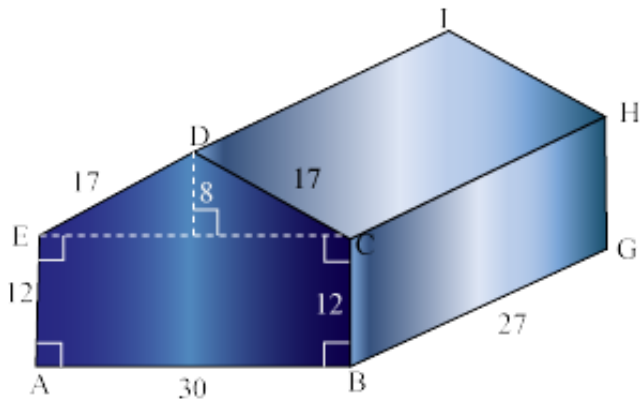




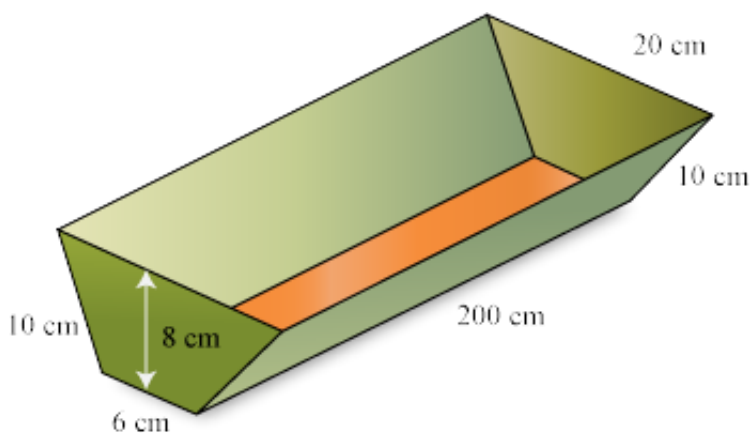
## Sixth Grade - Geometry

1) Find the volume and total surface area of the solid prism. The measurements are in terms of centimeters (cm)?



- Volume =  $31240\text{cm}^3$ , Surface area =  $2212\text{ cm}^2$
- Volume =  $34100\text{cm}^3$ , Surface area =  $6669\text{ cm}^2$
- Volume =  $12960\text{cm}^3$ , Surface area =  $3336\text{ cm}^2$
- Volume =  $21820\text{cm}^3$ , Surface area =  $41236\text{ cm}^2$

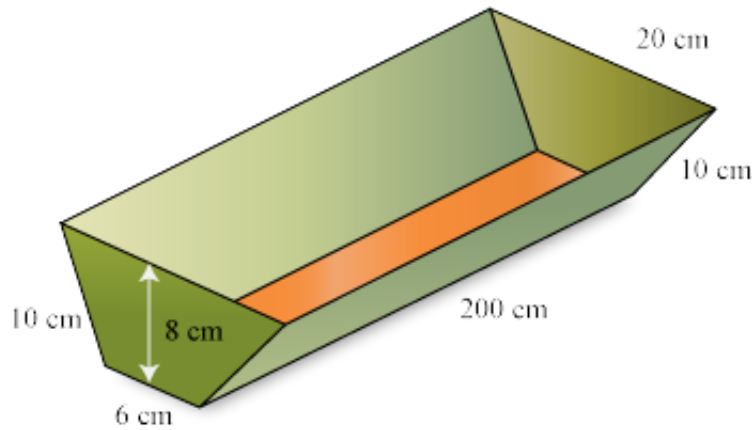
2) The diagram below shows an open water tub with a trapezoidal cross-section. A worker fills the tub with water from a tap using a 5 liter pail manually. During each pail of 5 liter a 10% of the water has been spilled. Find the volume of the tub in liters?



- 41.8 litres
- 51.1 litres
- 54.8 litres
- 20.8 litres

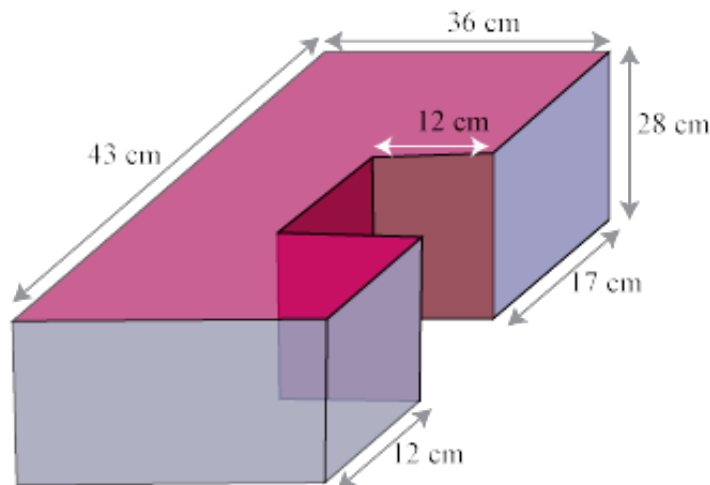


3) The diagram below shows an open water tub with a trapezoidal cross-section. A worker fills the tub with water from a tap using a 5 liter pail manually. During each pail of 5 liter a 10% of the water has been spilled. How many times does the worker need to make in order to fill up the whole tub?



- 4 times
- 5 times
- 9 times
- 6 times

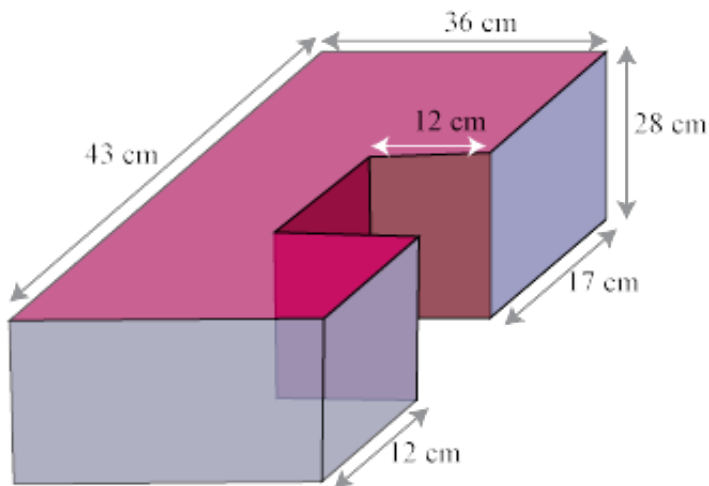
4) The following diagram is an open container which has a uniform cross-section. Find, in  $\text{cm}^2$ , the total surface area of the container?



