



## Seventh Grade - Geometry

1) Angle properties and solving simple algebraic equation using angle properties. Find the angle that is complementary to  $40^\circ$ ?

- $45^\circ$
- $50^\circ$
- $56^\circ$
- $78^\circ$

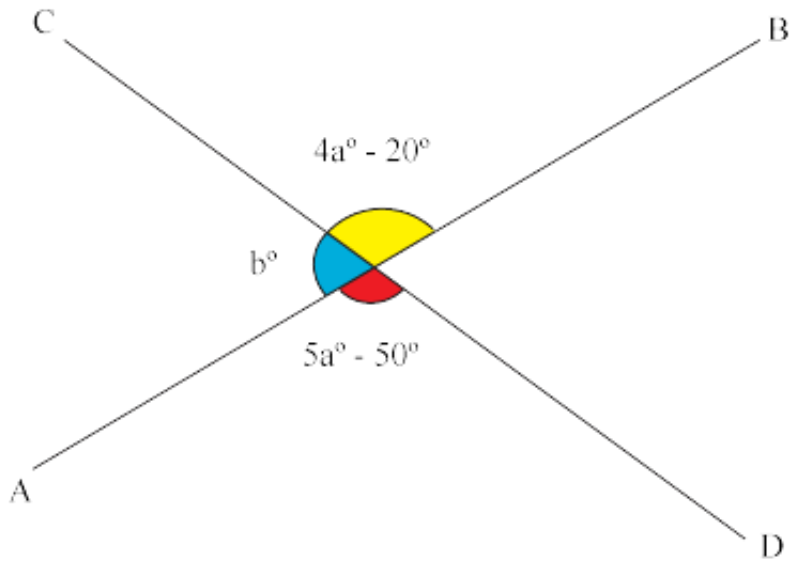
2) Angle properties and solving simple algebraic equation using angle properties. Find the angle that is supplementary  $40^\circ$ ?

- $130^\circ$
- $213^\circ$
- $140^\circ$
- $234^\circ$

3) Angle properties and solving simple algebraic equation using angle properties. If the angles  $2x^\circ$  and  $4y^\circ$  are supplementary, find the value of  $(x + 2y)^\circ$ ?

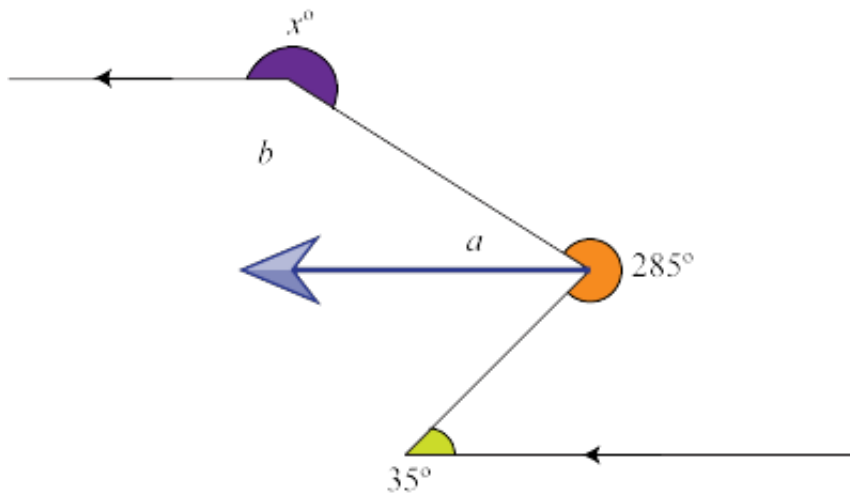
- $68^\circ$
- $90^\circ$
- $57^\circ$
- $87^\circ$

4) Angle properties and solving simple algebraic equation using angle properties. In the figure below, AB and CD are straight lines. Find the value of a and of b. State your reasons clearly in your working?



