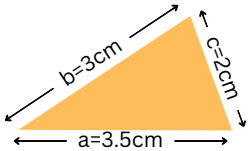
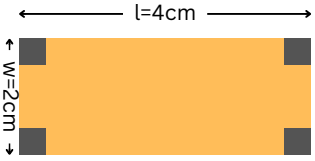
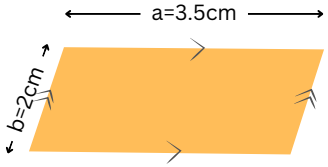
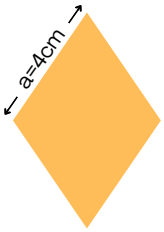
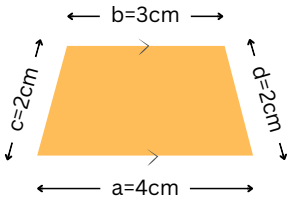
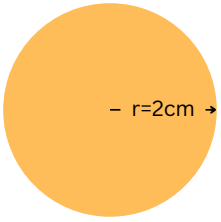
Perimeter of 2-D Figures

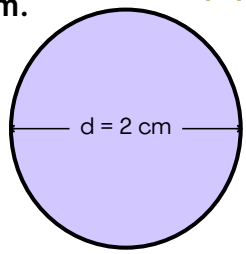
Shape	Name	Perimeter	Example
	Triangle	P = (a + b + c)	P = 3.5 + 3 + 2 = 8.5 (cm)
	Square	P = 4 × a	P = 4 × 2 = 8 (cm)
	Rectangle	P = 2 (l + w)	P = 2 (4 + 2) = 12 (cm)
	Parallelogram	P = 2 (a + b)	P = 2 (3.5 + 2) = 11 (cm)
	Rhombus	P = 4 × a	P = 4 × 4 = 16 (cm)
	Trapezoid	P = (a + b + c + d)	P = 4 + 3 + 2 + 2 = 11 (cm)
	Circle (diameter=d, radius=r, d=2r)	P = πd = 2πr	P = 2π × 2 = 4π (cm)

Perimeter of 2-D Figures

Name : _____

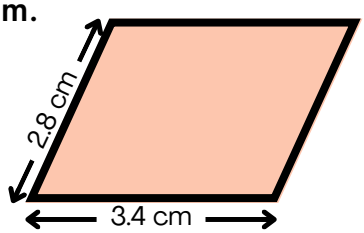
✏️ Perimeter of Simple Shape

⭐ The circumference of a circle with a diameter of 2 cm is _____ cm.



⭐ The perimeter of a rhombus is 36 cm. Its side length is _____ cm.

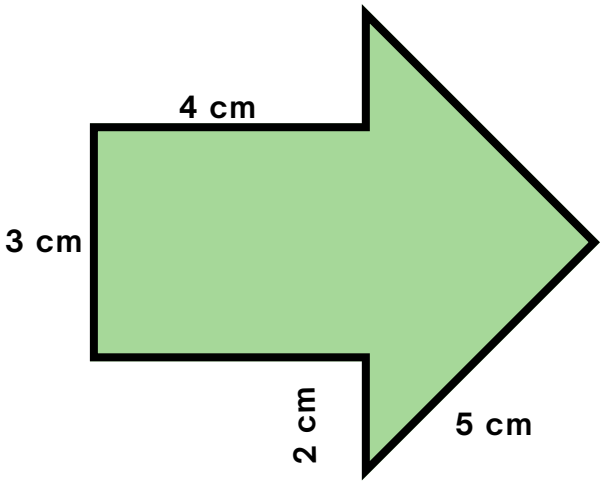
⭐ The perimeter of the parallelogram in the figure is _____ cm.



⭐ A rectangle has a length of 3.2 cm, and its width is half of the length. The perimeter of the rectangle is _____ cm.

