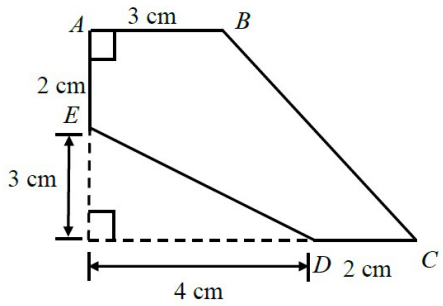
GHS Sorted Past Paper - MC
S1-09 Areas and Volumes (I)

1. [20 - 21 S1 Final Exam - 08] (98%)

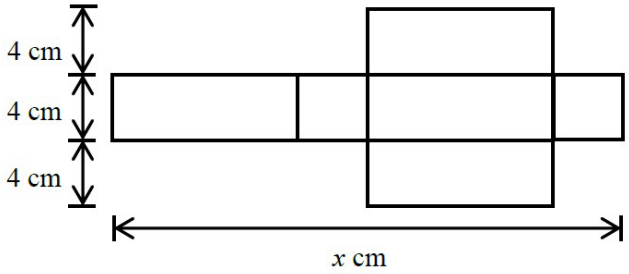
8. In the figure, find the area of the pentagon $ABCDE$.



A. 33 cm^2
B. 16.5 cm^2
C. 10.5 cm^2
D. 6.5 cm^2

2. [20 - 21 S1 Final Exam - 19] (81%)

19. The figure shows the net of a prism with a square base. If it is folded, the volume of the prism is 144 cm^2. Find the value of x.



A. 13
B. 24
C. 26
D. 48

3. [20 - 21 S1 Mid-year Exam - 12] (66%)

12. A rectangular box of dimension 32 cm × 40 cm × 48 cm is completely cut into a number of identical cubes. What is the length of the side of the largest possible cube?

A. 2 cm
B. 4 cm
C. 8 cm
D. 16 cm

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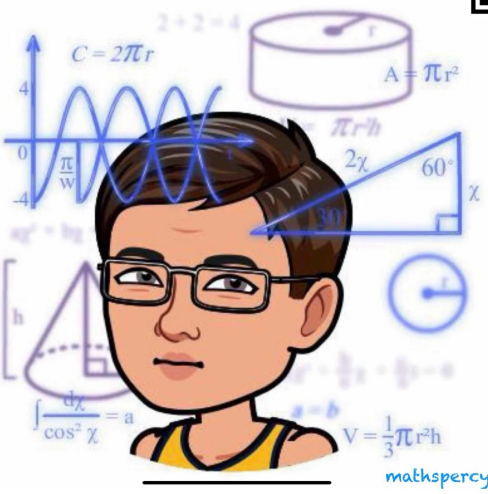


4. [21 - 22 S1 Final Exam - 08] (77%)

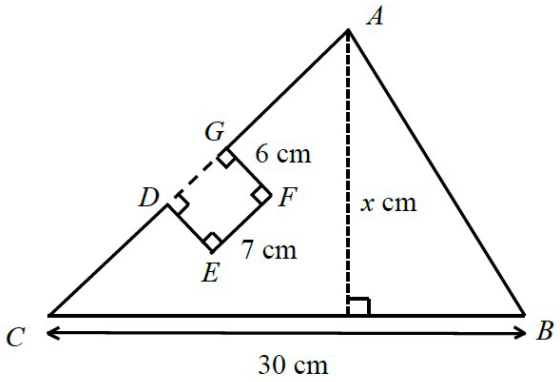
8. Which of the following solids is NOT a polyhedron?

A. a rectangular pyramid
B. an octagonal prism
C. a circular cylinder
D. a regular tetrahedron

5. [21 - 22 S1 Final Exam - 09] (72%)

9. In the figure, if the area of $ABCDEFG$ is 228 cm^2, then x =

A. 9 .
B. 12.4 .
C. 18 .
D. 22 .



6. [21 - 22 S1 Final Exam - 18] (57%)

18. If the volume of a metal cube of side 30 cm is equal to the total volume of five identical cuboids of length 24 cm and width 45 cm, then the height of each cuboid is