- $a = 60^\circ, b = 67^\circ$
- $a = 40^\circ, b = 56^\circ$
- $a = 30^\circ, b = 80^\circ$
- $a = 50^\circ, b = 45^\circ$

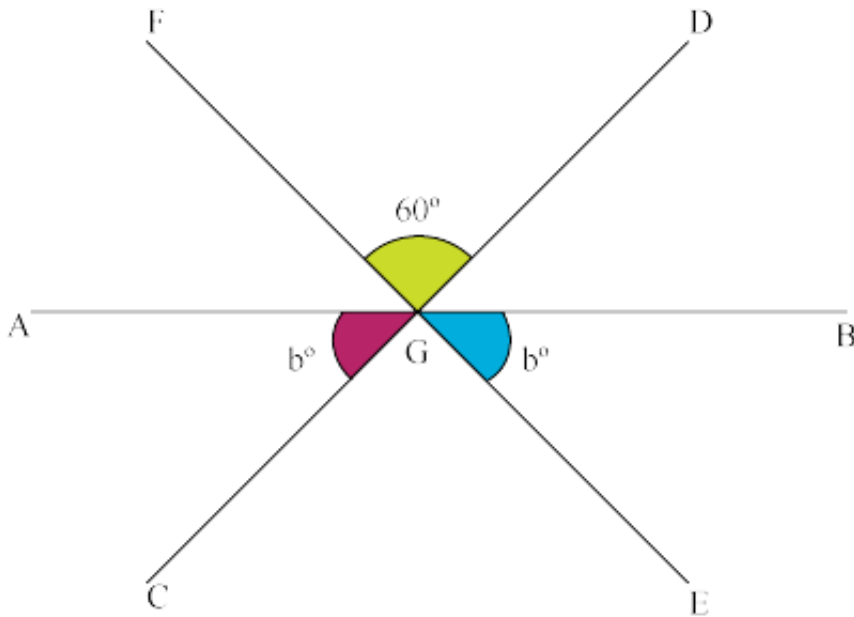
5) Angle properties and solving simple algebraic equation using angle properties. Find the value of x in the figure below?



- $345^\circ$
- $453^\circ$
- $234^\circ$
- $220^\circ$

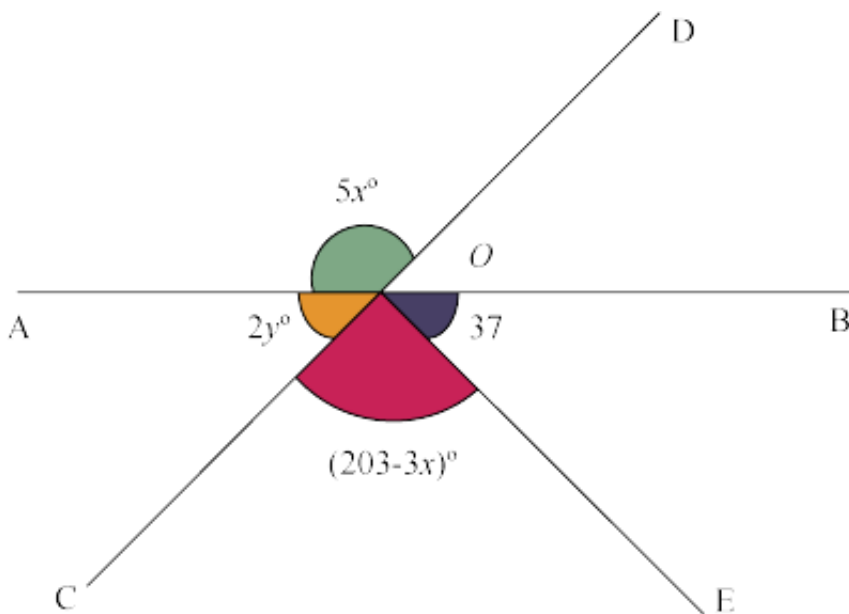


6) Angle properties and solving simple algebraic equation using angle properties. In the figure, AB, CD and EF are straight lines intersecting at G. Find the value of the angle b?



- $35^\circ$
- $58^\circ$
- $28^\circ$
- $60^\circ$

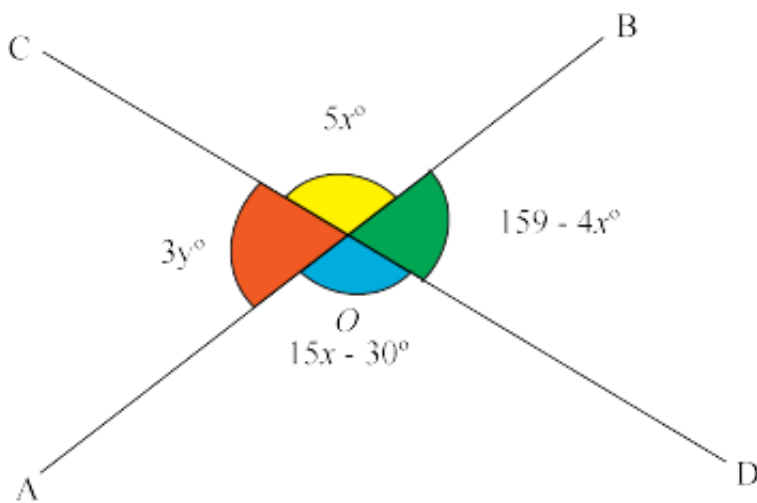
7) Angle properties and solving simple algebraic equation using angle properties. In the diagram below, AB and CD are straight lines which intersect at O. Calculate (a) the value of x, (b) the value of y?