✏️ Perimeter of Combined Shape

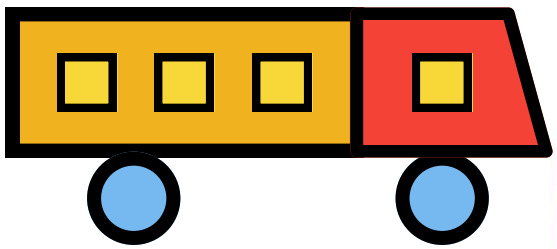
⭐ The perimeter of the road sign is _____ cm.



⭐ A robot's head is composed of two trapezoids. Each trapezoid has a top base of 20 cm, a bottom base of 30 cm, and both legs are 13 cm long. The perimeter of the robot's head is _____ cm.

🤔 Challenge

⭐ A toy truck is shown as in the figure. The red trapezoid has a top base of 6 cm, a bottom base of 14 cm, a height of 6 cm, and a slanted side of 10 cm. The rectangle has a length of 18 cm, and the radius of the circles is 3 cm. The perimeter of the truck is _____ m.



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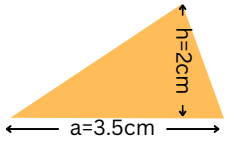
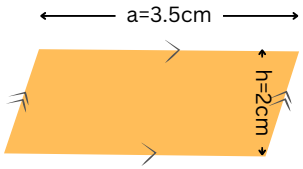
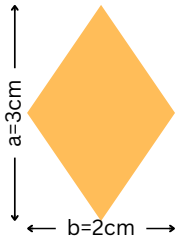
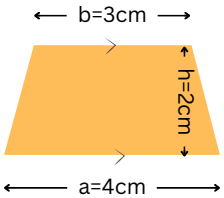
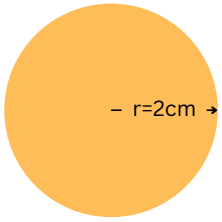
Area of 2-D Figures

Shape	Name	Area	Example
	Triangle	$A = \frac{1}{2}ah$	$A = \frac{1}{2} \times 3.5 \times 2 = 3.5\ (cm^2)$
	Square	$A = s^2$	$A = 2^2 = 4\ (cm^2)$
	Rectangle	$A = l \times w$	$A = 4 \times 2 = 8\ (cm^2)$
	Parallelogram	$A = a \times h$	$A = 3.5 \times 2 = 7\ (cm^2)$
	Rhombus	$A = \frac{1}{2}ab$	$A = \frac{1}{2} \times 3 \times 2 = 3\ (cm^2)$
	Trapezoid	$A = \frac{1}{2}(a + b)h$	$A = \frac{1}{2}(3 + 4) \times 2 = 7\ (cm^2)$
	Circle	$A = \pi r^2$	$A = \pi \times 2^2 = 4\pi\ (cm^2)$

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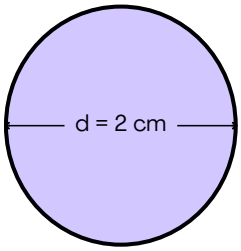
Area of 2-D Figures

Name : _____

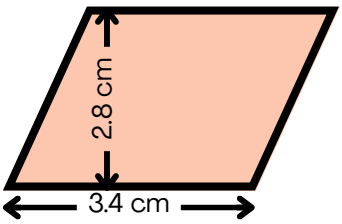
✏️ Area of Simple Shape

⭐ The area of a circle with a diameter of 2 cm is _____ cm².



⭐ A rhombus has diagonals of 5 cm and 6 cm. Its area is _____ cm².

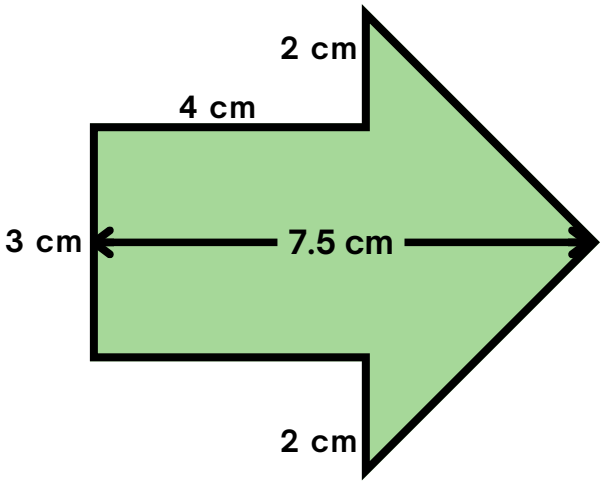
⭐ The area of the parallelogram in the figure is _____ cm².



