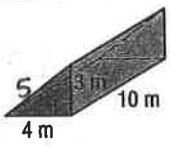
Surface Area of Prisms Notes

Characteristics of Prisms:

- Bases are parallel and congruent
- The lateral faces are faces that are not bases.
- The lateral faces intersect at lateral edges which are parallel.
- The altitude of a prism is a segment that is perpendicular to the bases with an endpoint in each base.
- For a right prism, the lateral edges are perpendicular to the bases. Otherwise, the prism is oblique.

Lateral Area of a Prism: $L = P \cdot h$ (P: perimeter of base; h: height)

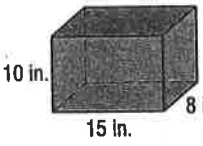
Find the lateral area of each prism.

1. 

$3+4+5 = 12 = P$

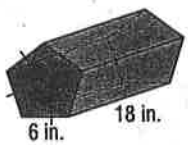
$h = 10$

$L = 12 \cdot 10 = 120\ m^2$

2. 

8×15 base: $46 \times 10 = 460\ in^2$

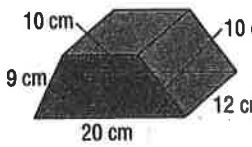
10×15 base: $400\ in^2$

3. 

$P = 6 \cdot 5 = 30$

$L = P \cdot h = 30 \cdot 18 =$

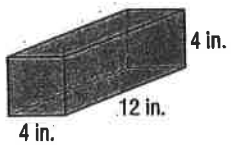
$540\ in^2$

4. 

$P = 49$

$L = 49 \cdot 12 =$

$588\ cm^2$

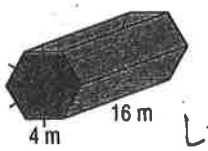
5. 

Square base: $16 \times 12 =$

$192\ in^2$

Rectangle base:

$32 \cdot 4 = 128\ in^2$

6. 

$4 \cdot 6 = 24 = P$

$L = P \cdot h = 24 \cdot 16 =$

$384\ m^2$

Surface Area of Prisms

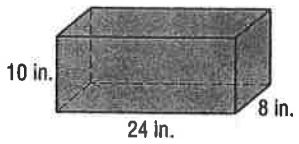
The surface area of a prism is the lateral area of the prism plus the areas of the bases.

Surface Area: $T = L + 2B$

↑ total ↑ lateral area ↑ area of base

Find the surface area of each prism. Round to the nearest tenth if necessary.

1.



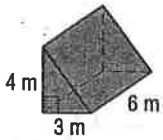
$L = 544$

$B = 10 \cdot 24 = 240$

$S = 544 + 2(240)$

$= \boxed{1024 \text{ in}^2}$

2.



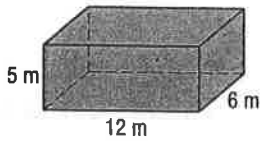
$L = 72$

$B = 6$

$S = 72 + 2(6)$

$= \boxed{84 \text{ m}^2}$

3.



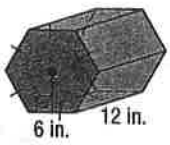
$L = 204$

$B = 60$

$S = 204 + 120$

$= \boxed{324 \text{ m}^2}$

4.



$L = 432$

$B = \frac{1}{2}Pa$

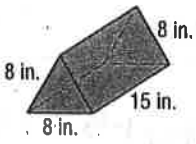
$\frac{1}{2}(36)(3\sqrt{3})$

$= 93.5$

$S = 432 + 2(93.5)$

$= \boxed{619.1 \text{ in}^2}$

5.



$L = 24 \cdot 15 = 360$

$B = \frac{1}{2}bh$

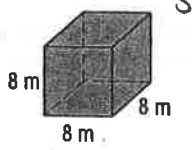
$\frac{1}{2}(8)(4\sqrt{3})$

$= 27.7$

$S = 360 + 2(27.7)$

$= \boxed{415.4 \text{ in}^2}$

6.



$L = 256$

$B = 64$

$S = 256 + 2(64)$

$= \boxed{384 \text{ m}^2}$