A. 5 cm.
B. 10 cm.
C. 25 cm.
D. 125 cm.

7. [21 - 22 S1 Mid-year Exam - 16] (63%)

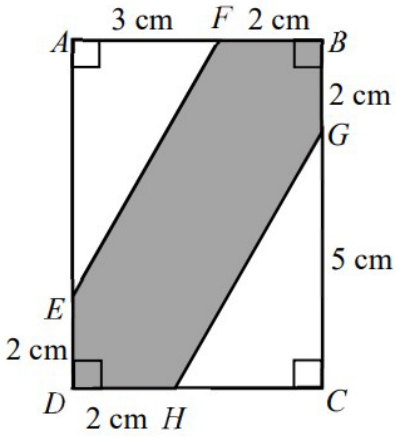
16. The upper base of a trapezium is 3 cm shorter than its lower base. If its height and area are 4 cm and 14 cm^2 respectively, find the lower base of this trapezium.

A. 5 cm
B. $\frac{13}{4}$ cm
C. 2 cm
D. $\frac{1}{4}$ cm

8. [22 - 23 S1 Final Exam - 09] (98%)

9. In the figure, the area of the shaded region is

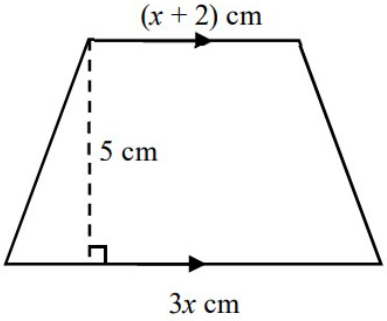
A. 18 cm^2.
B. 19 cm^2.
C. 20 cm^2.
D. 21 cm^2.



9. [22 - 23 S1 Final Exam - 17] (92%)

17. The figure shows a trapezium. If the area of the trapezium is 45 cm^2, find the value of x.

A. 1.75
B. 2
C. 3.5
D. 4



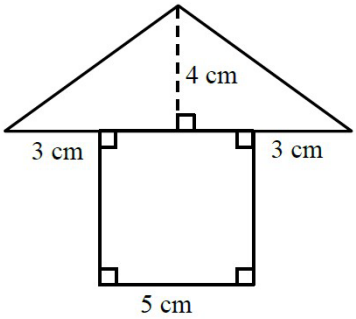
10. [22 - 23 S1 Final Exam - 18] (82%)

18. The volume of a right prism is 492 cm^3. If the perimeter and the area of the base are 50 cm and 82 cm^2 respectively, find the total surface area of the right prism.

A. 300 cm^2
B. 382 cm^2
C. 464 cm^2
D. 792 cm^2

11. [22 - 23 S1 Standardized Test - 04] (98%)

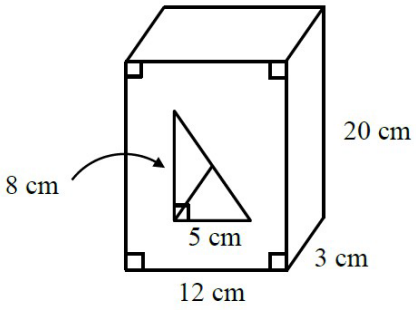
4. The figure is formed by a triangle and a square. Find the area of the figure.



A. 89 cm^2
B. 47 cm^2
C. 41 cm^2
D. 35 cm^2

12. [22 - 23 S1 Standardized Test - 05] (98%)

5. The figure shows a hollow right prism. Find the volume of the prism.



A. 135 cm^3
B. 220 cm^3
C. 660 cm^3
D. 1980 cm^3

13. [22 - 23 S1 Standardized Test - 10] (44%)

10. Which of the following statement(s) must be true?

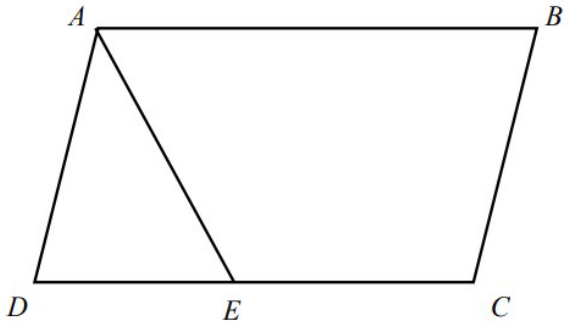
I. A right prism has a uniform cross section.
II. The areas of all the lateral faces of a right prism are equal.
III. Right prisms with equal volume have equal total surface area.