- a)  $x = 10$ , b)  $y = 11$
- a)  $x = 20$ , b)  $y = 12$
- a)  $x = 30$ , b)  $y = 15$
- a)  $x = 20$ , b)  $y = 11$

8) Angle properties and solving simple algebraic equation using angle properties. In the diagram below, AB and CD are straight lines which intersect at O. Calculate values of x and of y. State all your reasons clearly



- $x = 6$ ,  $y = 34$
- $x = 3$ ,  $y = 49$
- $x = 5$ ,  $y = 54$
- $x = 2$ ,  $y = 12$

9) Find the complementary and supplementary angle of measure  $89^\circ$ ?

- Complement= $1^\circ$ , Supplement= $91^\circ$
- Complement= $2^\circ$ , Supplement= $41^\circ$
- Complement= $3^\circ$ , Supplement= $21^\circ$
- Complement= $3^\circ$ , Supplement= $31^\circ$

10) Calculate the number of sides of a regular polygon if its interior angle is  $108^\circ$ ?

- 5



- 9
- 7
- 8

11) Find the number of sides of a regular polygon if each exterior angle is  $24^\circ$ ?

- 23
- 15
- 56
- 34

12) A polygon has  $n$  sides. Four of the exterior angles are  $23^\circ$ ,  $35^\circ$ ,  $18^\circ$  and  $14^\circ$ , while each of the remaining  $(n-4)$  exterior angles is  $30^\circ$ . Find the value of  $n$ ?

- 13
- 25
- 43
- 23

13) The interior angles of a hexagon are in the ratio of  $1 : 2 : 3 : 4 : 5 : 9$ . Find the largest exterior angle of the hexagon?

- $520^\circ$
- $150^\circ$
- $230^\circ$
- $345^\circ$

14) If each interior angle of a regular polygon is  $156^\circ$ , find the number of sides of the polygon?

- 23
- 12
- 34
- 15



15) If the exterior angle of a regular polygon with  $n$  sides is  $45^\circ$ , find the value of  $n$ ?

- 4
- 8
- 3
- 7

16) The interior angle of a regular polygon is  $120^\circ$ . How many sides does the polygon have? What is the name of this polygon?

- 8, octagon
- 7, pentagon
- 6, hexagon
- 4, heptagon

17) Four of the interior angles of a hexagon are each  $105^\circ$  and one of the remaining interior angle is thrice the other. Find the smaller of these two angles?

- $82^\circ$
- $55^\circ$
- $78^\circ$
- $75^\circ$

18) Three interior angles of a pentagon are  $75^\circ$ ,  $(2x - 3)^\circ$  and  $(3x - 14)^\circ$  the remaining two have exterior angles of  $64^\circ$  and  $2x^\circ$ . Calculate the value of  $x$  and the smallest interior angle?

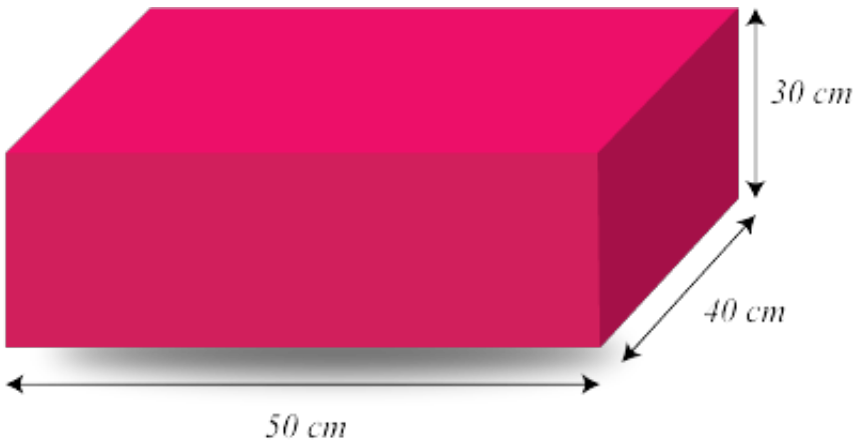
- $x = 52, 45^\circ$
- $x = 32, 46^\circ$
- $x = 62, 56^\circ$
- $x = 72, 78^\circ$



19) Three interior angles of an  $n$ -sided polygon are  $100^\circ$ ,  $130^\circ$  and  $160^\circ$ . If the other  $(n - 3)$  interior angles are  $150^\circ$  each, find the value of  $n$ ?