- $3123 \text{ cm}^2$
- $5988 \text{ cm}^2$
- $4345 \text{ cm}^2$
- $5968 \text{ cm}^2$

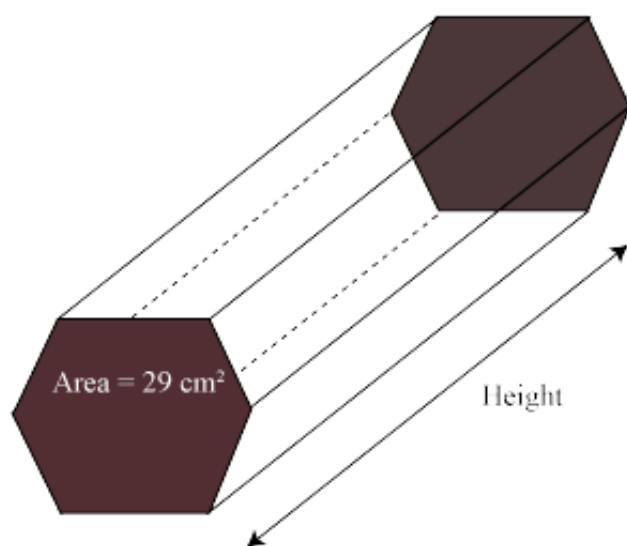


5) The following diagram is an open container which has a uniform cross-section, A tap is used to fill up the container with water, at a rate of 0.8 liters per minute. Calculate the time taken, in minutes, to fill up half the container?



- 88.3 min
- 31.5 min
- 61.3 min
- 48.3 min

6) The diagram below shows a regular hexagonal prism. Given that the volume of the prism is  $493 \text{ cm}^3$  and the area of the hexagon is  $29 \text{ cm}^2$ . Find the length of the prism?

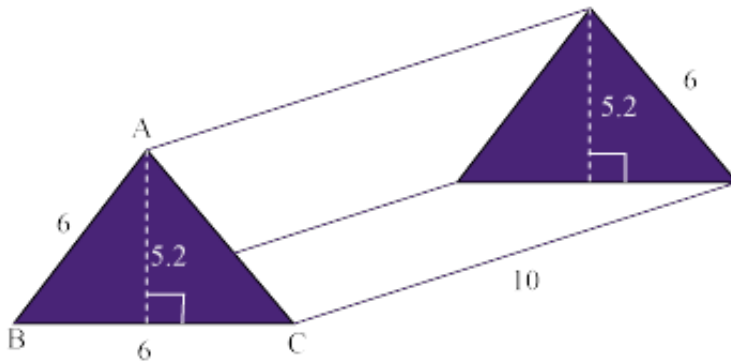


- 17 cm
- 21 cm
- 32 cm



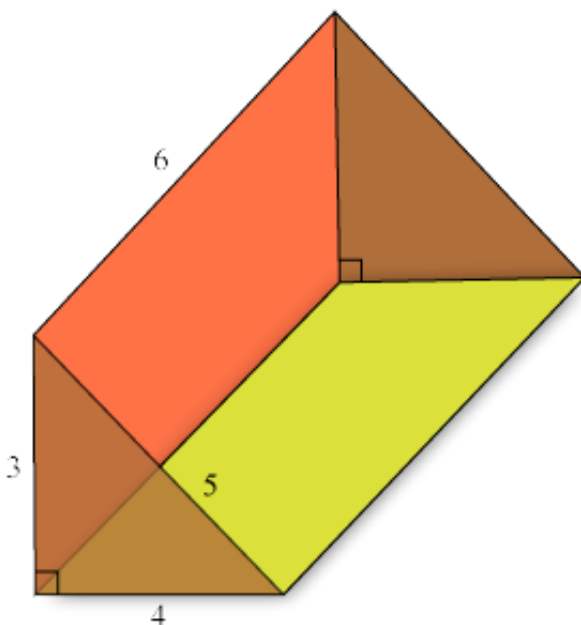
- 19 cm

7) The triangular prism shown in the diagram is an equilateral triangle on both sides which are open of length 6 cm. The height of the prism is 5.2 cm. All the dimensions in the diagram are given in cm. Draw a net diagram of the prism and find the surface area of the prism. First find the area of the cross section, the equilateral triangle and using this value find the volume of the prism?



- Surface area =  $211.2 \text{ cm}^2$ , Volume of the prism =  $156 \text{ cm}^3$
- Surface area =  $312.3 \text{ cm}^2$ , Volume of the prism =  $216 \text{ cm}^3$
- Surface area =  $511.2 \text{ cm}^2$ , Volume of the prism =  $193 \text{ cm}^3$
- Surface area =  $411.8 \text{ cm}^2$ , Volume of the prism =  $414 \text{ cm}^3$

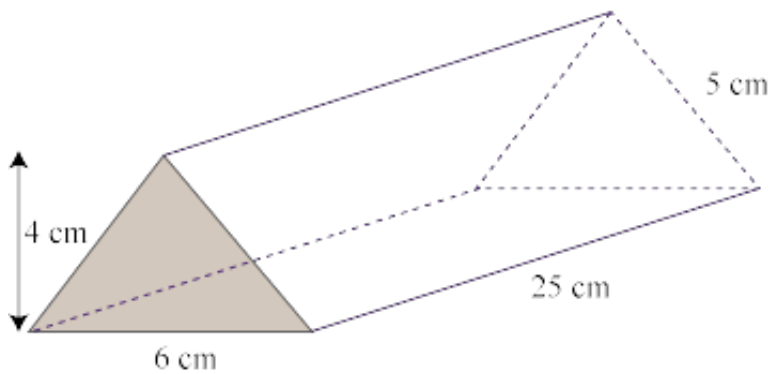
8) Draw a net diagram of the following solid and find the total surface area of the solid prism? All the dimensions in the diagram are given in cm