A. I only
B. I and II only
C. II and III only
D. I, II and III

14. [23 - 24 S1 Final Exam - 10] (47%)

10. In the figure, $ABCD$ is a parallelogram and E is a point on CD such that $DE = 3$ cm, $EC = 5$ cm. If the area of $\Delta ADE = 9$ cm^2, find the area of quadrilateral $AECB$.

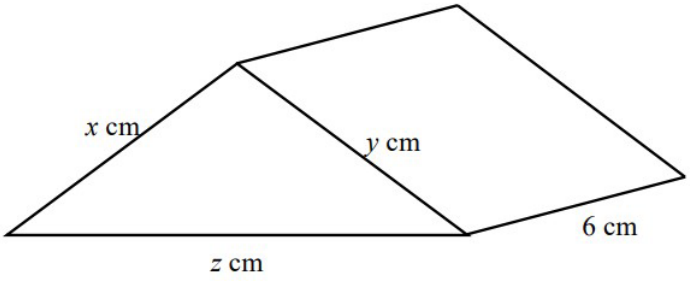
A. 15 cm^2
B. 24 cm^2
C. 39 cm^2
D. 48 cm^2



15. [23 - 24 S1 Final Exam - 20] (79%)

20. The volume of the right prism in the figure is 360 cm^3. If $x + y + z = 50$, find its total surface area.

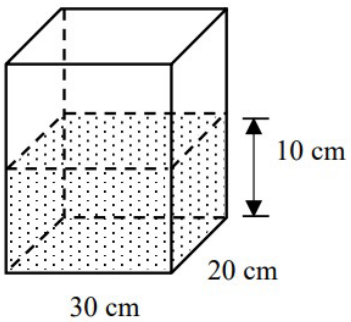
A. 420 cm^2
B. 400 cm^2
C. 360 cm^2
D. 300 cm^2



16. [23 - 24 S1 Final Exam - 21] (91%)

21. The figure shows a container filled with some water. The water is boiled and 120 cm^3 of water is evaporated every hour, find the drop in water level in 5 hours.

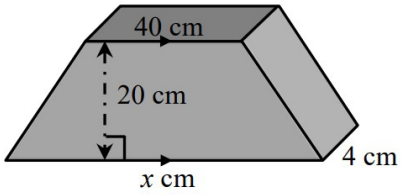
A. 0.5 cm
B. 1 cm
C. 1.5 cm
D. 2 cm



17. [23 - 24 S1 Standardized Test - 05] (91%)

5. In the figure, the volume of the right prism is $3600\ cm^3$ and the base is a trapezium. Find the value of x.

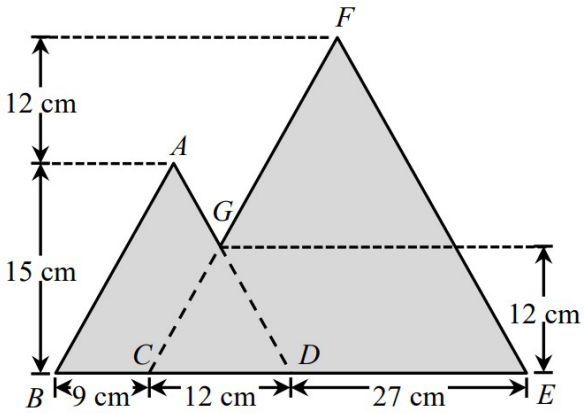
A. 5
B. 50
C. 100
D. 3200



18. [23 - 24 S1 Standardized Test - 08] (87%)

8. In the figure, AGD, CGF and $BCDE$ are straight lines. Find the area of the shaded region.

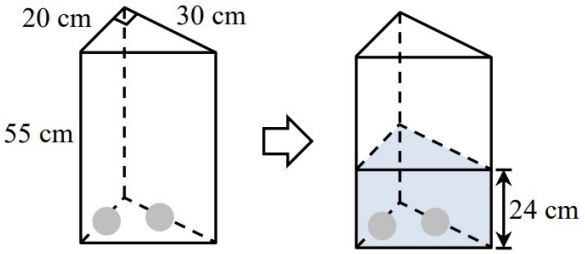
A. $504\ cm^2$
B. $612\ cm^2$
C. $684\ cm^2$
D. $1224\ cm^2$