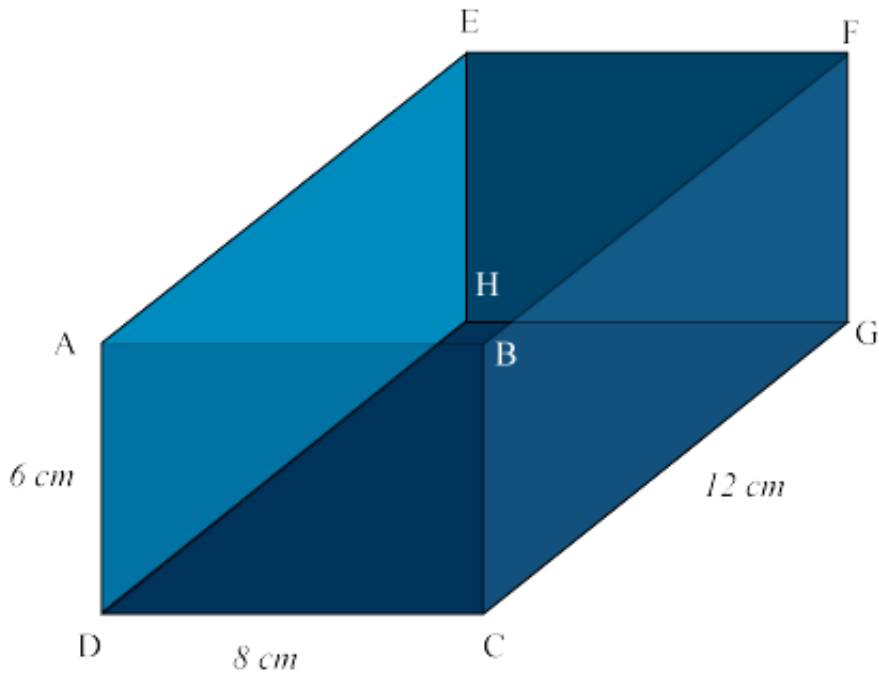
- 45
- 56
- 10
- 34

20) The figure below shows a paper box measuring 40cm by 50cm by 30cm. (a) Calculate the total surface area of the box, (b) Calculate the volume of the box?



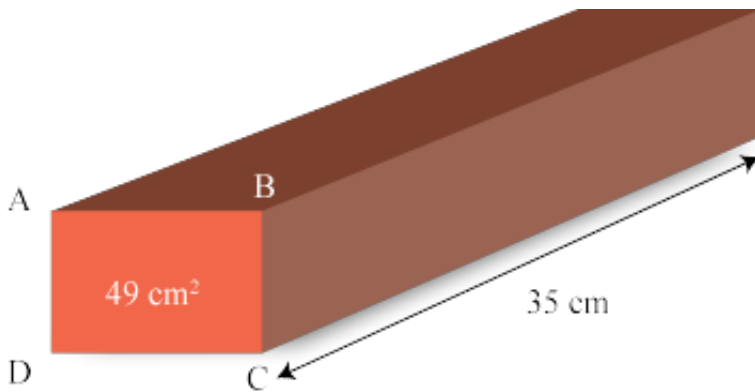
- $a = 9400\text{cm}^2$ ,  $b = 60000\text{cm}^3$
- $a = 4500\text{cm}^2$ ,  $b = 64500\text{cm}^3$
- $a = 4300\text{cm}^2$ ,  $b = 45000\text{cm}^3$
- $a = 9450\text{cm}^2$ ,  $b = 44500\text{cm}^3$

21) The diagram below shows a solid rectangular block, (a) Calculate the total surface area of this solid rectangular block, (b) Calculate the number of square cubes with sides measuring 2 cm, which can fill up this rectangular block?



- $a = 342\text{cm}^2$ ,  $b = 12$
- $a = 332\text{cm}^2$ ,  $b = 22$
- $a = 432\text{cm}^2$ ,  $b = 72$
- $a = 452\text{cm}^2$ ,  $b = 62$

22) The diagram shows a cuboid of length 35 cm. The area of the square face ABCD is  $49\text{ cm}^2$ . (a) Find the length of AD, (b) Calculate the total surface area of the cuboid?

