

Unit 12: Surface Area and Volume of Solids

Target 12.0: Euler's Formula and Introduction to Solids

Target 12.1: Find and apply surface area of solids

12.1a: Surface Area of Prisms and Cylinders

12.1b: Surface Area of Pyramids and Cones

Target 12.2: Find and apply surface of Spheres and Composites

12.2a: Surface Area of Spheres

12.2b: Surface Area of Composites Solids

Target 12.3: Find and apply volume of solids

12.3a: Volume of Prisms and Cylinders

12.3b: Volume of Pyramids and Cones

Target 12.4: Find and apply volume of spheres and composites

12.4a: Volume of Spheres

12.4b: Volume of Composites Solids

Date	Target	Assignment	Done!
T 4-11	12.1a	12.1a Worksheet	
W 4-12	12.1b	12.1b Worksheet	
R 4-13	12.2a	12.2a Worksheet	
F 4-14	No School	No School: Day of Non-Attendance	
M 4-17	12.2b	12.2b Worksheet	
T 4-18	Review	Quiz Review	
W 4-19	Quiz	Quiz 12.1-12.2	
R 4-20	12.3a	12.3a Worksheet	
F 4-21	12.3b	12.3b Worksheet	
M 4-24	12.4a	12.4a Worksheet	
T 4-25	12.4b	12.4b Worksheet	
W 4-26	Review	Quiz Review	
R 4-27	Quiz	Quiz 12.3-12.4	
F 4-28	Review	Unit 12 Test Review	
M 5-1	Review	Unit 12 Test Review	
T 5-2	Test	Unit 12 Test	

Name: _____

12.0 – Euler's Formula and Introduction to Solids

"Geometry Drawing 3-Dimensional Shapes" - <https://youtu.be/WS50M1D09U>



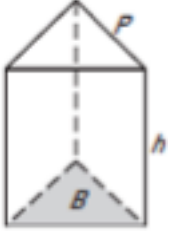
<i>Solid</i>	<i>Definition</i>	<i>Drawing</i>
<i>Prism</i>		
<i>Pyramid</i>		
<i>Cylinder</i>		
<i>Cone</i>		
<i>Sphere</i>		

12.1a - Surface Area of Prisms and Cylinders

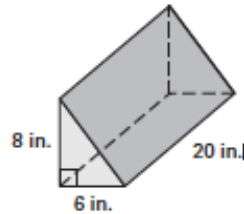
Target 1: Find and apply surface area of solids

Surface Area of a Right Prism

The surface area of a RIGHT PRISM is the sum of twice the area of the base and the product of the perimeter of the base and height.

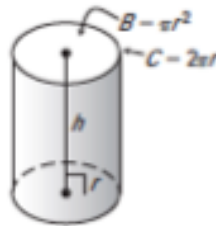


Example 1: Find the surface area of a right prism

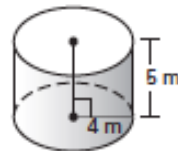


Surface Area of a Right Cylinder

The surface area of a RIGHT CYLINDER is the sum of twice the area of the base and the product of the perimeter of the base and height.



Example 2: Find the surface area of a cylinder



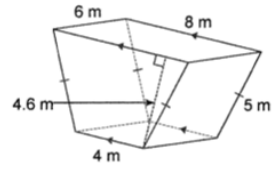
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What is the radius of the cylinder?

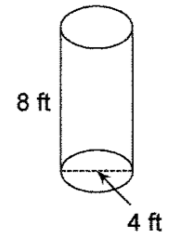
Geometry Unit 12: Surface Area and Volume of Solids

YOU TRY NOW!