19. [23 - 24 S1 Standardized Test - 10] (42%)

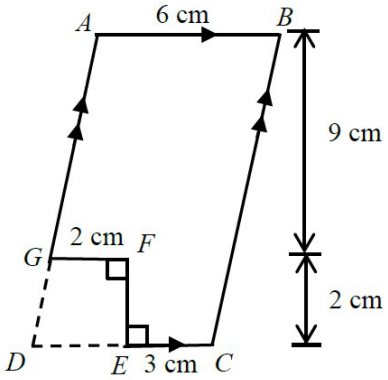
10. In the figure, two identical iron balls are put inside an empty bottle in the shape of a triangular prism. Water of volume $6000\ cm^3$ is then poured into the bottle to a depth of 24 cm. Peter wants to put some identical iron balls into the bottle until the water overflow. Find the minimum number of additional iron balls.

A. 15
B. 16
C. 17
D. 18



20. [24 - 25 S1 Final Exam - 09] (95%)

9. *ABCD* is a parallelogram. Find the area of the polygon *ABCEFG*.



A. $66\,\text{cm}^2$

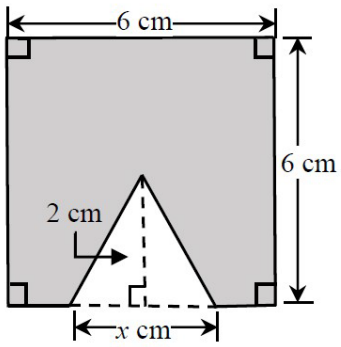
B. $62\,\text{cm}^2$

C. $61\,\text{cm}^2$

D. $60\,\text{cm}^2$

21. [24 - 25 S1 Standardized Test - 05] (89%)

5. In the figure, if the area of shaded region is $30\,\text{cm}^2$, then $x =$



A. 1.5.

B. 3.

C. 6.

D. 12.

22. [24 - 25 S1 Standardized Test - 09] (65%)

9. The volume of a cuboid with a square base is $108\,\text{cm}^3$. If the height of the cuboid is 12 cm, find its total surface area.

A. $594\,\text{cm}^2$

B. $162\,\text{cm}^2$

C. $153\,\text{cm}^2$

D. $144\,\text{cm}^2$

23. [24 - 25 S1 Standardized Test - 10] (89%)

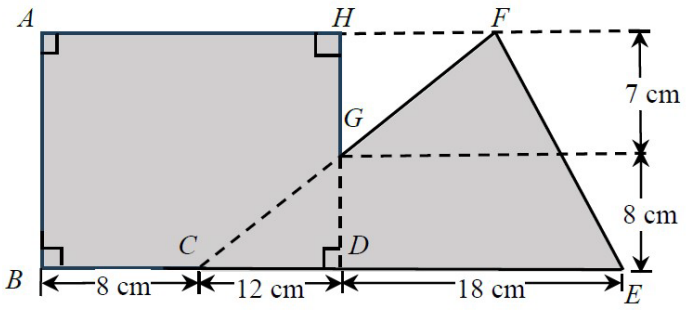
10. In the figure, *BCDE* and *CGF* are straight lines. Find the area of the shaded region.

A. $625\ \text{cm}^2$

B. $525\ \text{cm}^2$

C. $477\ \text{cm}^2$

D. $429\ \text{cm}^2$



GHS Sorted Past Paper - Conventional Questions
S1-09 Areas and Volumes (I)

1. [20 - 21 S1 Final Exam - 10]

10. Find the total surface area of the right prism in **Figure 4**. **(3 marks)**

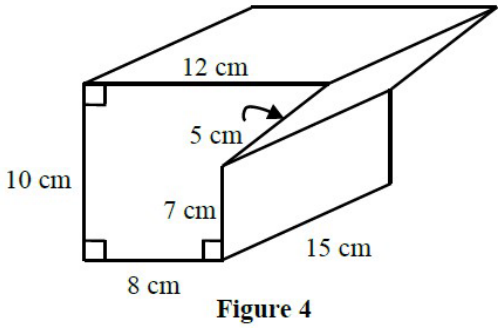


Figure 4

2. [20 - 21 S1 Final Exam - 20]

20. **Figure 9a** shows a closed container in the shape of right triangular prism with a right-angled triangle base which contains 1080 cm^3 of water.