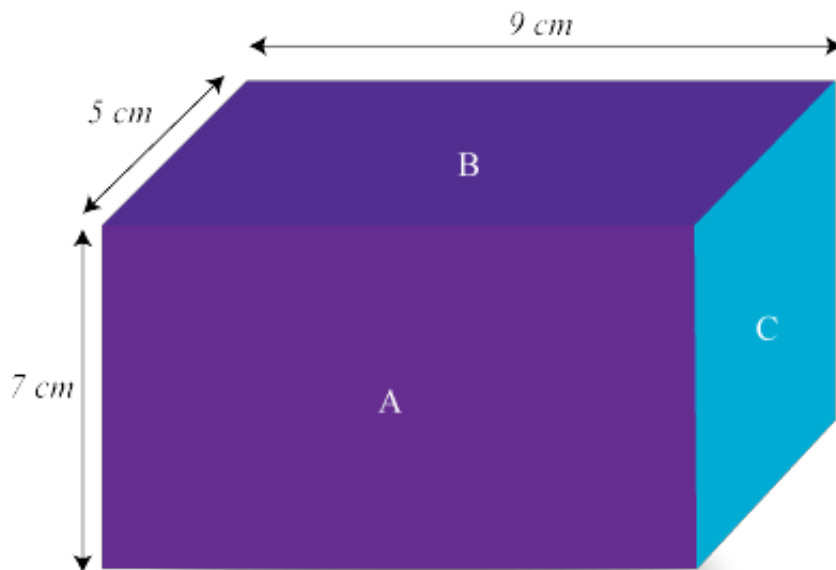


- $a = 5\text{ cm}$ ,  $b = 1218\text{cm}^2$
- $a = 4\text{ cm}$ ,  $b = 1458\text{cm}^2$
- $a = 7\text{ cm}$ ,  $b = 1078\text{cm}^2$
- $a = 6\text{ cm}$ ,  $b = 4578\text{cm}^2$



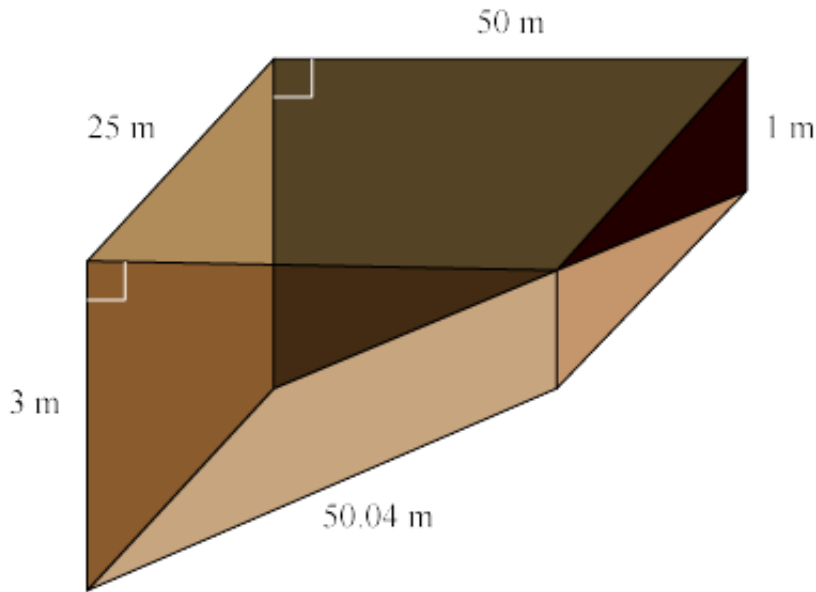


23) The figure below is a cuboid. Find (a) (i) Area of A, (ii) Area of B, (iii) Area of C, (iv) Its total surface area. (b) Its volume?