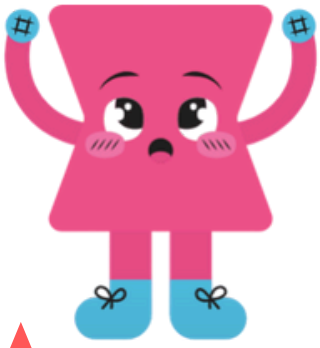
⭐ A rectangle has a length of 3.2 cm, and its width is half of the length. The area of the rectangle is _____ cm².

✏️ Area of Combined Shape

⭐ The area of the road sign is _____ cm².

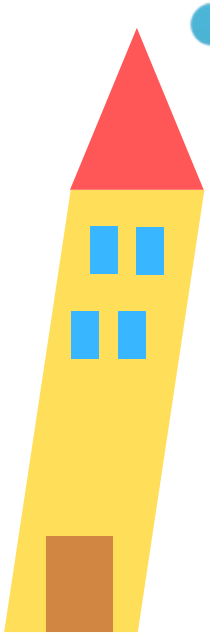


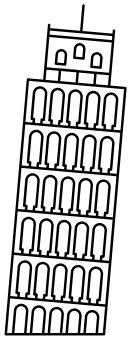
⭐ A robot's head is composed of two trapezoids. Each trapezoid has a top base of 20 cm and a bottom base of 30 cm. The height of the robot's head is 24 cm. The area of the robot's head is _____ cm².



🤔 Challenge

As shown in the figure, building blocks are stacked to form a house resembling the Leaning Tower of Pisa. The base of the triangle is 20.1 cm, and its height is 30.2 cm. The total height of the figure is 1 meter. The area of the house is _____ cm².





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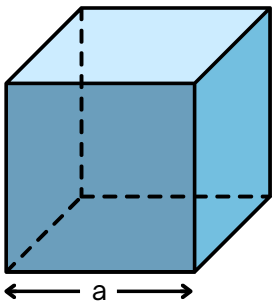
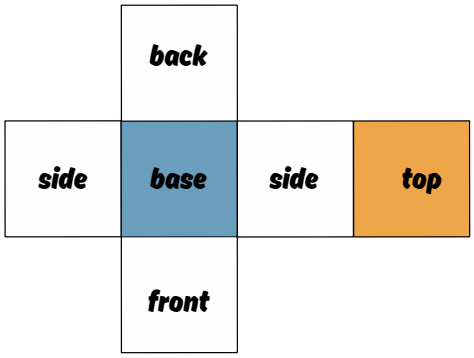
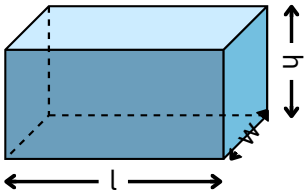
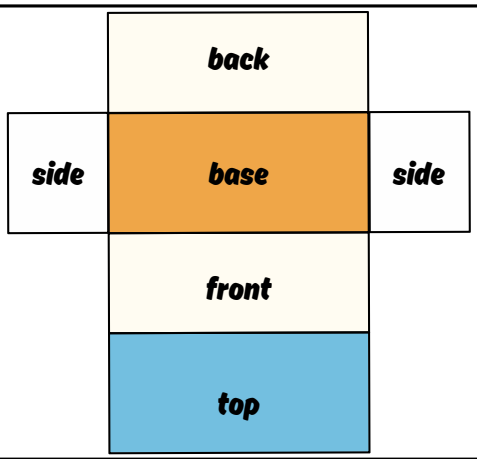
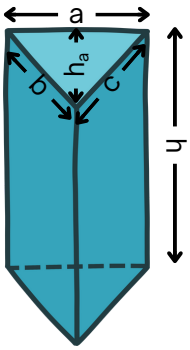
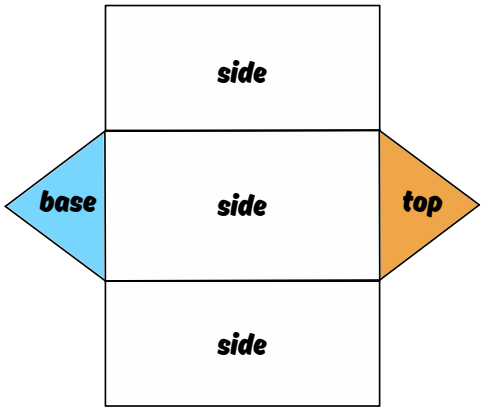
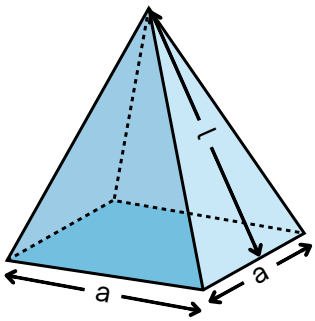
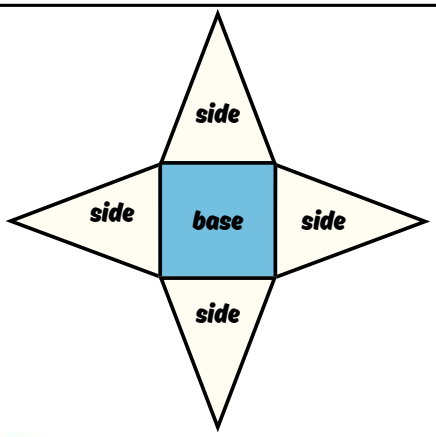
Surface Area of 3-D Figures

