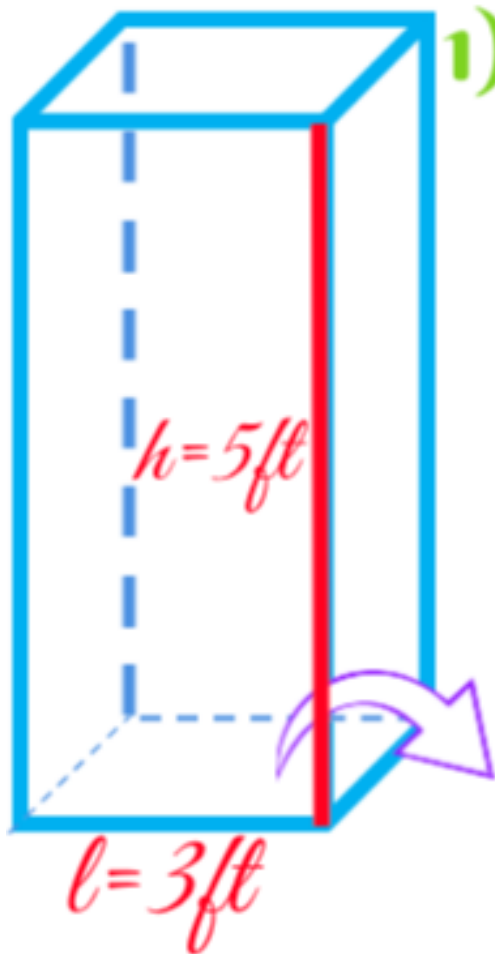$$= 2(9) + 4(15) = 18 + 60 = 78 ft^2 \checkmark$$

$$V = B \times h$$

B = Area of the Base

h = height

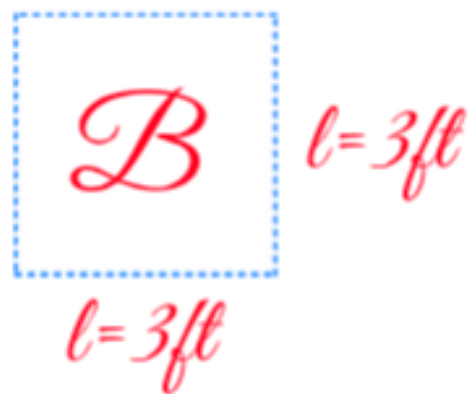**EXAMPLE: Find the volume of a quadrangular prism with 3ft base length and 5ft height:**

1) Area of the Base:

SQUARE

$$B = \ell^2$$

$$B = 3^2 = 9ft^2$$

$$B$$

$\ell = 3ft$

$\ell = 3ft$

$h = 5ft$

$\ell = 3ft$

2) Volume:

$$V = B \times h$$

$$V = (9) \times 5$$

$$V = 45ft^3$$