Find the lateral surface area and total surface area of each solid. Show work!
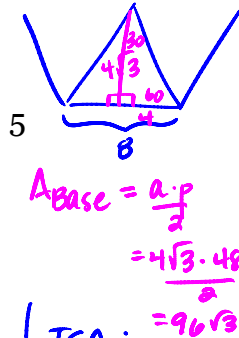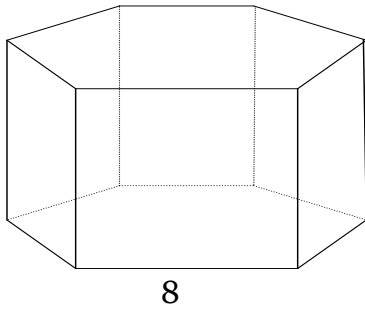
1. Right regular hexagonal prism.

8

LSA :
option #1
· $A_{\square Face} = 8 \cdot 5 = 40 u^2$
$\times 6 \; \square's$
240 u²   OR
option #2
· $LSA = p \cdot h$
$= (8 \cdot 6) \cdot 5 = $ 240 u²

5
8

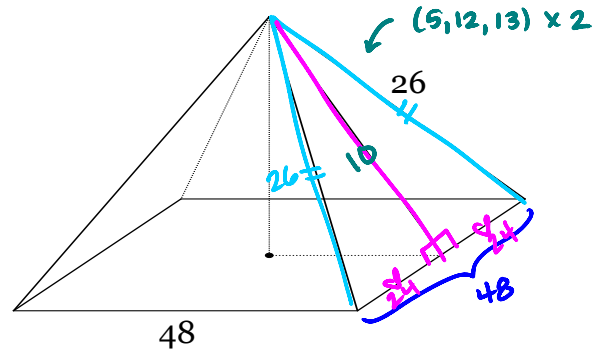$A_{Base} = \frac{a \cdot p}{2}$
$= \frac{4\sqrt{3} \cdot 48}{2}$
$= 96\sqrt{3}$

TSA :
$TSA = LSA + 2 \cdot A_{Base}$
$= 240 + 2(96\sqrt{3})$
$TSA = (240 + 192\sqrt{3}) u^2$

2. Square pyramid

Base edge = 48 and lateral edge = 26.

(5,12,13) × 2

48

LSA :
option #1
· $A_{\triangle Face} = \frac{48 \cdot 10}{2} = 240 u^2$
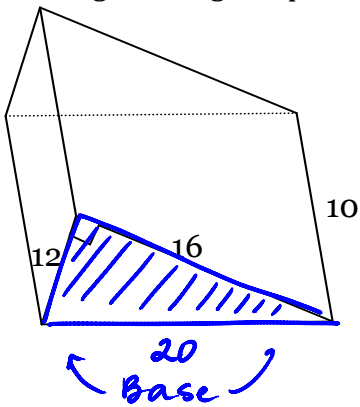$\times 4 \triangle s$
960 u²   OR
option #2
· $LSA = \frac{p \cdot \ell}{2} = \frac{48 \cdot 4 \cdot 10}{2} = 960 u^2$

TSA = LSA + A_{Base}
$= 960 + 48 \cdot 48$
$= 960 + 2304$
$TSA = 3,264 u^2$

3. Right triangular prism.

10
12   16
20
Base

$A_{Base} = \frac{b \cdot h}{2}$
$= \frac{12 \cdot 16}{2}$
$= 96$

LSA :
· option 1
$A_{\square 1} = 16 \cdot 10 = 160$
$A_{\square 2} = 12 \cdot 10 = 120$
$A_{\square 3} = 20 \cdot 10 = 200$
LSA = 480 u²

· option 2
$LSA = p \cdot h$
$= (12 + 16 + 20) \cdot 10$
$= (48)10$
LSA = 480 u²

$TSA = LSA + 2 A_{Base}$
$= 480 + 2(96)$
$= 480 + 192$
$TSA = 672 u^2$

4. Rectangular pyramid

★ Does not have a regular base so you can only use option #1
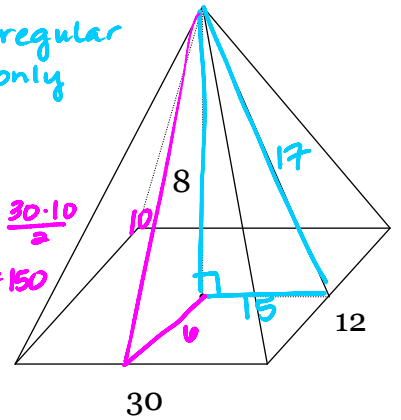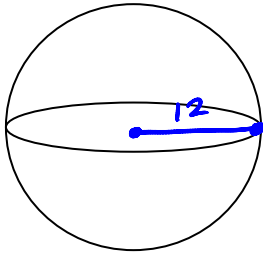
LSA :
$A_{\triangle Face1} = \frac{12 \cdot 17}{2}$
$= 102$
$A_{\triangle Face2} = \frac{30 \cdot 10}{2}$
$= 150$
$LSA = 2(102) + 2(150)$
$= 204 + 300$
$LSA = 504 u^2$

8   17
10   15
12
30

SO $TSA = LSA + A_{Base}$
$= 504 + 360$
$TSA = 864 u^2$

5. What is the difference between a prism and a pyramid?

A prism is a 3-D solid that has 2 ≅, ‖ bases with rectangular faces.