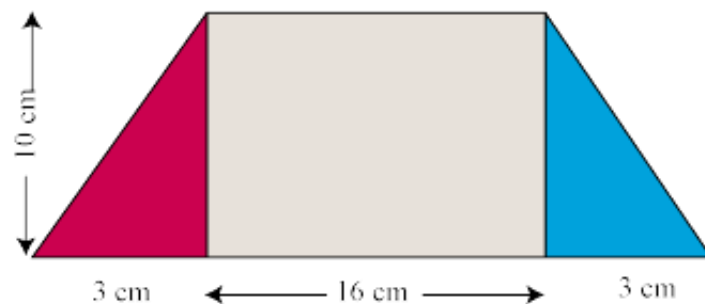
- $240 \text{ cm}^2$
- $336 \text{ cm}^2$
- $234 \text{ cm}^2$
- $345 \text{ cm}^2$

9) Draw a net diagram of a chocolate bar below. If we want to wrap it with a rectangular wrapping paper, what should be the minimum rectangular size of the wrapping paper needed after adding 2cm extra along the length and breadth?



- 43 cm, 21cm
- 35 cm, 18 cm
- 52 cm, 19 cm
- 41 cm, 28 cm

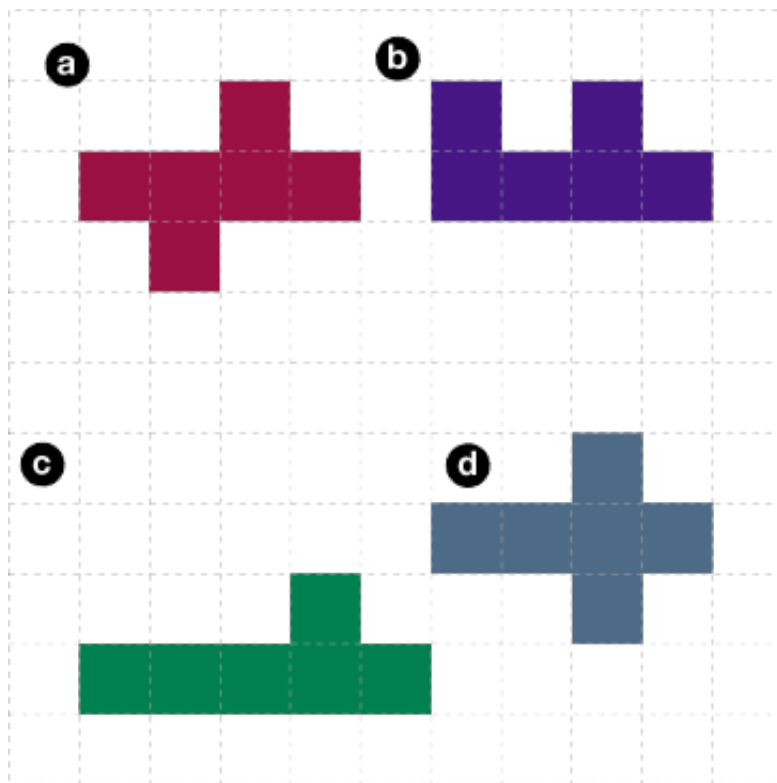
10) The cross section of an iron bar is given in the following diagram, calculate the volume of the metal if it is 10 cm long?



- $1900 \text{ cm}^3$
- $2456 \text{ cm}^3$
- $1800 \text{ cm}^3$
- $2300 \text{ cm}^3$

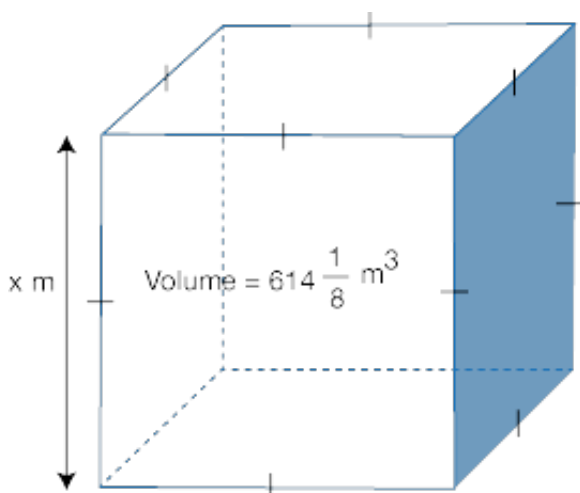


11) Out of the following which are the one cannot form a cube?



- (a)It is a cube, (b)It is not a cube, (c)It is not a cube, (d)It is not a cube
- (a)It is a cube, (b)It is a cube, (c)It is not a cube, (d)It is not a cube
- (a)It is not a cube, (b)It is a cube, (c)It is a cube, (d)It is a cube
- (a)It is a not cube, (b)It is not a cube, (c)It is not a cube, (d)It is a not cube

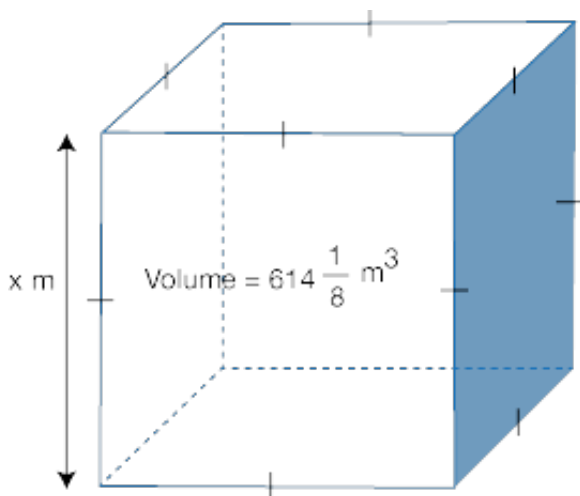
12) A closed cubical tank can hold  $4913/8 \text{ m}^3$  of water, what is the length of one side of the tank (x) in m?