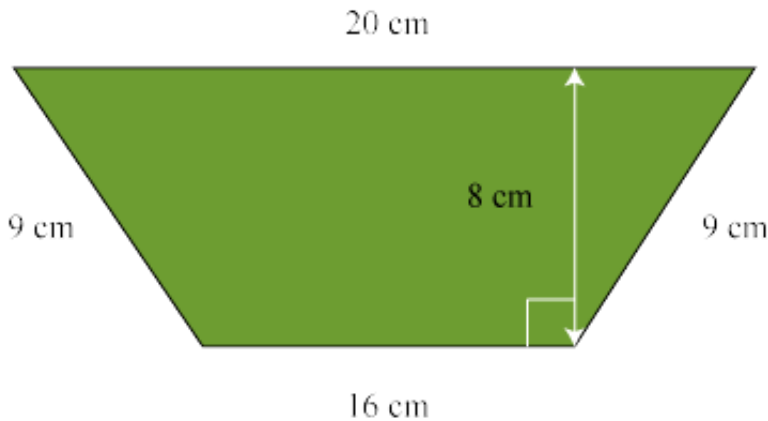
- a) i =  $63 \text{ cm}^2$ , ii =  $45 \text{ cm}^2$ , iii =  $35 \text{ cm}^2$ , iv =  $286 \text{ cm}^2$  b)  $315 \text{ cm}^3$
- a) i =  $13 \text{ cm}^2$ , ii =  $15 \text{ cm}^2$ , iii =  $15 \text{ cm}^2$ , iv =  $186 \text{ cm}^2$  b)  $311 \text{ cm}^3$
- a) i =  $13 \text{ cm}^2$ , ii =  $15 \text{ cm}^2$ , iii =  $15 \text{ cm}^2$ , iv =  $186 \text{ cm}^2$  b)  $311 \text{ cm}^3$
- a) i =  $61 \text{ cm}^2$ , ii =  $15 \text{ cm}^2$ , iii =  $15 \text{ cm}^2$ , iv =  $16 \text{ cm}^2$  b)  $115 \text{ cm}^3$

24) A swimming pool, 50 m long by 25 m wide is 1 m deep at the shallow end and 3 m deep at the other end. Find the volume of the water in the pool when it is full and also find the total surface area of the pool which is in contact with water?



- Volume = 2400 m<sup>3</sup>, Surface = 1234 m<sup>2</sup>
- Volume = 2450 m<sup>3</sup>, Surface = 1834 m<sup>2</sup>
- Volume = 2300 m<sup>3</sup>, Surface = 3654 m<sup>2</sup>
- Volume = 2500 m<sup>3</sup>, Surface = 1551 m<sup>2</sup>

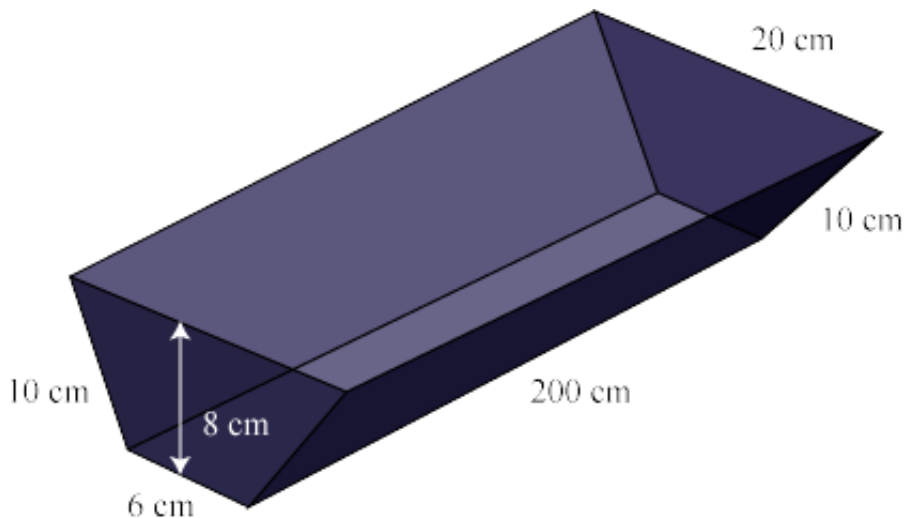
25) A trapezoidal prism metal block of height 15 cm has a cross-section as shown. It is melted and re-cast as a cylindrical block with a height of 5 cm. (Take  $\pi=3.142$ ). Find (a) the area of the cross-section, (b) the volume of the trapezoidal prism, (c) the radius of the cylindrical base after re-casting, leaving your answer in 3 significant figures?