1. Find the surface area of the trapezoidal prism.

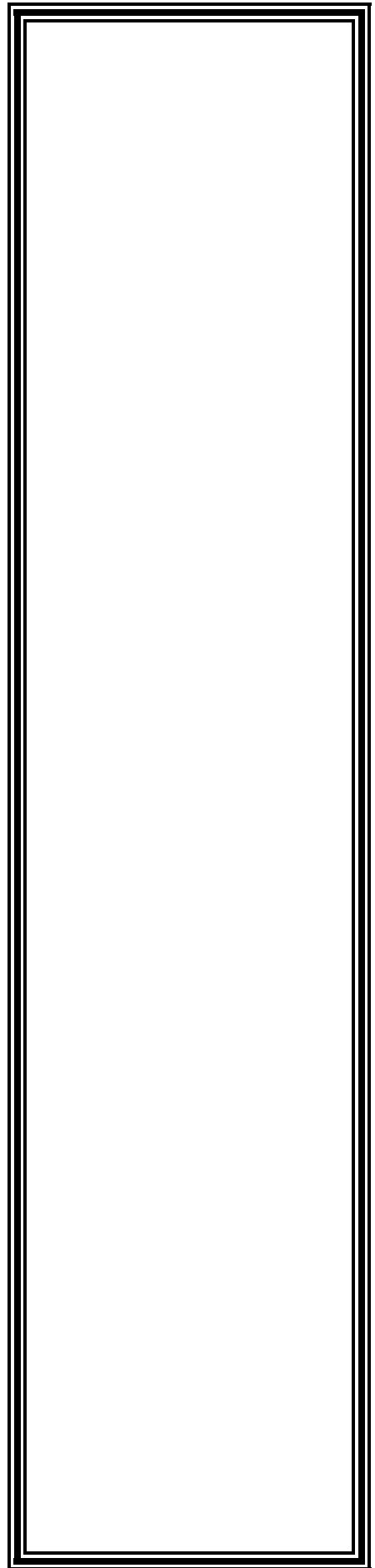


-
2. Find the surface area of the cylinder



Answers:

1. 297 m²
2. Exact: 40π ft²; Approximate: 125.66 ft²

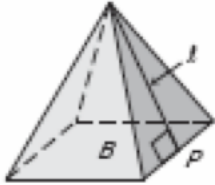


12.1b - Surface Area of Pyramids and Cones

Target 1: Find and apply surface area of solids

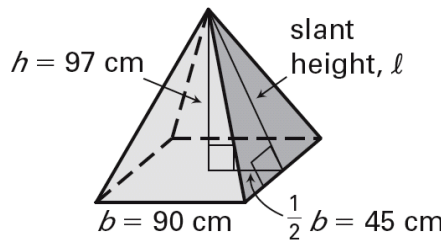
Surface Area of a Regular Pyramid

The surface area of a REGULAR PYRAMID is the sum of area of the base and half of the product of the perimeter of the base and the slant height.



Example 1: Find the area of a lateral face of a pyramid

Find the area of each lateral face of the regular square pyramid



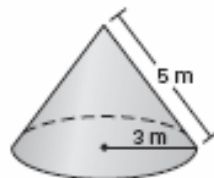
Surface Area of a Right Cone

The surface area of a right cone is the sum of the area of a circle and the product of pi times the radius and the slant height.



Example 2: Find the surface area of a right cone

Find the surface area of the right cone.



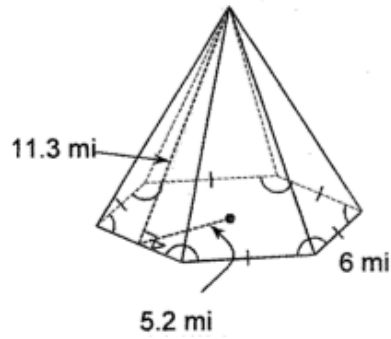
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What is the radius of the cylinder?

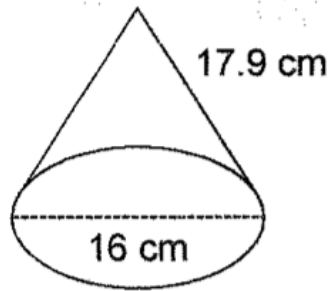
Geometry Unit 12: Surface Area and Volume of Solids

YOU TRY NOW!

1. Find the surface area of the hexagonal pyramid.



2. Find the surface area of the right cone



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What is the formula to find the area of a regular polygon?

Answers:

1. 297mi^2

2. Exact: $207.2\pi \text{ cm}^2$; Approximate: 650.94 cm^2

12.2a - Surface Area of Spheres

Target 2: Find and apply surface area of spheres and composite solids

Surface Area of a Sphere

The surface area of a sphere is:

Example 1: Find the surface area of a cylinder

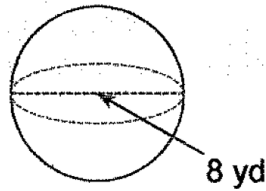


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YOU TRY NOW!