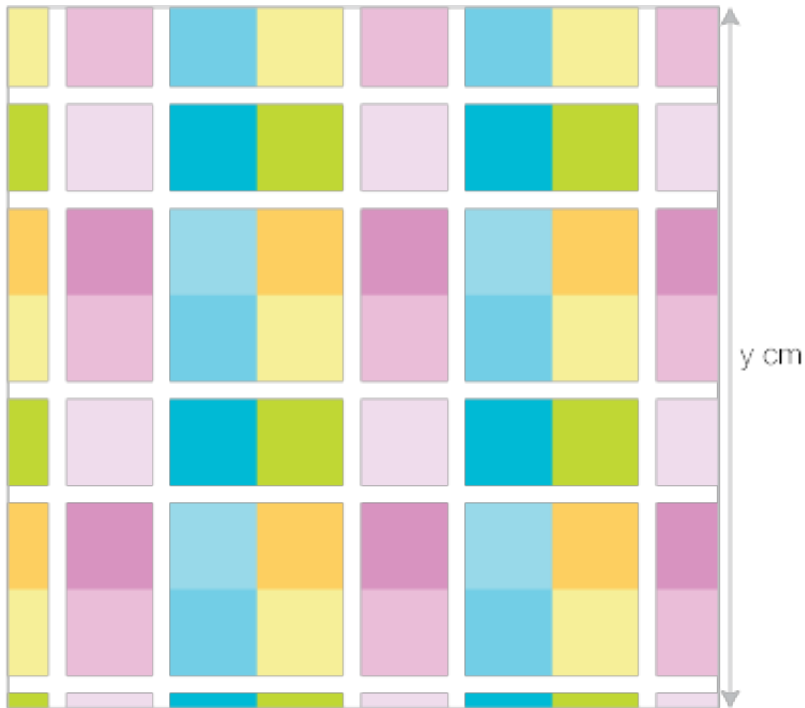
- $19/3$  m
- $21/6$  m
- $17/2$  m
- $34/5$  m

13) A closed cubical tank can hold  $614\frac{1}{8}$  m<sup>3</sup> of water, (a) Hence, what is the total surface area of the given closed tank? Express your answer to the nearest integer. (Hint: A cube has 6 surfaces.) (b) The painter tells you that it costs \$11.85 to paint 1 m<sup>2</sup> of the tank. Using your answer in (a), and rounding off the cost to the nearest dollar, estimate the minimum amount you need to have so that you can pay the painter in full to paint the 6 outer surfaces of the tank.



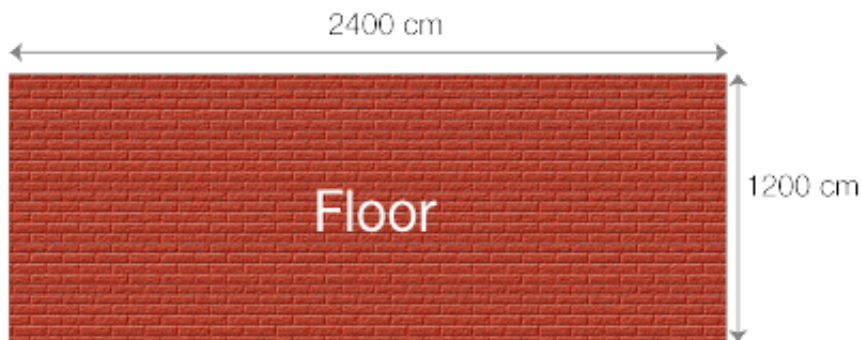
- $a = 934\text{m}^2$ ,  $b = \$7142.90$
- $a = 434\text{m}^2$ ,  $b = \$5142.90$
- $a = 332\text{m}^2$ ,  $b = \$4341.32$
- $a = 142\text{m}^2$ ,  $b = \$2020.30$

14) A square floor tile has been designed for a new building in Orchard Road, Singapore. What is the area of the square tile above in terms of  $y$ ?



- $y^2$
- $y$
- $y^3$
- $y^{10}$

15) A square floor tile has been designed for a new building in Orchard Road, Singapore. The square tile is used to cover the entire rectangular floor measuring 2400 cm by 1200 cm, (i) How many square tiles are needed to cover this floor, leaving your answer in term of  $y$ ?, (ii) Using your answer in (i), calculate how many square tiles are need to cover this floor if  $y = 120\text{cm}$ ?

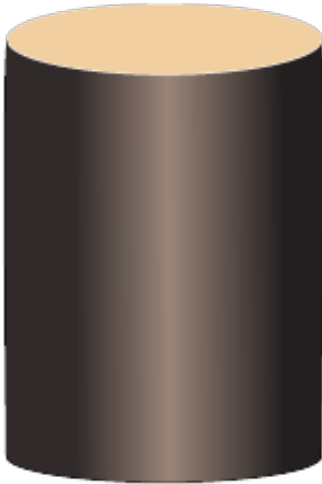


- (i)  $2880000/y^2$ , (ii) 200
- (i)  $2344000/y^2$ , (ii) 212
- (i)  $2240000/y^2$ , (ii) 198
- (i)  $2880000/y^2$ , (ii) 210



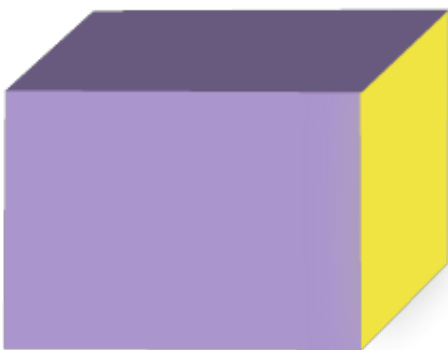


16) Name the following 3D shapes and write about its properties using the shape of sides, number of sides and number of faces



- This 3D shape is cone. It has two faces. One circle and one sem-circle
- This 3D shape is a Cylinder. It has curved surface, base and top are circles
- This 3D shape is Hemisphere. It has two faces and one edge
- This 3D shape is sphere. It has one face