- a = 144 cm<sup>2</sup>, b = 2160 cm<sup>3</sup>, c = 137 cm
- a = 111 cm<sup>2</sup>, b = 1110 cm<sup>3</sup>, c = 37 cm
- a = 124 cm<sup>2</sup>, b = 1260 cm<sup>3</sup>, c = 127 cm
- a = 214 cm<sup>2</sup>, b = 1230 cm<sup>3</sup>, c = 217 cm

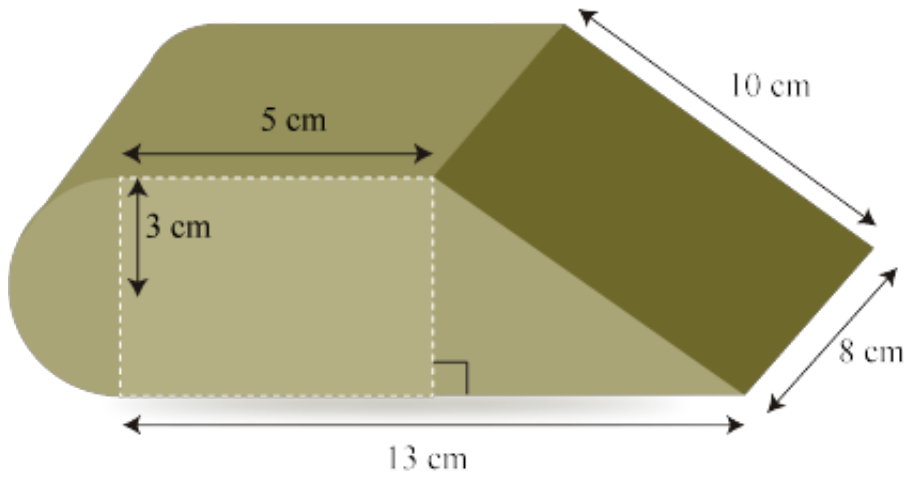


26) The diagram below shows an open tray with a trapezoidal cross-section. A man fills the tray with water from a tap using a 5-liter pail. During every trip, he realizes that 10% of the water from the pail will be spilled. (a) Find the volume of the tray in liters. (b) How many trips does the man need to make in order to fill up the whole tray? (c) When the tray was completely filled with water, the man decided to paint the external surface area of the tray. Calculate the external surface area of the tray excluding the base. (d) If the material for making the tray costs \$0.05 per  $\text{cm}^2$ , find the total cost of the material for making the tray?



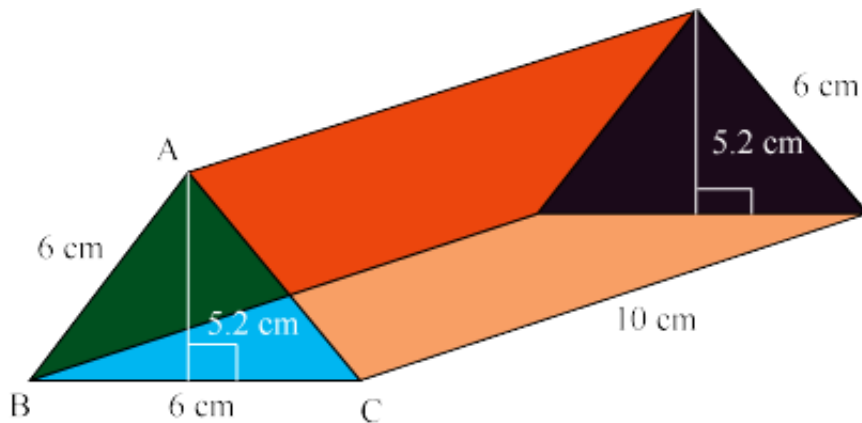
- a = 23.8 lts, b = 3 times, c = 1108, d = \$211.40
- a = 10.8 lts, b = 2 times, c = 4218, d = \$170.40
- a = 20.8 lts, b = 5 times, c = 4208, d = \$270.40
- a = 11.1 lts, b = 7 times, c = 9208, d = \$170.40

27) The diagram below shows a composite prism. Its base area is made up of a semicircle of radius 3 cm, a rectangle and a triangle. Calculate the (a) cross-sectional area of the prism, (b) perimeter of the cross-sectional area of the prism, (c) volume of the prism, (d) total surface area of the prism?