Shape	Net	Surface Area
 Cube		$S = 6a^2$
 Cuboid (Rectangular Prism)		$S = 2(lw + lh + wh)$
 Triangular Prism		$S = 2A_{base} + (a + b + c)\,h$ $= ah_a + (a + b + c)\,h$
 Rectangular Pyramid		$S = A_{base} + 4A_{side}$ $= a^2 + 2al$

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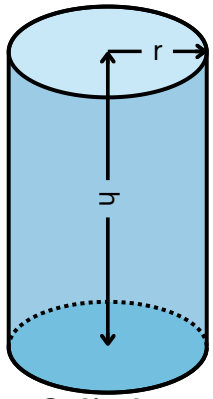
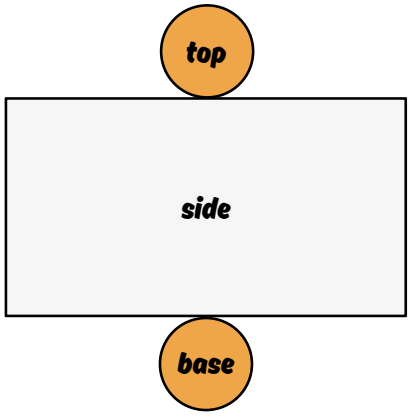
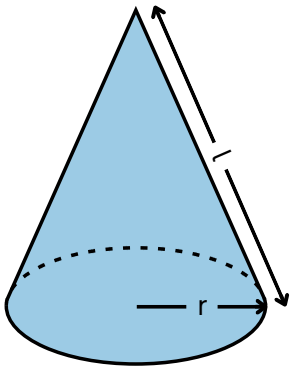
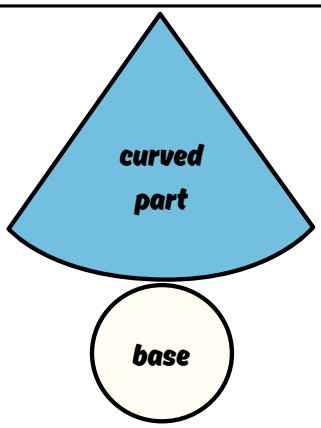
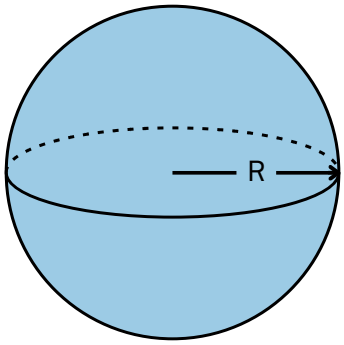
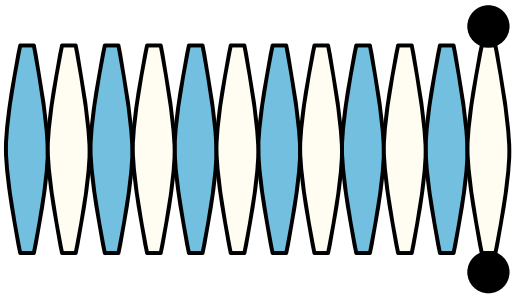
Surface Area of 3-D Figures