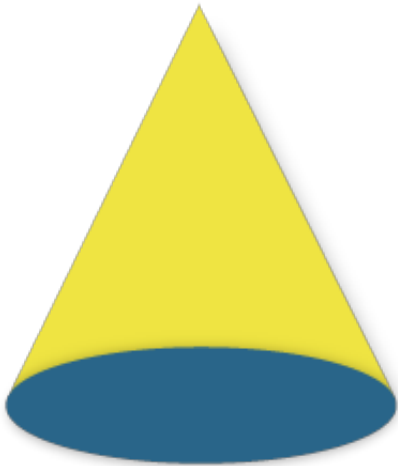
17) Name the following 3D shapes and write about its properties using the shape of sides, number of sides and number of faces



- This 3D shape is a Cube. It has six faces and all the faces are squares
- This 3D shape is a Square based pyramid. It has five faces. Four isosceles triangle and one square
- This 3D shape is a Triangular Prism. It has five faces, nine edges and six vertices
- This 3D shape is a Cuboid. It has six sides, opposite sides are equal, sides are rectangles

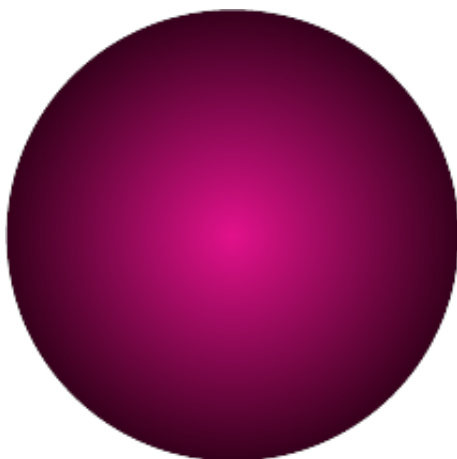


18) Name the following 3D shapes and write about its properties using the shape of sides, number of sides and number of faces



- This 3D shape is Hemisphere. It has two faces and one edge
- This 3D shape is a cone. It has its base as circle, it may be called as a pyramid with a base circle
- This 3D shape is a Cylinder. It has curved surface, base and top are circles
- This 3D shape is sphere. It has one face

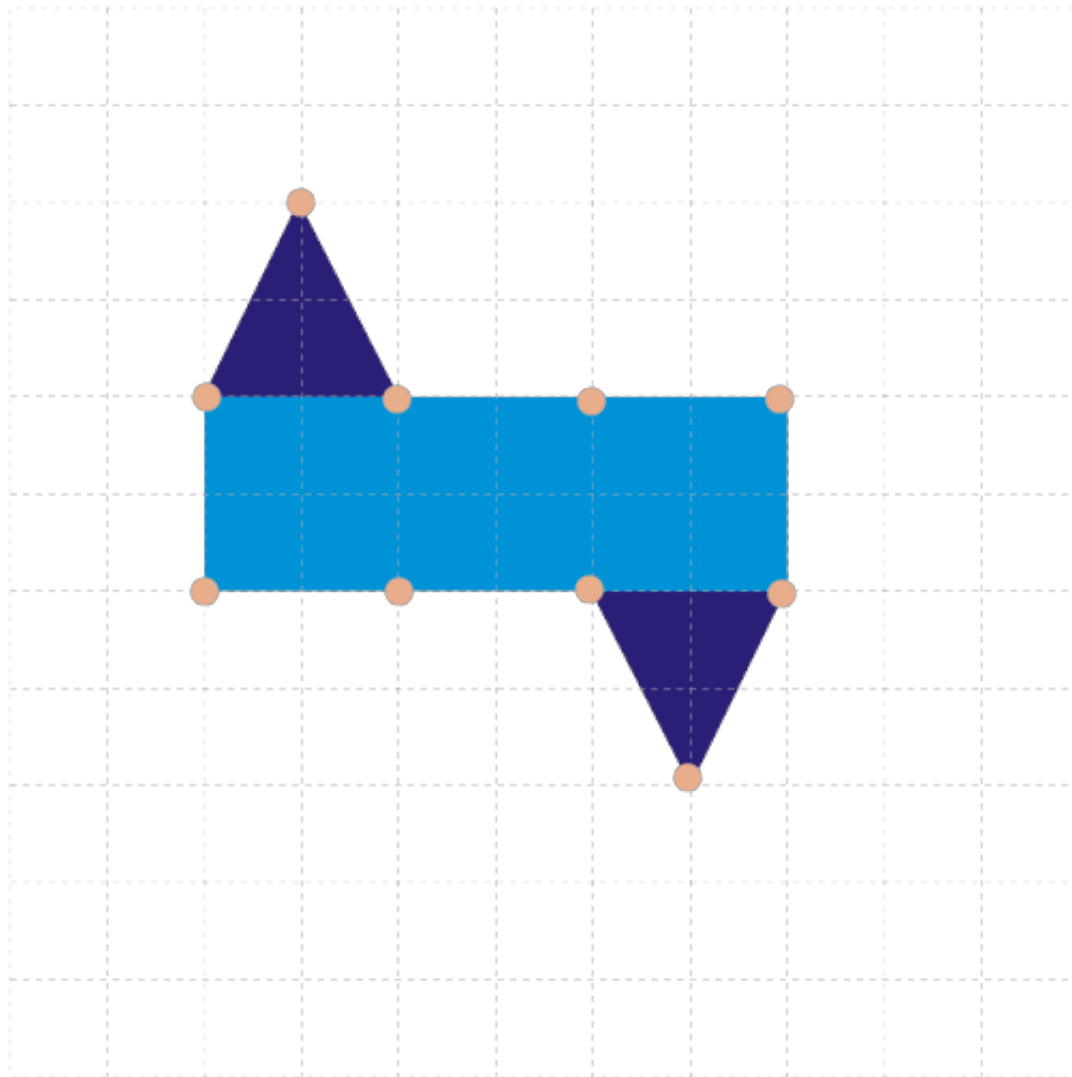
19) Name the following 3D shapes and write about its properties using the shape of sides, number of sides and number of faces



- This 3D shape is a Cylinder. It has curved surface, base and top are circles
- This 3D shape is a cone. It has its base as circle, it may be called as a pyramid with a base circle
- This 3D shape is a Sphere. It has a radius, volume and surface area can be found using this radius value
- This 3D shape is Hemisphere. It has two faces and one edge