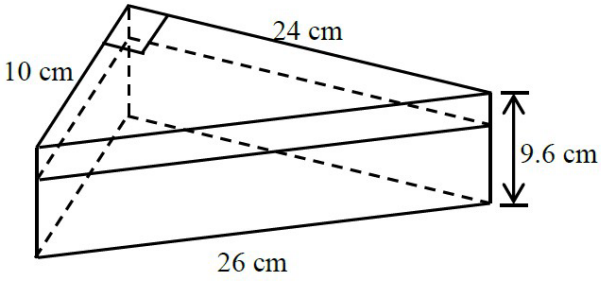


Figure 9a

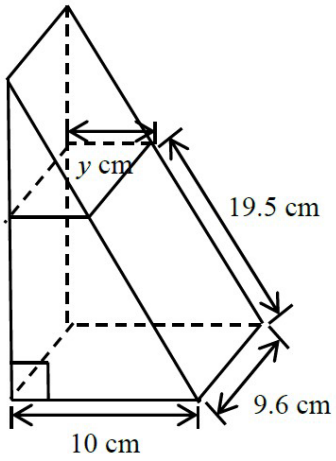


Figure 9b

(a) Find the depth of water in **Figure 9a**. **(2 marks)**

(b) Now the container is put vertically as shown in **Figure 9b**. The depth of water is doubled. Find the value of y. **(2 marks)**

3. [21 - 22 S1 Final Exam - 10] (94%)

10. **Figure 3** shows a polygon *ABCEFD* which is formed by joining a trapezium *ABCD* and a parallelogram *DCEF* . It is given that *AB* = 5 cm, *FE* = 12 cm and the height of the trapezium *ABCD* and the parallelogram *DCEF* are 8 cm and 9 cm respectively.

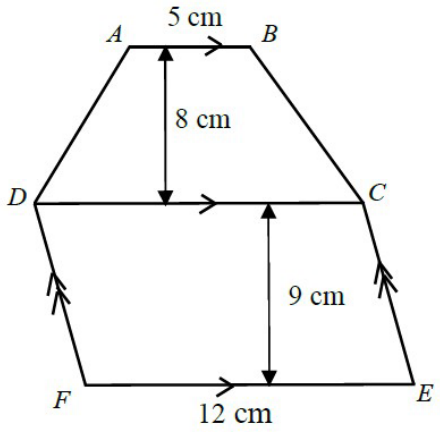


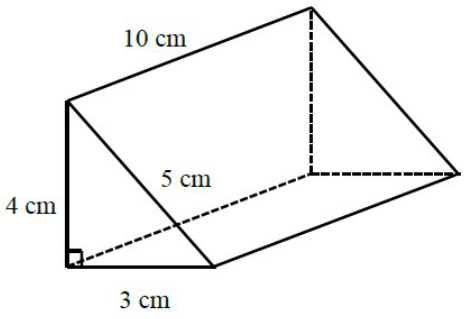
Figure 3

(a) Find the area of the polygon *ABCEFD* . **(2 marks)**

(b) Polygon *ABCEFD* is the base of a prism with height 36 cm . Find the volume of the prism. **(2 marks)**

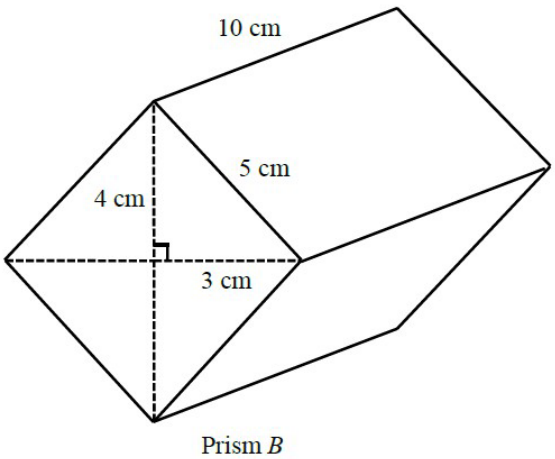
4. [21 - 22 S1 Final Exam - 12] (25%)