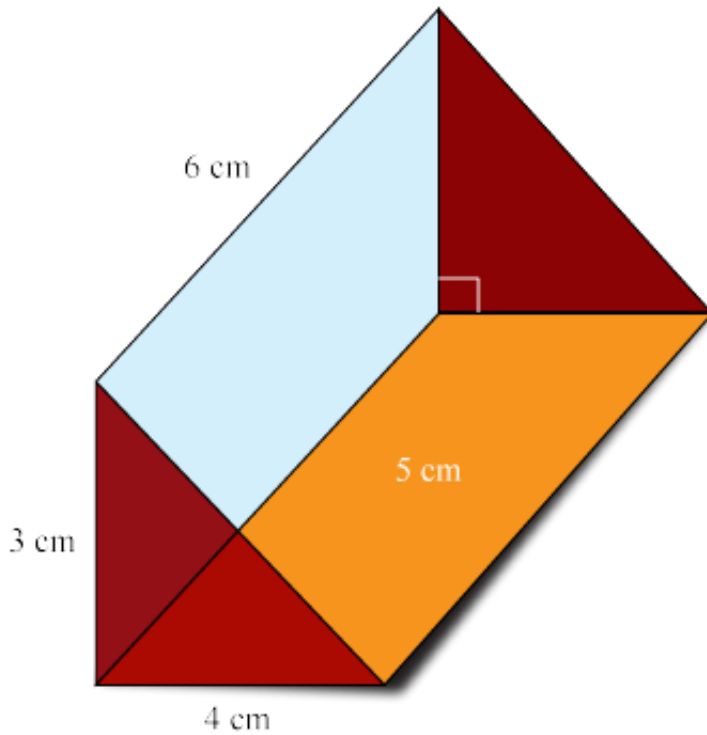
- $a = 82.3\text{cm}^2$ ,  $b = 46.8\text{cm}$   $c = 658.2\text{cm}^3$ ,  $d = 539.33\text{cm}^2$
- $a = 81.3\text{cm}^2$ ,  $b = 16.8\text{cm}$   $c = 158.2\text{cm}^3$ ,  $d = 139.33\text{cm}^2$
- $a = 22.3\text{cm}^2$ ,  $b = 26.8\text{cm}$   $c = 228.2\text{cm}^3$ ,  $d = 229.33\text{cm}^2$
- $a = 21.3\text{cm}^2$ ,  $b = 12.8\text{cm}$   $c = 238.2\text{cm}^3$ ,  $d = 521.33\text{cm}^2$

28) The triangular face of the prism shown in the diagram is an equilateral triangle whose sides are each of length 6 cm. The height of the prism is 5.2 cm. All the dimensions in the diagram are given in cm. Find (a) the volume of the prism, (b) the total surface area of the prism?



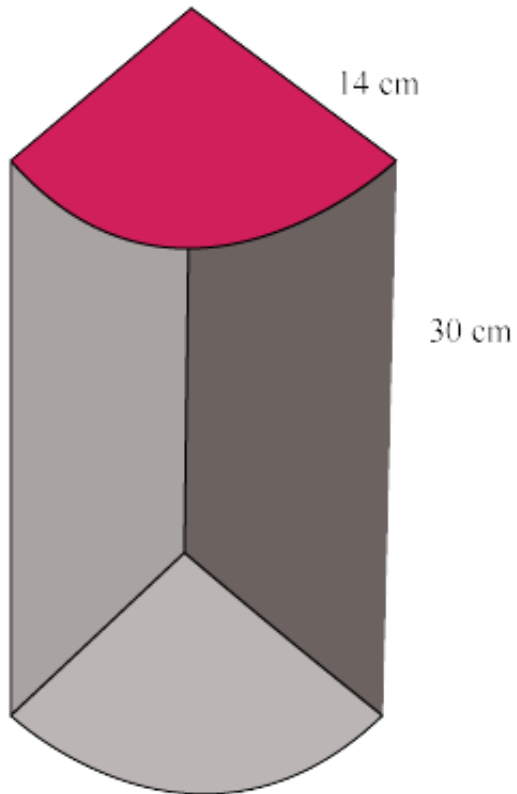
- $a = 156\text{ cm}^3$ ,  $b = 211.1\text{ cm}^2$
- $a = 152\text{ cm}^3$ ,  $b = 341.1\text{ cm}^2$
- $a = 216\text{ cm}^3$ ,  $b = 101.1\text{ cm}^2$
- $a = 426\text{ cm}^3$ ,  $b = 121.1\text{ cm}^2$

29) Find the total surface area of the following solid?



- 45 cm<sup>2</sup>
- 56 cm<sup>2</sup>
- 84 cm<sup>2</sup>
- 46 cm<sup>2</sup>

30) The diagram below shows a solid prism whose cross section (the shaded area) is quarter of a circle of radius 14 cm. The height of the prism is 30 cm. (Take  $\pi=22/7$ ) (a) Find its volume. (b) Find its total surface area?



- $a = 7120 \text{ cm}^3$ ,  $b = 568 \text{ cm}^2$
- $a = 3420 \text{ cm}^3$ ,  $b = 138 \text{ cm}^2$
- $a = 4620 \text{ cm}^3$ ,  $b = 968 \text{ cm}^2$
- $a = 3620 \text{ cm}^3$ ,  $b = 956 \text{ cm}^2$