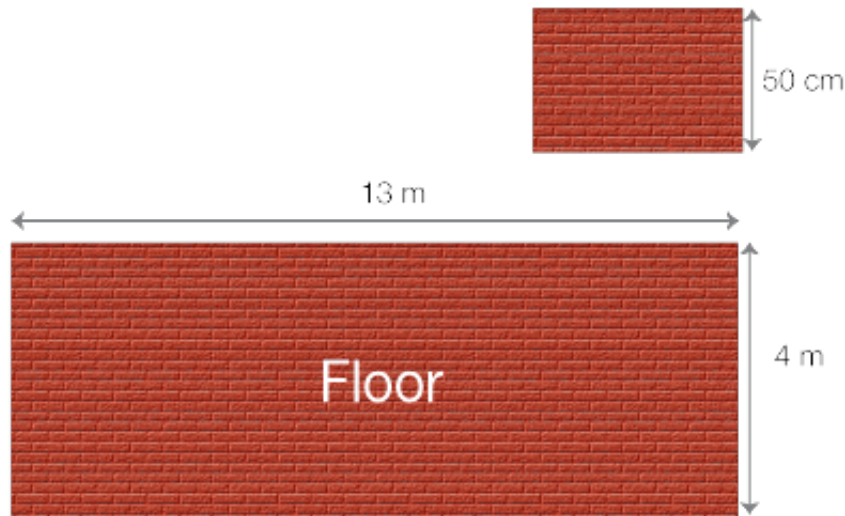


20) What 3D shape the following net will make? Give your answer with supporting reasons



- It looks like a Trapezium Prism, but actually NOT. Because the isosceles triangle sides are not matching with the sides of the squares. Hence, no 3D shape will be formed
- It looks like a triangular prism, but actually NOT. Because the triangle sides are not matching with the sides of the squares. Hence, no 3D shape will be formed
- It looks like a Hexagonal Prism, but actually NOT. Because the hexagon sides are not matching with the sides of the squares. Hence, no 3D shape will be formed
- It looks like a Square based pyramid, but actually NOT. Because the isosceles triangle sides are not matching with the sides of the squares. Hence, no 3D shape will be formed

21) A square floor tile has been designed for a new apartment(a) Calculate the area of the square tile above. (b)The square tile is used to cover the entire rectangular floor measuring 13 meters by 4 meters.How many square tiles are needed to cover this floor?



- $a = 2341 \text{ cm}^2$ ,  $b = 134$
- $a = 1910 \text{ cm}^2$ ,  $b = 418$
- $a = 3100 \text{ cm}^2$ ,  $b = 160$
- $a = 2500 \text{ cm}^2$ ,  $b = 208$

22) The diagram below shows a rectangular floor plan of a hall in a hotel. It consists of three squares marked as special area. The special areas are to be tiled with tiles of green color. The rest of the area should be in blue color. Find the area of the regions with green and blue colors?

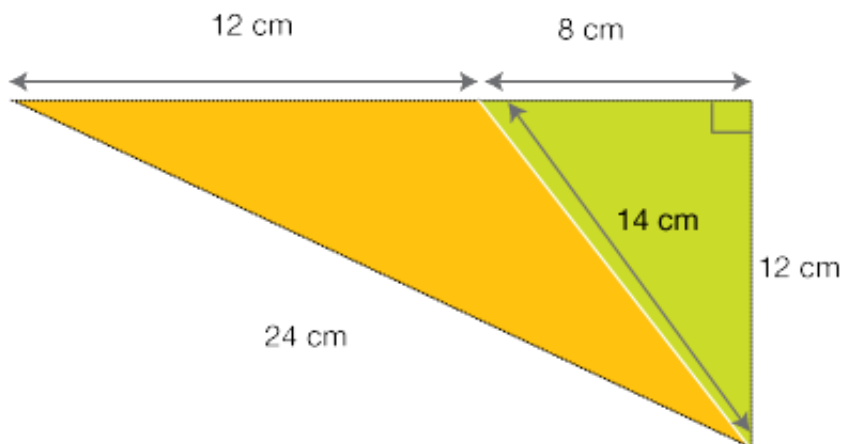


- $75 \text{ m}^2$ ,  $2625 \text{ m}^2$
- $75 \text{ m}^2$ ,  $1284 \text{ m}^2$
- $67 \text{ m}^2$ ,  $2120 \text{ m}^2$



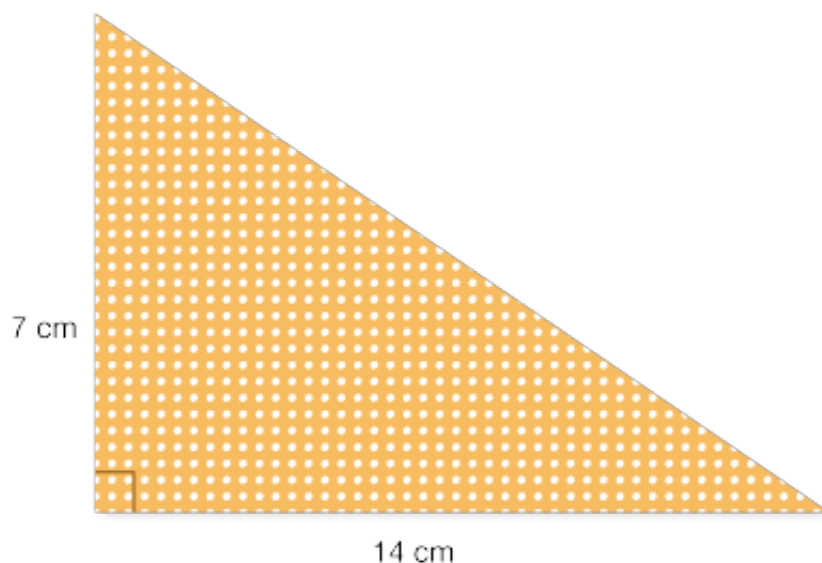
- $12 \text{ m}^2$ ,  $1232 \text{ m}^2$

23) In the triangle ABD,  $AB = 12 \text{ cm}$ ,  $BD = 14 \text{ cm}$ , and  $AD = 24 \text{ cm}$ . ABC is a straight line with  $BC = 8 \text{ cm}$  and perpendicular line  $CD = 12 \text{ cm}$ . Calculate (a) the perimeter of the shaded triangle ABD, (b) the area of the shaded triangle ABD?