Shape	Net	Surface Area
 Cylinder		$S = 2\pi r^2 + 2\pi rh$
 Cone		$S = \pi r^2 + \pi rl$
 Sphere/Ball		$S = 4\pi R^2$

To find the surface area of a solid figure, add up the areas of all its faces.

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PreA Teacher Jia Ming
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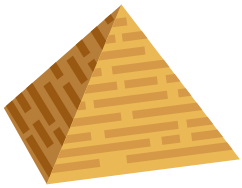
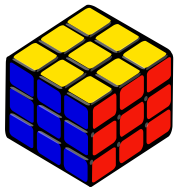
Surface Area of 3-D Figures

Name : _____

Classification-Name the Shape



_____



_____

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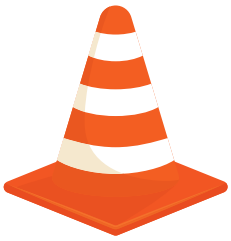


_____

_____

_____

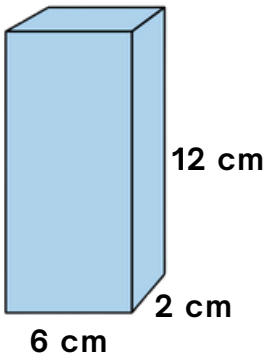
Calculate the Surface Area

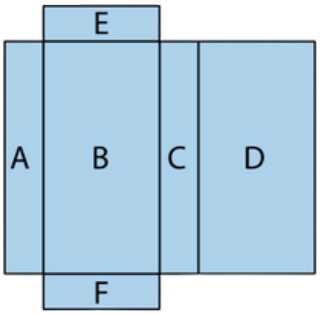
The rectangular prism below has a length of 6 cm, a width of 2 cm, and a height of 12 cm.

The area of A = the area of _____ = _____ cm^2

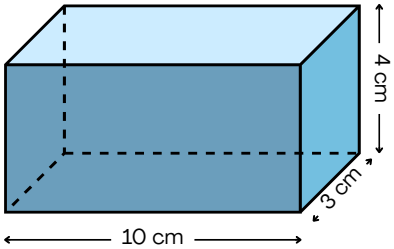
The area of B = the area of _____ = _____ cm^2

The area of E = the area of _____ = _____ cm^2





The surface area of the rectangular prism is _____ cm^2.



The surface area of a cube is 8.64 cm^2. Its edge length is _____ cm.

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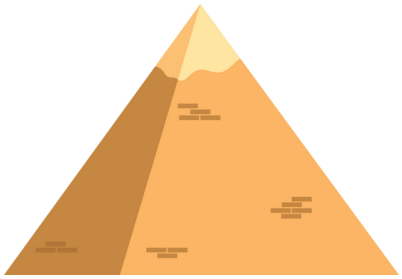
Surface Area of 3-D Figures

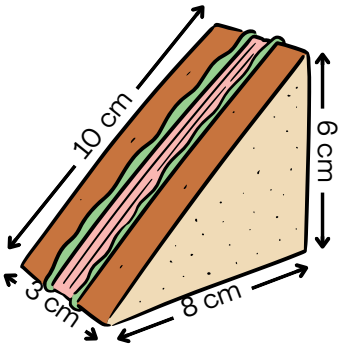
Name : _____

The diameter of the base of a cylinder is 5.5 cm and its height is 16 cm. Its surface area is _____ cm^2.

