



Surface Area & Volume

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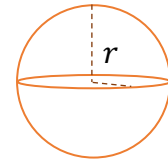
The surface area and volume of the 3D objects below can be found using the formulas provided.

Volume of a sphere

$$V = \frac{4}{3}\pi r^3$$

SA of a sphere

$$SA = 4\pi r^2$$

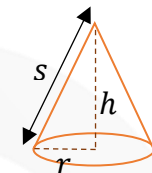


Volume of a right cone

$$V = \frac{1}{3}\pi r^2 h$$

SA of a right cone

$$SA = \pi r^2 + \pi r s$$
$$SA = \pi r^2 + \pi r \sqrt{r^2 + h^2}$$



Volume of a right pyramid (square)

$$V = \frac{1}{3}b^2 h$$

SA of a right pyramid (square)

$$SA = 2bs + b^2$$

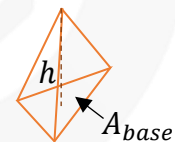


Volume of a right pyramid (triangle)

$$V = \frac{1}{3}A_{base} h$$

SA of a right pyramid (triangle)

$$SA = A_{base} + \frac{3}{2}bh$$



Instructions: Draw the shapes below and answer the questions.

1

Find the volume and SA.

Sphere

$$r = 4.65\text{mm}$$



2

Find the volume and SA.

Square-based pyramid

$$b = 8.1\text{cm}$$

$$h = 12.8\text{cm}$$

$$s = 14.2\text{cm}$$

3

Find the volume and SA.

Right cone

$$r = 4.5\text{cm}$$

$$h = 7.8\text{cm}$$

$$s = 9\text{cm}$$

4

Find the volume and SA.

Triangle-based pyramid

$$A_{\text{base}} = 281.65\text{cm}^2$$

$$b = 17.7\text{cm}$$

$$h = 21.4\text{cm}$$

5

Find the SA.

Right cone

$$d = 22.8\text{m}$$

$$s = 15.3\text{m}$$



6

Find A_{base} .

Triangle-based pyramid

$$V = 2069.6\text{cm}^3$$

$$h = 72.5\text{cm}$$

7

Find the radius.

Sphere

$$V = 45.45\text{mm}^3$$

8

Find the base.

Square-based pyramid

$$V = 7525.3\text{m}^3$$

$$h = 66.6\text{m}$$

9

Find the height.

Right cone

$$V = 3005\text{m}^3$$

$$r = 18\text{m}$$



10

Find the side length.

Square-based pyramid

$$SA = 1433.3\text{mm}^2$$

$$b = 27.5\text{mm}$$

11

Find the volume.

Right cone

$$d = 8.4\text{cm}$$

$$h = 10.5\text{cm}$$

12

Find the base.

Square-based pyramid

$$V = 1101.2\text{km}^3$$

$$h = 4.2\text{km}$$

13

Find the radius.

Right cone

$$V = 8982.2\text{mm}^3$$

$$h = 45.5\text{mm}$$



14

Find the radius.

Sphere

$$SA = 16.8\text{m}^2$$

15

Find the height.

Square-based pyramid

$$V = 8985.5\text{m}^3$$

$$b = 39.4\text{m}$$

16

Find the SA.

Right cone

$$r = 14.5\text{mm}$$

$$h = 15.9\text{mm}$$

17

Find A_{base} .

Triangle-based pyramid

$$SA = 14,001.8\text{mm}^2$$

$$b = 148.2\text{mm}$$

$$h = 58.3\text{mm}$$



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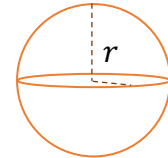
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SA of a sphere

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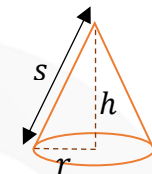


Volume of a right cone

$$V = \frac{1}{3}\pi r^2 h$$

SA of a right cone

$$SA = \pi r^2 + \pi r s$$
$$SA = \pi r^2 + \pi r \sqrt{r^2 + h^2}$$



Volume of a right pyramid (square)

$$V = \frac{1}{3}b^2 h$$

SA of a right pyramid (square)

$$SA = 2bs + b^2$$

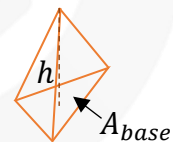


Volume of a right pyramid (triangle)

$$V = \frac{1}{3}A_{base} h$$

SA of a right pyramid (triangle)

$$SA = A_{base} + \frac{3}{2}bh$$



Instructions: Draw the shapes below and answer the questions.

1

Find the SA.

Right cone

$$d = 33.9\text{cm}$$

$$h = 30\text{cm}$$



2

Find the volume and SA.

Square-based pyramid

$$b = 19.4\text{m}$$

$$h = 24.5\text{m}$$

$$s = 28.2\text{m}$$

3

Find the A_{base} .

Triangle-based pyramid

$$SA = 16,793.2\text{km}^2$$

$$b = 108.5\text{km}$$

$$h = 56.4\text{km}$$

4

Find the SA.

Right cone

$$r = 20.2\text{km}$$

$$h = 34.6\text{km}$$

5

Find the base.

Square-based pyramid

$$V = 2980.7\text{mm}^3$$

$$h = 21.8\text{mm}$$



6

Find the volume and SA.

Sphere

$$r = 0.275\text{km}$$

7

Find the height.

Square-based pyramid

$$V = 7896.6\text{cm}^3$$

$$b = 22.8\text{cm}$$

8

Find the side length.

Square-based pyramid

$$SA = 7750.4\text{km}^2$$

$$b = 49.9\text{km}$$

9

Find the radius.

Sphere

$$V = 13.89\text{cm}^3$$



10

Find the SA.

Right cone

$$d = 47.4\text{m}$$

$$h = 16.6\text{m}$$

11

Find the volume and SA.

Triangle-based pyramid

$$A_{base} = 605.2\text{m}^2$$

$$b = 18.9\text{m}$$

$$h = 32.3\text{m}$$

12

Find the side length.

Right cone

$$SA = 1445.5\text{cm}^2$$

$$r = 5.8\text{cm}$$

13

Find the height.

Square-based pyramid

$$V = 4555.4\text{cm}^3$$

$$b = 36.8\text{cm}$$



14

Find the height.

Triangle-based pyramid

$$A_{base} = 1234.1\text{cm}^2$$

$$V = 15,430.8\text{cm}^3$$

15

Find the volume and SA.

Right cone

$$r = 18.3\text{mm}$$

$$h = 26.5\text{mm}$$

$$s = 32.2\text{mm}$$

16

Find the diameter.

Sphere

$$V = 26.52\text{km}^3$$

17

Find the base.

Triangle-based pyramid

$$A_{base} = 727.7\text{mm}^2$$

$$SA = 27,455.9\text{mm}^2$$

$$h = 113.5\text{mm}$$