- $a = 80 \text{ cm}$ ,  $b = 52 \text{ cm}^2$   $c = 3 \text{ min and } 30 \text{ seconds}$
- $a = 50 \text{ cm}$ ,  $b = 72 \text{ cm}^2$   $c = 4 \text{ min and } 10 \text{ seconds}$
- $a = 40 \text{ cm}$ ,  $b = 12 \text{ cm}^2$   $c = 6 \text{ min and } 5 \text{ seconds}$
- $a = 71 \text{ cm}$ ,  $b = 98 \text{ cm}^2$   $c = 9 \text{ min and } 15 \text{ seconds}$

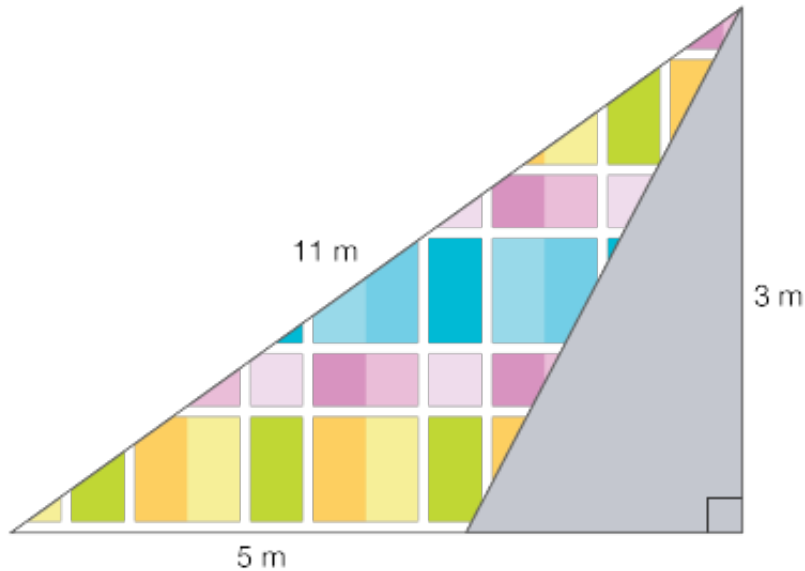
24) The figure below shows a right angled triangle. a) Calculate the area of the triangle. b) Find the ratio of its height to its area. Express your answer in the simplest form?





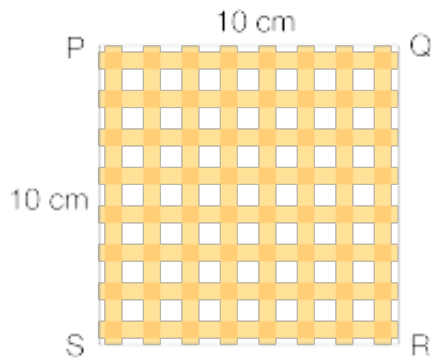
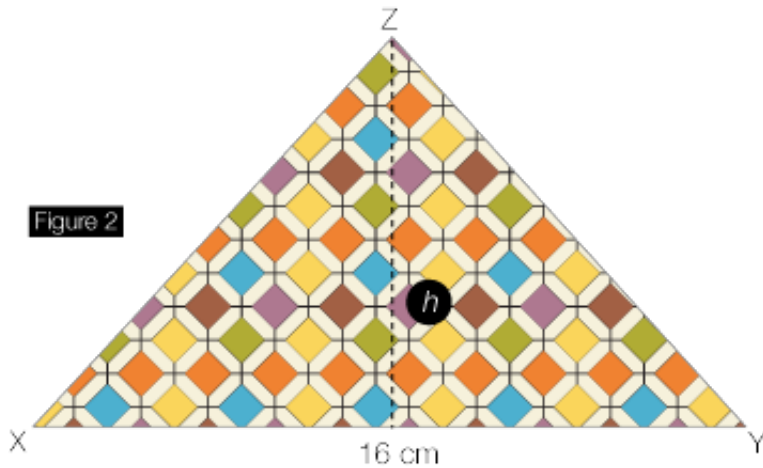
- $a = 49 \text{ cm}^2$ ,  $b = 1:7$
- $a = 51 \text{ cm}^2$ ,  $b = 5:19$
- $a = 89 \text{ cm}^2$ ,  $b = 1:9$
- $a = 25 \text{ cm}^2$ ,  $b = 2:2$

25) Find the area of the figure below?



- $6.6 \text{ m}^2$
- $4.6 \text{ m}^2$
- $7.5 \text{ m}^2$
- $5.7 \text{ m}^2$

26) A piece of copper wire is bent to form a square PQRS of side 10 cm as show in Figure 1.a)Find the area of square PQRS (b)The square is re-bent to form a triangle in Figure 2.(c)The area of the triangle is  $80 \text{ cm}^2$ . Find the height h?

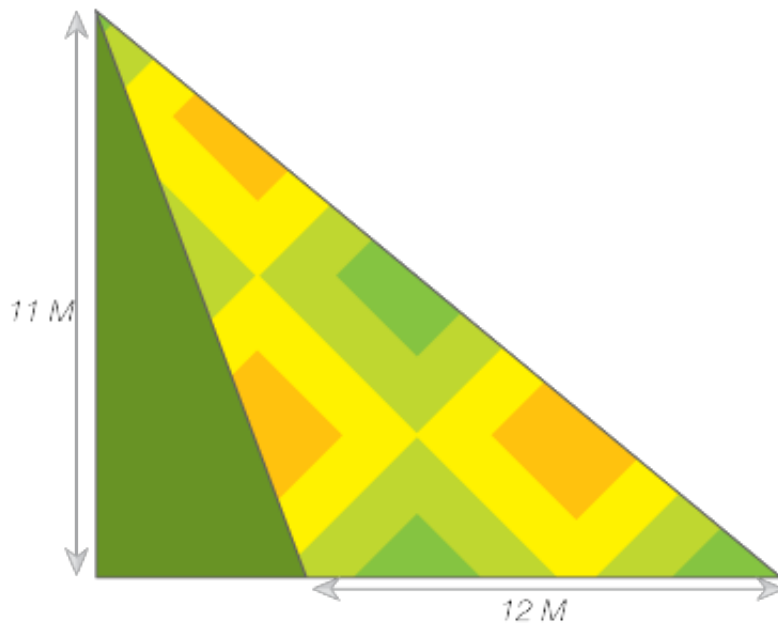
**Figure 1****Figure 2**

- $a = 121\text{cm}^2$ ,  $b = 54\text{cm}$ ,  $c = 35\text{cm}$
- $a = 71\text{cm}^2$ ,  $b = 16\text{cm}$ ,  $c = 6\text{cm}$
- $a = 107\text{cm}^2$ ,  $b = 15\text{cm}$ ,  $c = 21\text{cm}$
- $a = 100\text{cm}^2$ ,  $b = 24\text{cm}$ ,  $c = 10\text{cm}$

