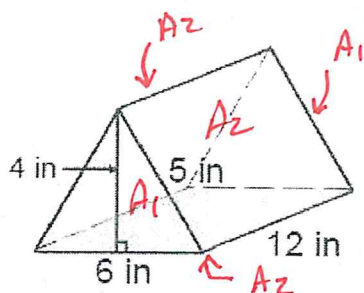


Grade 8 Math – Measurement Surface Area of 3D Shapes 2

Name: Key Class: _____ Date: _____

In order to give you practice on the layout of your work, here are some new questions and space to show your work.

1.



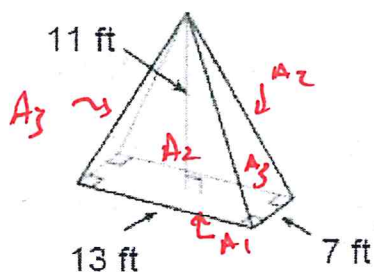
$$A_1 = \frac{B \times H}{2} \\ = \frac{6 \text{ in} \times 4 \text{ in}}{2} \\ = \frac{24 \text{ in}^2}{2} \\ = 12 \text{ in}^2$$

$$A_2 = L \times w \\ = 12 \text{ in} \times 5 \text{ in} \\ = 60 \text{ in}^2$$

$$A_T = 2A_1 + 3A_2 \\ = 2(12 \text{ in}^2) + 3(60 \text{ in}^2) \\ = 24 \text{ in}^2 + 180 \text{ in}^2 \\ = 204 \text{ in}^2$$

∴ The total surface area of this triangular prism is 204 in^2 .

2.



$$A_1 = L \times w \\ = 13 \text{ ft} \times 7 \text{ ft} \\ = 91 \text{ ft}^2$$

$$A_2 = \frac{B \times H}{2} \\ = \frac{13 \text{ ft} \times 11.543 \text{ ft}}{2}$$

* height of A_2 is 11.543 ft by Pythagorean Theorem

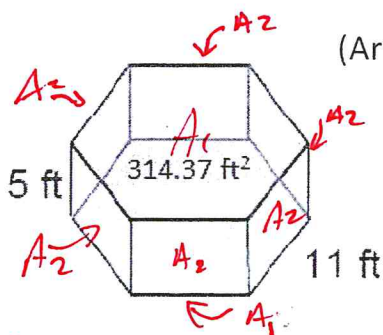
$$A_3 = \frac{B \times H}{2} \\ = \frac{7 \text{ ft} \times 12.777 \text{ ft}}{2} \\ = 44.7195 \text{ ft}^2$$

Height of A_3 is 12.777 ft by Pythagorean Theorem.

$$A_T = A_1 + 2A_2 + 2A_3 \\ = 91 \text{ ft}^2 + 2(15.0295 \text{ ft}^2) + 2(44.7195 \text{ ft}^2) \\ = 91 \text{ ft}^2 + 30.059 \text{ ft}^2 + 89.439 \text{ ft}^2 \\ = 330.50 \text{ ft}^2$$

∴ The total surface area of this rectangular pyramid is 330.50 ft^2 rounded to the second decimal place.

3.

(Area of hexagonal face is 314.37 ft^2)

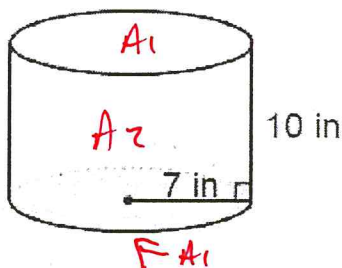
$$A_1 = 314.37 \text{ ft}^2 \text{ (given)}$$

$$\begin{aligned} A_2 &= L \times W \\ &= 11 \text{ ft} \times 5 \text{ ft} \\ &= 55 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} A_T &= 2A_1 + 6A_2 \\ &= 2(314.37 \text{ ft}^2) + 6(55 \text{ ft}^2) \\ &= 628.74 \text{ ft}^2 + 330 \text{ ft}^2 \\ &= 958.74 \text{ ft}^2 \end{aligned}$$

∴ The total surface area of this hexagonal prism is 958.74 ft^2 .

4.



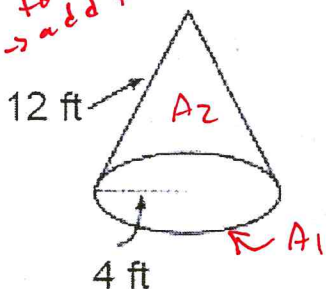
$$\begin{aligned} A_1 &= \pi r^2 \\ &= 3.14 \times 7 \text{ in} \times 7 \text{ in} \\ &= 3.14 \times 49 \text{ in}^2 \\ &= 153.86 \text{ in}^2 \end{aligned}$$

$$\begin{aligned} A_2 &= \pi D \times h \\ &= 3.14 \times 2(7 \text{ in}) \times 10 \text{ in} \\ &= 3.14 \times 14 \text{ in} \times 10 \text{ in} \\ &= 3.14 \times 140 \text{ in}^2 \\ &= 439.6 \text{ in}^2 \end{aligned}$$

$$\begin{aligned} A_T &= 2A_1 + A_2 \\ &= 2(153.86 \text{ in}^2) + 439.6 \text{ in}^2 \\ &= 307.72 \text{ in}^2 + 439.6 \text{ in}^2 \\ &= 747.32 \text{ in}^2 \end{aligned}$$

∴ The total surface area of this cylinder is 747.32 in^2 .

5. * new formula
→ add to chart.



$$\begin{aligned} A_1 &= \pi r^2 \\ &= 3.14 \times 4 \text{ ft} \times 4 \text{ ft} \\ &= 3.14 \times 16 \text{ ft}^2 \\ &= 50.52 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} A_2 &= \pi r s \\ &= 3.14 \times 4 \text{ ft} \times 12 \text{ ft} \\ &= 3.14 \times 48 \text{ ft}^2 \\ &= 150.72 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} A_T &= A_1 + A_2 \\ &= 50.52 \text{ ft}^2 + 150.72 \text{ ft}^2 \\ &= 201.24 \text{ ft}^2 \end{aligned}$$

The total surface area is 201.24 ft^2 for this cone.