12. **Figure 5a** shows a triangular prism *A* with a base of right-angled triangle. It is given that the side lengths of the base are 3 cm, 4 cm and 5 cm. The height of the prism is 10 cm. Four prisms *A* are combined to form a quadrilateral prism *B* in **Figure 5b**. Candy claims that the total surface area of four prisms *A* will be doubled that of prism *B*. Do you agree? Explain your answer. **(3 marks)**



Prism *A*

Figure 5a



Prism *B*

Figure 5b

5. [22 - 23 S1 Final Exam - 10] (65%)

10. **Figure 2** shows a right-angled triangle ABC with $AC \perp AB$. $AB = 12$ cm and $BC = 20$ cm. D is a point on BC such that $AD \perp BC$. It is given that $AD = 9.6$ cm. Find the length of AC.

(2 marks)

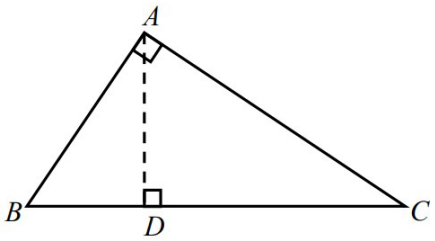


Figure 2

6. [22 - 23 S1 Final Exam - 18] (55%)

18. **Figure 7** shows an open tank in the shape of a right prism with base $ABCDEF$. It is given that $AB = 4.5$ m, $BC = 20$ m, $EF = 1.5$ m, $AF = 50$ m and the height of the prism is 25 m.

(a) Find the capacity of the tank. **(2 marks)**

(b) If the tank is fully filled with water, find the wet surface area of the tank. **(2 marks)**

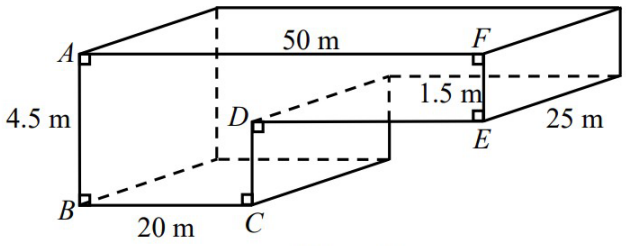


Figure 7

7. [22 - 23 S1 Standardized Test - 03] (85%)

3. **Figure 2** shows a right prism with $ABCDE$ as the base. M is a point on CD such that $MC = MD = 5$ cm. It is given that $BC = 12$ cm, $AM = 14$ cm, $ED = 10$ cm and the height of the prism is 20 cm. Find the volume of the prism. **(3 marks)**

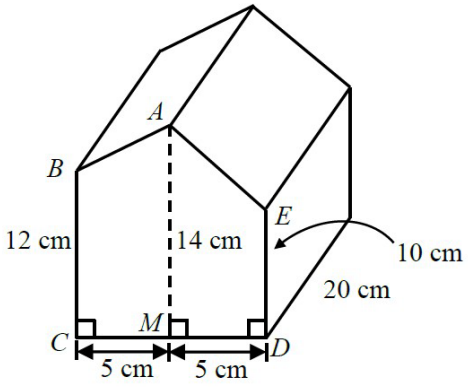


Figure 2

8. [22 - 23 S1 Standardized Test - 06] (67%)

6. **Figure 4** shows a right prism with $ABCDE$ as the base and height of 8 cm. If the perimeter and the area of the base are 150 cm and 40 cm^2 respectively, find the total surface area of the prism. **(2 marks)**

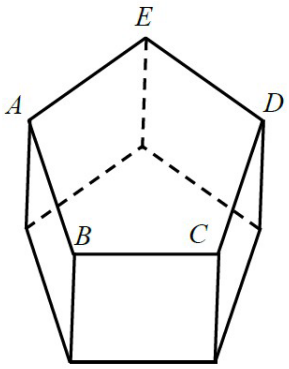


Figure 4

9. [22 - 23 S1 Standardized Test - 07] (34%)

7. **Figure 5(a)** shows a solid metal cuboid. The length and width of the cuboid are 20 cm and 36 cm respectively. It is given that the volume of the cuboid is 10800 cm^3.