27) The area of a triangle is  $486\text{ cm}^2$ . If the ratio of its base and height is  $3 : 4$ , find the length of the base of the triangle?

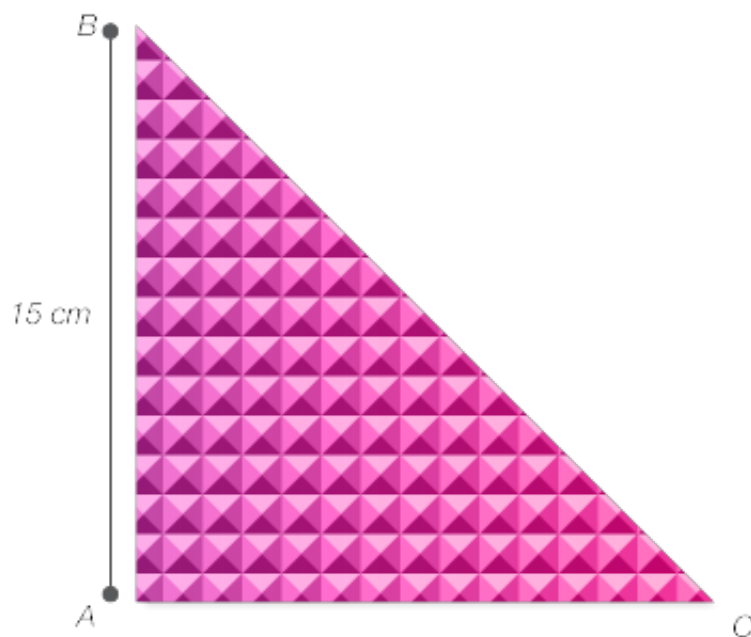
- 43 cm
- 31 cm
- 27 cm
- 45 cm

28) Find the area of the triangle below?



- $66 \text{ m}^2$
- $67 \text{ m}^2$
- $52 \text{ m}^2$
- $55 \text{ m}^2$

29) The ratio of the lengths of the 3 sides of a right-angled triangle ABC is  $AB:AC:BC = 3 : 4 : 5$ . The length of AB is 15 cm. (a)the perimeter of triangle ABC. (b)the area of triangle ABC?



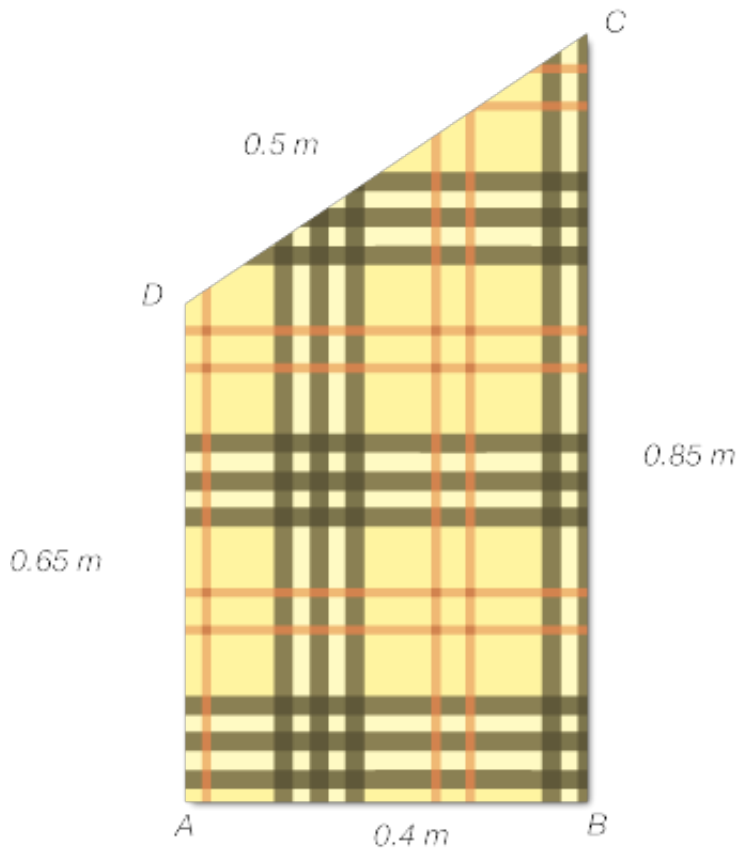
- $a = 60 \text{ cm}, b = 150 \text{ cm}^2$
- $a = 54 \text{ cm}, b = 190 \text{ cm}^2$
- $a = 40 \text{ cm}, b = 120 \text{ cm}^2$





- $a = 50 \text{ cm}$ ,  $b = 210 \text{ cm}^2$

30) The figure above shows a window frame ABCD. (a) Find the perimeter of the frame. (b) Find the area enclosed by the frame. Dividing into a rectangle plus a triangle by dropping a perpendicular from D to BC, we will get a rectangle 0.4 by 0.65 and a triangle base (0.85-0.65) with height 0.4?



- $a = 2.4 \text{ m}$ ,  $b = 2.64 \text{ m}^2$
- $a = 4.3 \text{ m}$ ,  $b = 1.34 \text{ m}^2$
- $a = 1.2 \text{ m}$ ,  $b = 2.41 \text{ m}^2$
- $a = 1.2 \text{ m}$ ,  $b = 1.321 \text{ m}^2$