An artist builds a sculpture shaped like a regular square pyramid. The base edge is 24 cm and the height of the lateral face is 13 cm. The surface area of the sculpture is _____ cm^2.



A sandwich is cut into a shape like a triangular prism. The ends are triangles with side lengths 6 cm, 8 cm, and 10 cm, with the 6 cm and 8 cm sides perpendicular to each other. The sandwich is 3 cm long. The surface area of the sandwich is _____ cm^2.



Challenge

Mia is building a colorful block tower with her favorite toy blocks. She uses three different shapes: a cube at the bottom, a cylinder in the middle, and a cone on top. The cube has an edge length of 8 cm. The cylinder's base has a radius of 4 cm and a height of 6 cm, and it sits perfectly on top of the cube. The cone has the same base as the cylinder, and its slant height is 10 cm. The cone is placed exactly on top of the cylinder. The total surface area of the tower is _____ cm^2.

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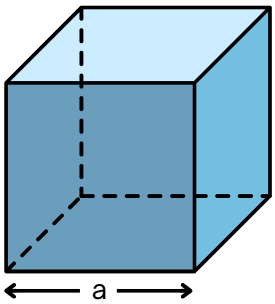
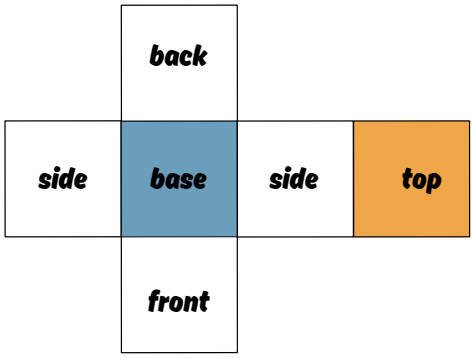
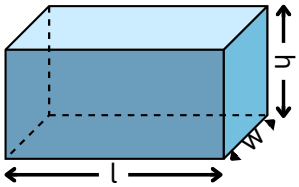
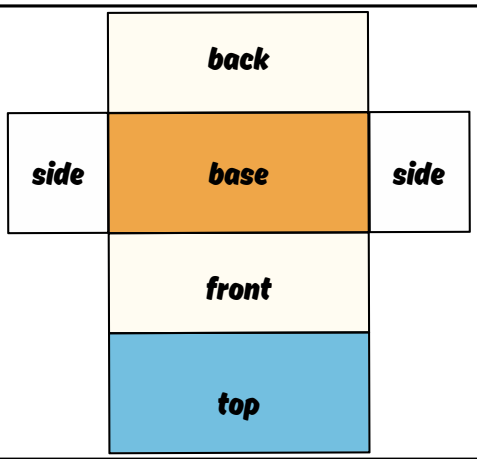
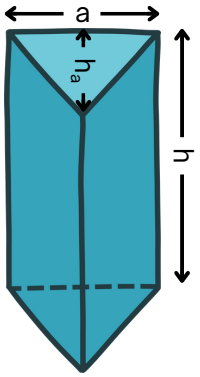
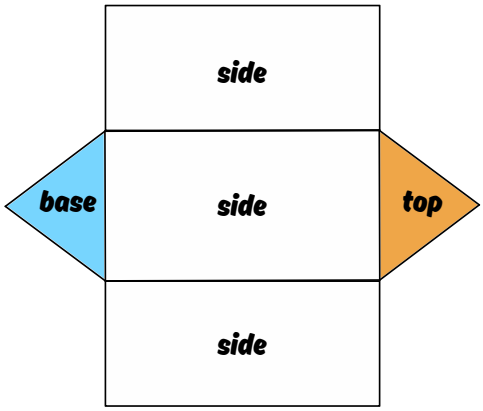
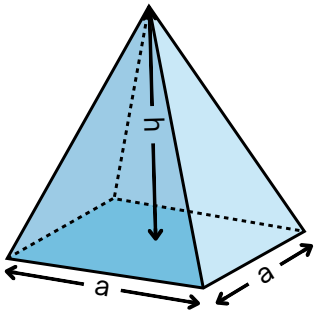
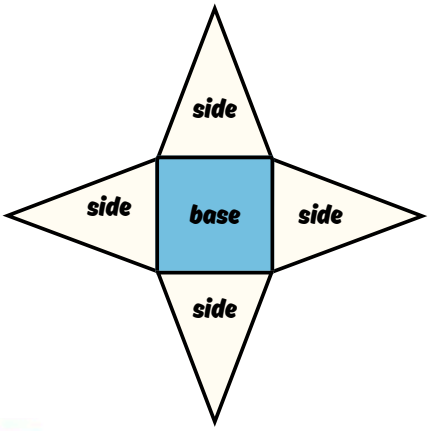
Volume of 3-D Figures

