

Flash Cards: Surface Area of Pyramids and Cones

Directions: For each three-dimensional figure, draw the 'net' or the surfaces of the figure when they are laid out flat. Label all dimensions.

1. Find the surface area of this figure. A pyramid with a square base. The base measures 10 inches by 10 inches, the height of the pyramid is 7.8 inches, and the slant height of the pyramid is 11 inches.
2. Find the surface area of this figure. A pyramid with a square base. The base measures 15 inches by 15 inches, the height of the pyramid is 10 inches, and the slant height of the pyramid is not given.
3. Find the surface area of this figure. A cone with radius 20 feet and height of 30 feet.
4. Find the surface area of a cone with height 18 centimeters and slant height 19.5 centimeters.

Answers:

1. 1. Draw and label the surfaces of a figure.

This was done in the first set of flash cards.

2. Find the area of each surface.

Square: $A = s \cdot s = (10)(10) = 100$

Triangles: A equals one-half b times h equals one-half 10 times 11 equals 55.

3. Add the areas together.

$SA = \text{base} + 4\text{sides} = 100 + 4(55) = 320$

4. Label the answer with 'square units'.

The surface area is 320 in^2 .

2. 1. Draw and label the surfaces of a figure.

This was done in the first set of flash cards.

2. Find the area of each side.

Square: $A = s \cdot s = (15)(15) = 225$

Triangles: A equals one-half b times h equals one-half 15 times 12.5 equals 93.75.

3. Add the areas together.

$SA = \text{base} + 4\text{sides} = 225 + 4(93.75) = 600$

4. Label the answer with 'square units'.

The surface area is 600 in^2 .

3. 1. Draw and label the sides of a figure.

This was done in the first set of flash cards.

2. Find the area of each side.

$$\text{Circle: } A = \pi r^2 = \pi(20)^2 = 400\pi$$

$$\text{Sector: } A = \pi r l = \pi(20)(36.06) = 721.2\pi$$

3. Add the areas together.

$$\text{SA} = \text{circle} + \text{sector}$$

$$\text{SA} = \pi r^2 + \pi r l = 400\pi + 721.2\pi = 1121.2\pi$$

4. Label the answer with 'square units'.

The surface area is $1121.2\pi \text{ ft}^2$.

This is approximately 3522.35 ft^2 .

4. 1. Draw and label the sides of a figure.

This was done in the first set of flash cards.

2. Find the area of each side.

$$\text{Circle: } A = \pi r^2 = \pi(7.5)^2 = 56.25\pi$$

$$\text{Sector: } A = \pi r l = \pi(7.5)(19.5) = 146.25\pi$$

3. Add the areas together.

$$\text{SA} = \text{circle} + \text{sector}$$

$$\text{SA} = \pi r^2 + \pi r l = 56.25\pi + 146.25\pi = 202.5\pi$$

4. Label the answer with 'square units'.

The surface area is $202.5\pi \text{ cm}^2$.

This is approximately 636.17 cm^2 .