1. Find the surface area of a sphere with a radius of 5 inches.

2. Find the surface area of a sphere.



Answers:

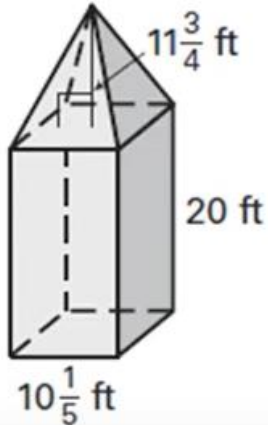
1. Exact: 100π in²; Approximate: 314.16 in²
2. Exact: 65π yd²; Approximate: 201.06 yd²

12.2b - Surface Area of Composite Solids

Target 2: Find and apply surface area of spheres and composite solids

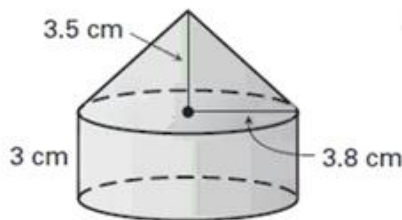
Example 1: Find the surface area of the composite solid

Find the surface area of the solid. The solid shown is made up of a rectangular prism and a regular pyramid. Round your answer to two decimal places



Example 2: Find the surface area of the composite solid

Find the surface area of the solid. The solid shown is made up of a cylinder and a right cone. Round your answer to two decimal places



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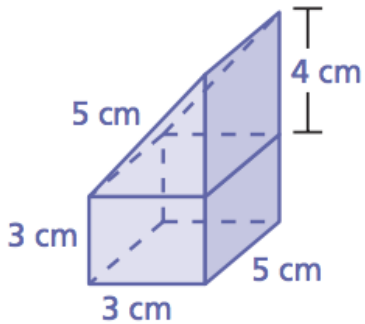
Shade the part of the solid that cannot be seen from the outside.

Shade the part of the solid that cannot be seen from the outside

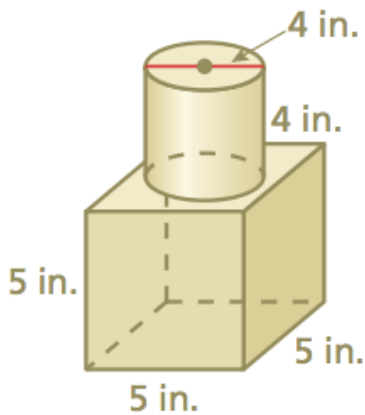
Geometry Unit 12: Surface Area and Volume of Solids

YOU TRY NOW!

1. Find the surface area of the composite solid made up of a rectangular prism and triangular prism.



2. Find surface area of the solid.



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Answers:

1. 120cm^2
2. 200.27 in^2

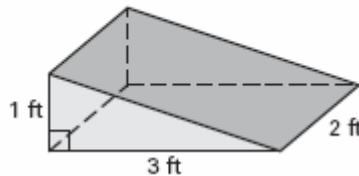
12.3a– Volume of Prisms and Cylinders

Target 3: Find and apply volume of solids

Volume of a Prism

The volume of a PRISM is the product of the area of the base and the height.

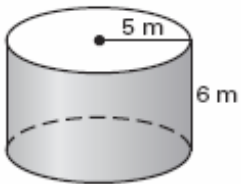
Right triangular prism



Volume of a Cylinder

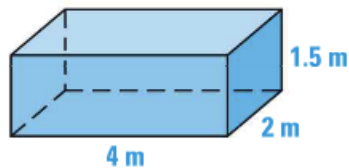
The volume of a cylinder is the product of the Area of the Base and the Height.

Right cylinder

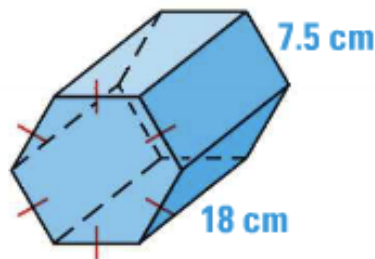


YOU TRY NOW!