Shape	Net	Volume
 Cube		$S = a^3$
 Cuboid		$S = lwh$
 Triangular Prism		$S = A_{base} \times h$ $= ½\ ah_a \times h$
 Rectangular Pyramid		$S = ⅓\ A_{base} \times h$ $= ⅓\ a^2 \times h$

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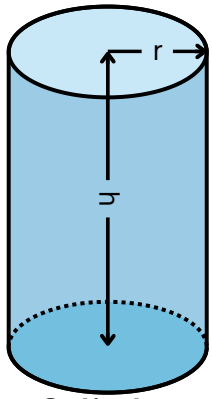
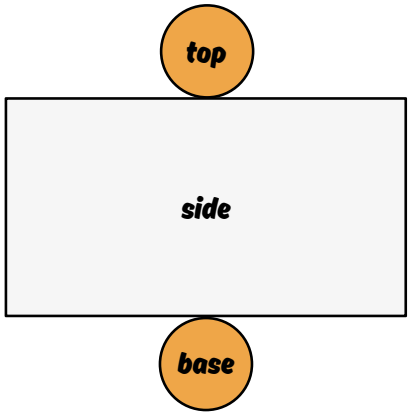
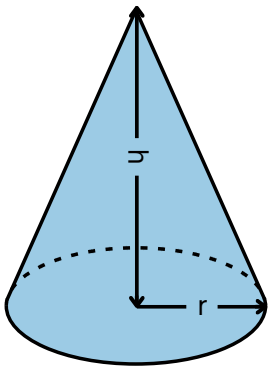
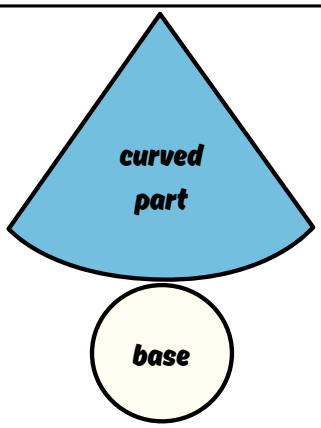
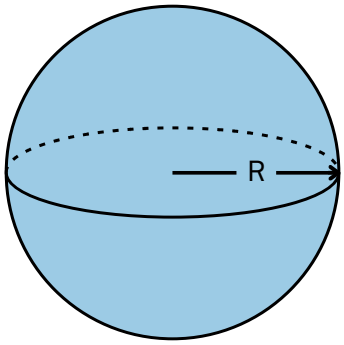
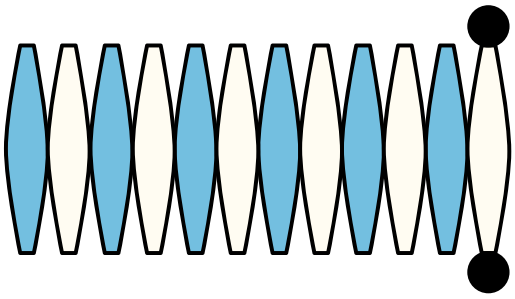
Volume of 3-D Figures

Shape	Net	Surface Area
 Cylinder		$S = \pi r^2 h$
 Cone		$S = \frac{1}{3}\pi r^2 h$
 Sphere		$S = 4/3 \times \pi R^3$