A pyramid is a 3-D solid that has 1 base with triangular faces.
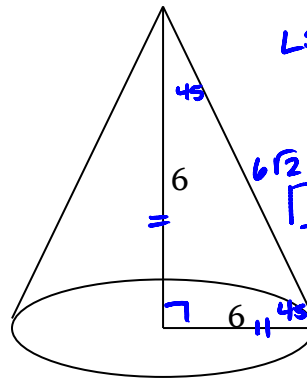
6. Sphere with radius = 12.

$$TSA = 4\pi r^2$$
$$= 4\pi(12)^2$$
$$\boxed{TSA = 576\pi \; u^2}$$
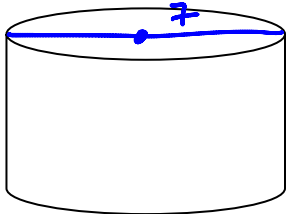
7. Cone. Radius = 6, altitude = 6

$$LSA = p \cdot \frac{\ell}{2}$$
$$= \frac{12\pi \cdot 6\sqrt{2}}{2}$$
$$\boxed{LSA = 36\sqrt{2}\pi \; u^2}$$

$6\sqrt{2}$

$$TSA = LSA + A_{Base}$$
$$\boxed{TSA = (36\sqrt{2}\pi + 36\pi) u^2}$$

8. Cylinder. Diameter = 14, height = 5.

$$LSA = p \cdot h$$
$$= 14\pi \cdot 5$$
$$\boxed{LSA = 60\pi \; u^2}$$

$$TSA = LSA + 2 \cdot A_{Base}$$
$$= 60\pi + 2(49\pi)$$
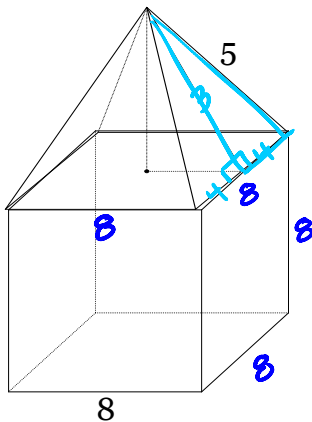$$= 60\pi + 98\pi$$
$$\boxed{TSA = 158\pi \; u^2}$$

9. Complete the analogy:

Cylinder is to prism as cone is to

__pyramid__ .

10. Find the total surface area of the combined shapes. (*Hint: Do not include any faces that would be inside the shape.*)

a) Square pyramid on top of cube

5

8   8   8

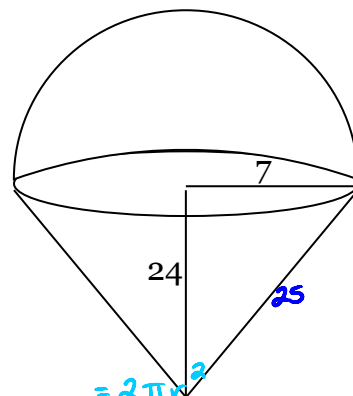8   8

$TSA = 64 + 48 + 256$
$\boxed{TSA = 368 \; u^2}$

① $A_{Base} = 64$

② $LSA_{pyramid} = p \cdot \frac{\ell}{2}$ or $A_{\triangle_1} = \frac{8 \cdot 3}{2} \times 4\triangle's$
$= \frac{32 \cdot 3}{2}$ $= 12 \times 4\triangle's$
$= 48$ $= 48$
$= 48$

③ $LSA \; prism = p \cdot h$ or $A_{\square_1} = 8 \cdot 8 \times 4\square's$
$= 32 \cdot 8$ $= 64 \times 4$
$= 256$ $= 256$

b) Hemisphere on top of cone.

7

24   25

$$LSA_{Hemisphere} = 2\pi r^2$$
$$= 2\pi(7)^2$$
$$= 2\pi \cdot 49$$
$$= 98\pi$$

$$LSA \; cone = p \cdot \frac{\ell}{2}$$
$$= \frac{14\pi \cdot 25}{2}$$
$$= 175\pi$$

$$TSA = 98\pi + 175\pi$$
$$\boxed{TSA = 273\pi \; u^2}$$