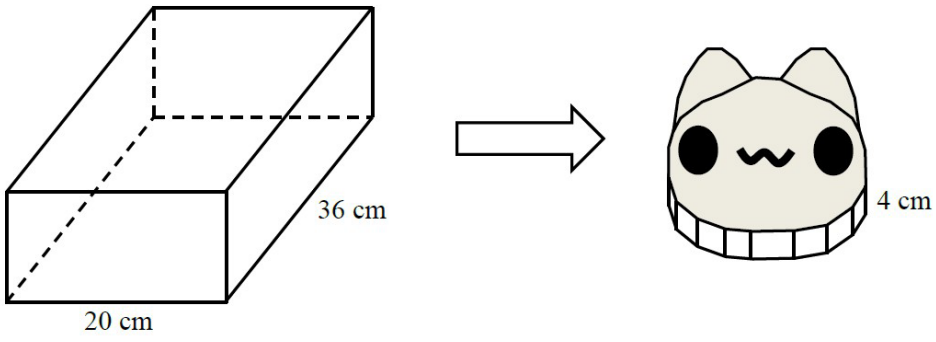


Figure 5(a) **Figure 5(b)**

(a) Find the height of the cuboid. **(1 mark)**

(b) The cuboid in **Figure 5(a)** is melted and recast into 90 identical right prisms with height 4 cm as shown in **Figure 5(b)**. After recasting, the sum of the total surface area of **all** right prisms is 6 times that of the cuboid in **Figure 5(a)**. Alvin claims that the total area of all lateral faces of a right prism is more than 150 cm^2. Do you agree? Explain your answer. **(3 marks)**

10. [23 - 24 S1 Final Exam - 14] (45%)

14.

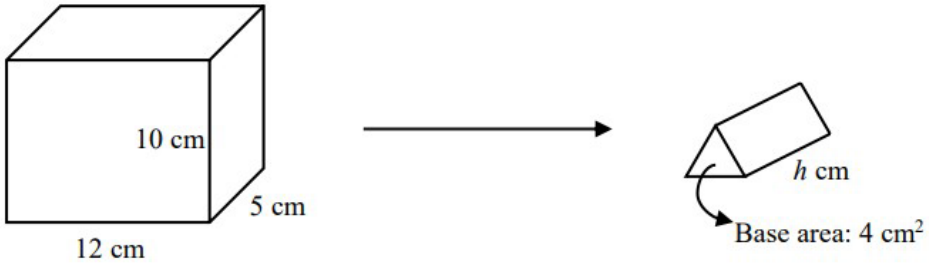


Figure 3a **Figure 3b**

(a) The cuboid in **Figure 3a** is melted and recast into 30 identical triangular right prisms as shown in **Figure 3b**. Find h. **(2 marks)**

(b) **Figure 3c** shows a rectangular water tank filled with some water. The triangular right prism as shown in **Figure 3b** is being put into the tank one by one until the wet surface area of the tank reaches 780 cm^2. Find the number of triangular right prisms needed. **(4 marks)**

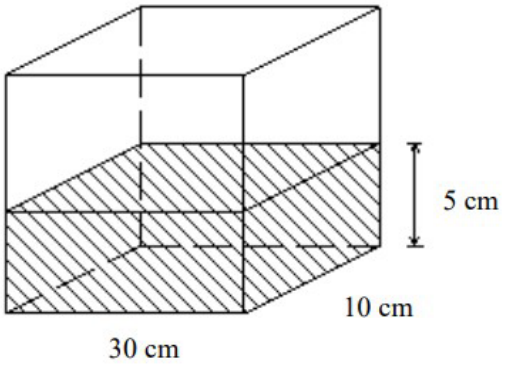


Figure 3c

11. [23 - 24 S1 Standardized Test - 01] (88%)

