

Year 10 Term 3 Homework

Student Name: _____	Grade: _____
Date: _____	Score: _____

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1 Year 10 Term 3 Week 1 Homework

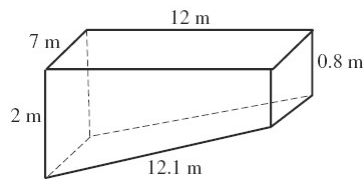
1.1 Surface Area

1.1.1 Surface area of a prism

The surface area of a solid is the sum of the area of its faces.

Exercise 1.1.1

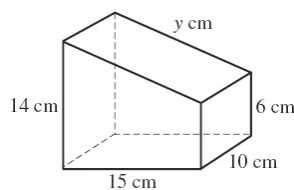
- The sides and floor of this swimming pool are to be tiled. The tiles cost \$28 per square metre and there is a further charge of \$850 for labour.



- Find the area to be tiled, correct to the nearest m^2 .

- Find the total cost of the tiling the pool, correct to nearest dollar.

- For the figure given below find:

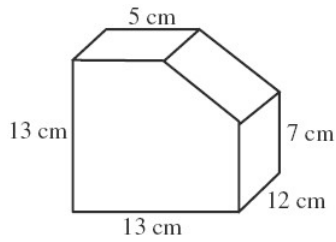


- the value of y .

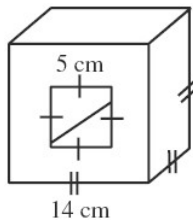
- Hence, find the surface area of the trapezoidal prism.

Exercise 1.1.2 Further applications

1. Calculate the total surface area of the given solid.



2. Calculate the total surface area of the given solid.



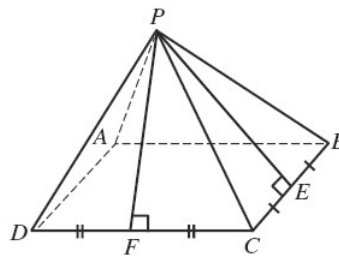
3. A rectangular prism, open at the top, has a length of 15 cm, with 11 cm and a surface area of 789 cm². Find the height of the prism.

1.1.2 Surface area of a pyramid

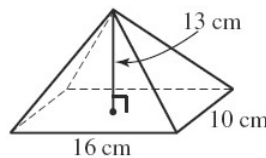
- In a right pyramid, the apex is directly above the centre of the base.
- The perpendicular height of a pyramid is the distance from the apex to the centre of the base.
- The slant heights are the distances from the apex to the midpoints of the base edges.
- To find the surface of a pyramid:
 1. Find the slant heights, if necessary, by using Pythagoras; theorem.
 2. Find the sum of the area of the base and the triangular faces.

Exercise 1.1.3

1. $PABCD$ is a rectangular pyramid. $PE = 24$ cm. $PF = 20$ cm, $BC = 14$ cm. Calculate the surface area of the pyramid.

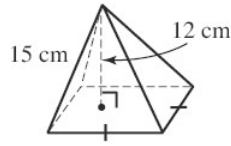


2. Find the exact height of the pyramid and calculate the surface area of the pyramid, correct to 1 decimal place.



Exercise 1.1.4 Further applications

1. A square pyramid has slant edges of 15 cm and a perpendicular height of 12 cm.

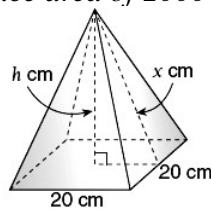


(a) Show that the diagonals in the base have length 18 cm.

(b) Find the exact length of the base edges.

(c) Hence, find the surface area of the pyramid, correct to 1 decimal place.

2. A square pyramid has to have a surface area of 2000 cm^2 . If the base edge is 20 cm, calculate:



(a) the perpendicular height, $x \text{ cm}$ of one of the triangular faces.

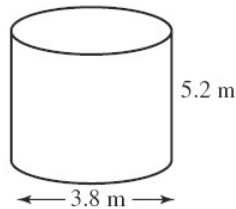
(b) the perpendicular height, $h \text{ cm}$ of the pyramid, correct to 2 decimal places.

1.1.3 Surface area of a cylinder

The total surface area of a closed cylinder is given by: $A = 2\pi r^2 + 2\pi rh$.

Exercise 1.1.5

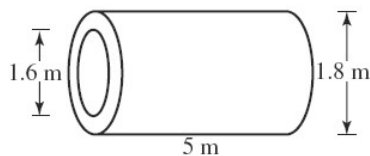
1. The interior of a cylindrical water tank is to be rustproofed.



- (a) Find the required area correct to 2 decimal places.

- (b) Hence, find the cost of rustproofing the tank at \$2.95/m², answer correct to nearest dollar.

2. A 5 m length of pipe has an inner diameter of 1.6 m and an outer diameter of 1.8 m.



- (a) Find the inner curved surface area in terms of π .

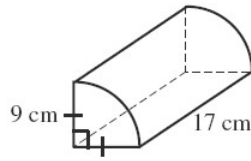
- (b) Find the outer curved surface area in terms of π .

- (c) Find the area of the two ends of the pipe in terms of π .

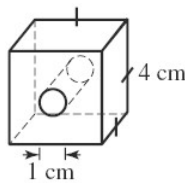
- (d) Find the total surface area of the pipe, correct to 1 decimal place.

Exercise 1.1.6

1. Find the total surface area of the given solid, correct to 1 decimal place.

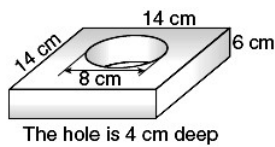


2. Find the total surface area of the given solid, correct to the nearest cm^2



3. The surface area of a cylinder is $88\pi \text{ cm}^2$ and the radius is 4 cm. Find the height of the cylinder.

4. Find the total surface area of the this solid, correct to 1 decimal place.

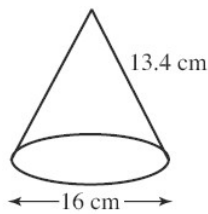


1.1.4 Surface area of a cone and sphere

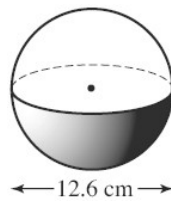
- The total surface area of a cone is given by: $A = \pi r^2 + \pi r s$, where r is the length of the radius and s is the slant height of the cone.
- The surface area of a sphere is given by: $A = 4\pi r^2$, where r is the length of the radius.

Exercise 1.1.7

1. Find the surface area of this cone, correct to 1 decimal place.



2. Find the surface area of this sphere, correct to the nearest cm^2 .



3. Find the total surface area of the given solid, correct to the nearest cm^2 .