1. Find the volume of a rectangular prism.



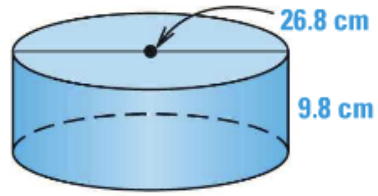
2. **HONORS:** Find the volume of the hexagonal prism with an apothem of 7.5 cm.



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Geometry Unit 12: Surface Area and Volume of Solids

3. Find the volume of a cylinder.



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Answers:

- 1.
- 2.
3. Exact: $1759.688\pi \text{ m}^3$; Approximate: 5528.22 m^3

12.3b– Volume of Pyramid and Cones
Target 3: Find and apply volume of solids

Volume of a Pyramid

The volume of a Pyramid is the product of the Area of the Base and the Height of the solid divided by 3.

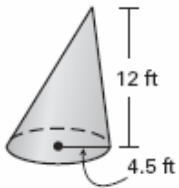


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Volume of a Cone

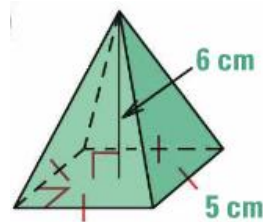
The volume of a cone is the product of the Area of the Base and the Height divided by 3.

Oblique cone

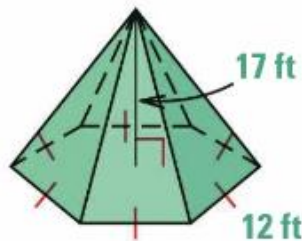


YOU TRY NOW!

1. Find the volume of a square base pyramid



2. **HONORS:** Find the volume of a hexagonal pyramid with an apothem of 12 feet.



Answers:

1. 50 cm^3
2. 2120.03 ft^3

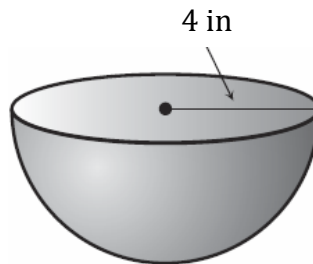
12.4– Volume of Spheres and Composites
Target 4a: Find and apply volume of spheres and composites

Volume of a Sphere

The volume of a sphere is the product of $\frac{4}{3}$ pi and the radius cubed

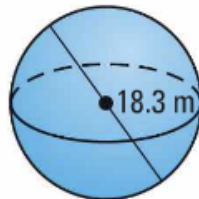


Example 2: Find the volume of a hemisphere



YOU TRY NOW!

1. Find the volume of a sphere.



2. Find the radius of a sphere if the volume is 972π in³.

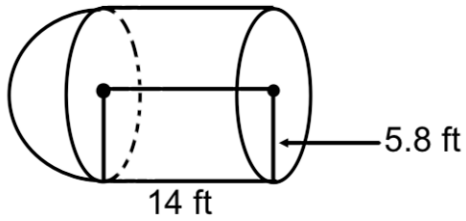
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Answers:

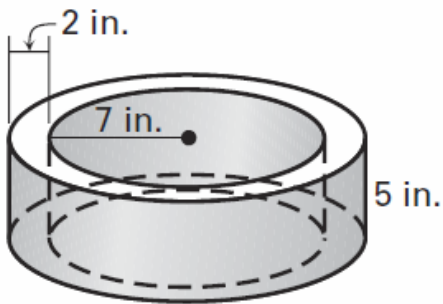
1. 1021.42π m³
2. 9 in

12.4– Volume of Spheres and Composites
Target 4b: Find and apply volume of composite solids

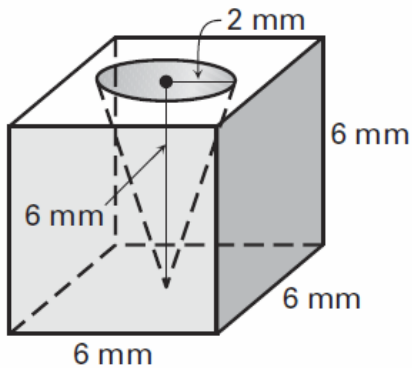
1. Find the volume of the composite solid.



2. Find the volume of the composite solid.



3. Find the volume of the composite solid.



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