1. Find the area of the polygon $ABCDE$ in **Figure 1**. **(2 marks)**

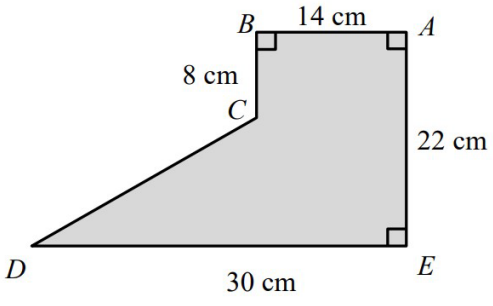


Figure 1

12. [23 - 24 S1 Standardized Test - 02] (80%)

2. **Figure 2** shows a right triangular prism with a right-angled triangle as base.
(a) Find the total surface area of the prism.
(b) If the painting cost for each cm^2 is \$0.3, find the total painting cost of covering all faces of the prism.

(4 marks)

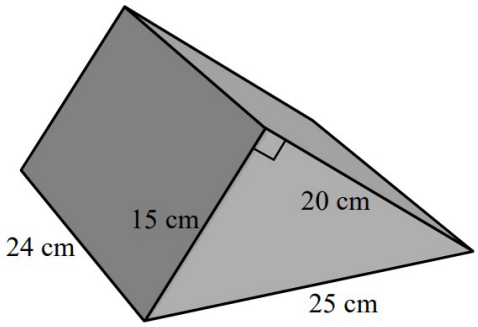


Figure 2

13. [23 - 24 S1 Standardized Test - 07] (73%)

7. A sealed tank contains some water and the tank is in the shape of a right prism. The depth of the water is 8 cm when the face *AEFG* is facing up (**Figure 5a**). Find the depth of the water when the tank is rotated so that the face *AEFG* is facing down (**Figure 5b**). **(3 marks)**

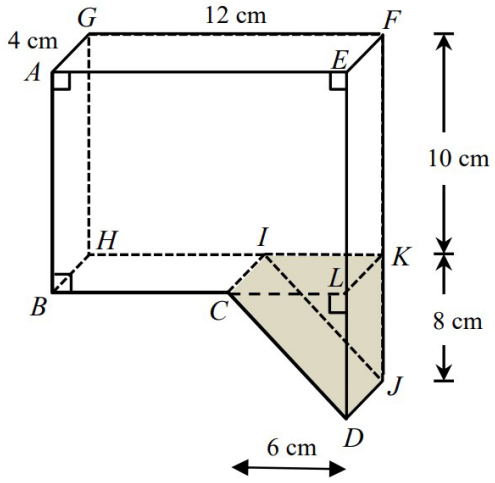


Figure 5a

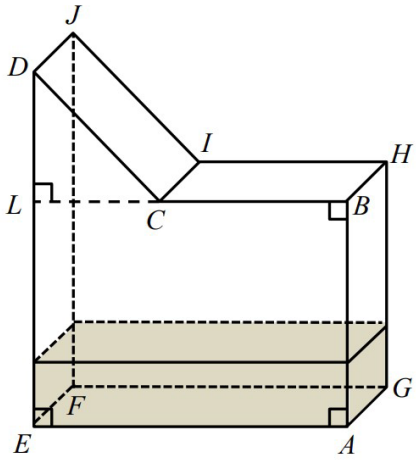


Figure 5b

14. [24 - 25 S1 Standardized Test - 01] (91%)

1. **Figure 1** shows the floor plan of a lawn *ABCD*.

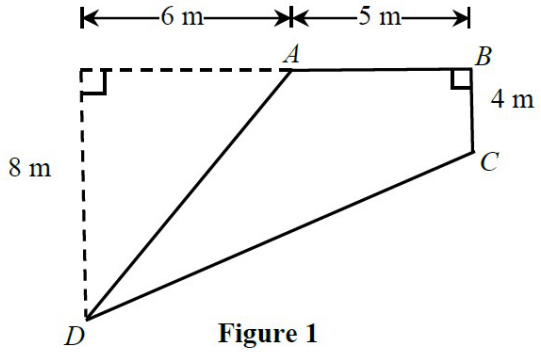


Figure 1

(a) Find the area of the lawn *ABCD*. **(2 marks)**

(b) It is given that the cost of mowing each m^2 of the lawn is \$55. Find the cost of mowing the lawn *ABCD*. **(2 marks)**