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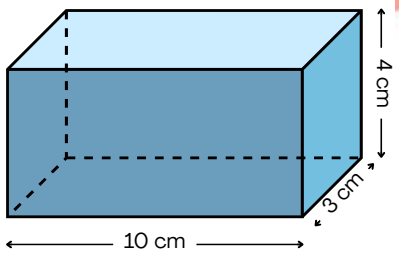
✏️ Calculate the Volume

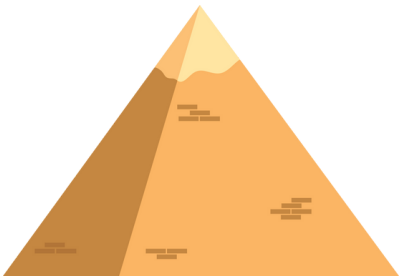
⭐ The volume of the rectangular prism is _____ cm^3.



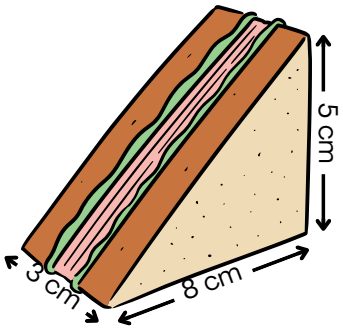
⭐ The volume of a cube is 27 cm^3. Its edge length is _____ cm.

⭐ The diameter of the base of a cylinder is 5.5 cm and its height is 16 cm. Its volume is _____ cm^3. ($\pi = 3.14$)

⭐ An artist builds a sculpture shaped like a regular square pyramid. The length of the base edge is 24 cm and the height of the sculpture is 13 cm. The volume of the sculpture is _____ cm^3.



⭐ A sandwich is cut into a shape like a triangular prism. The ends are triangles with base 8 cm and height 5 cm, and the sandwich is 3 cm long. The volume of the sandwich is _____ cm^3.



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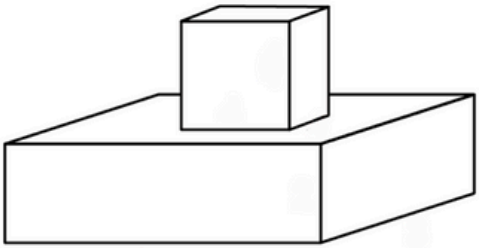
Volume of 3-D Figures

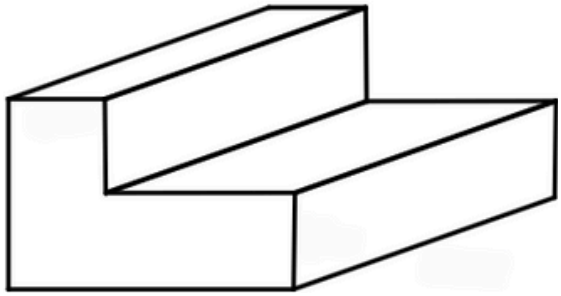
Name : _____

The radius of a sphere is 2.5 cm. Its volume is _____ cm^3. (π = 3.14, Round to two decimal places)

Emma built a block sculpture using her favorite toy blocks. She stacked a small cube on top of a larger rectangular cuboid. The rectangular cuboid at the bottom has a length of 12 cm, a width of 8 cm, and a height of 5 cm. The cube on top has an edge length of 4 cm and sits perfectly on the center of the cuboid. The total volume of Emma's block sculpture is _____ cm^3.



Olivia built a stepped block structure using her toy blocks. The structure consists of two rectangular cuboids stacked in a stair-like shape. The lower cuboid has a length of 14 cm, a width of 6 cm, and a height of 4 cm. The upper cuboid has the same length (14 cm) and height (4 cm) as the lower cuboid, but its width is 2 cm. The total volume of Olivia's block structure is _____ cm^3.



🤔 Challenge

Mia is building a colorful block tower with her favorite toy blocks. She uses three different shapes: a cube at the bottom, a cylinder in the middle, and a cone on top. The cube has an edge length of 8 cm. The cylinder's base has a radius of 4 cm and a height of 6 cm, and it sits perfectly on top of the cube. The cone has the same base as the cylinder, and its height is 10 cm. The cone is placed exactly on top of the cylinder. The volume of the tower is _____ cm^3. (π = 3.14, Round to two decimal places)

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