MATHEMATICS

GRADE 8

PROJECT

TOTAL SURFACE AREA

OF 3D FIGURE

Total : 50 marks

TIME : 1 hour in class

INSTRUCTIONS:

Read the following instructions before answering the questions.

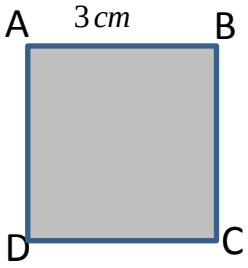
1.	This question paper consists of 3 questions.
2.	Answer ALL the questions.
3.	Clearly show ALL calculations, diagrams, graphs, et cetera which you have used in determining your answers.
4.	You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
5.	If necessary, round off answers to TWO decimal places, unless stated otherwise.
6.	Number the answers correctly according to the numbering system used in this question paper.
7.	Diagrams are NOT necessarily drawn to scale.
8.	Write neatly and legibly.

QUESTION 1

1.1 Give the formula for the area of the following figures:

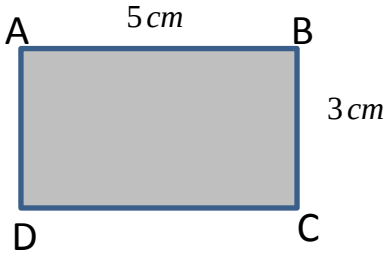
1.1.1 a square
1.1.2 a rectangular
1.1.3 a triangular (3)

1.2 Determine the area of the square ABCD with AB=3cm.



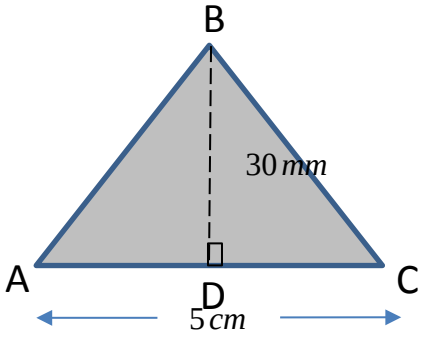
(3)

1.3 Determine the area of the rectangular ABCD with AB=5cm and BC=3cm.



(3)

1.4 Determine the area of the triangular ABC with AC=5cm and
height DB=30 mm.



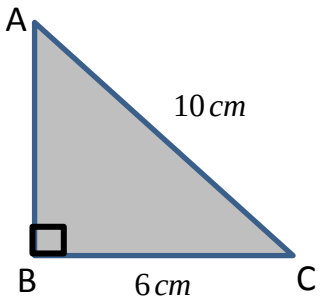
(4)

1.5 In the figure is a right triangle ABC with AC=10cm and AB=6cm.

Determine :

1.5.1 The height AB (hint: Theorem of Pythagoras) (3)

1.5.2 The area of the triangular. (2)

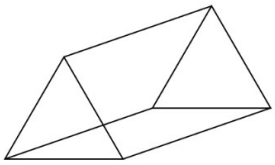


[18]

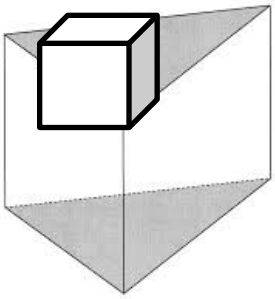
QUESTION 2

- The **outside area** of a 3D object is the total area of the levels of the object.
- If you have a box unfold, you can see all the levels of the box.
- An opened view of a 3D object is called the **net** of the object .

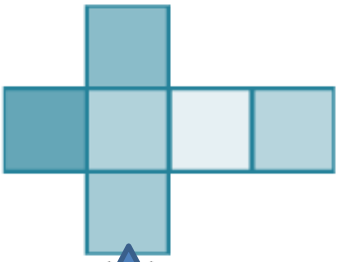
Choose the net (A, B, C, D or E) that best fits the following 3D figures.
Give only the answer. For example: (2.1) A

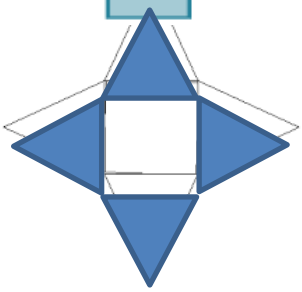
2.1 

2.2 

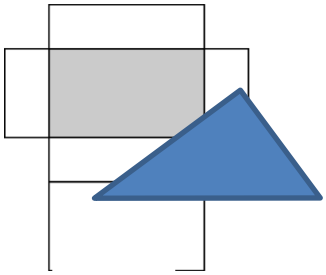
2.3 

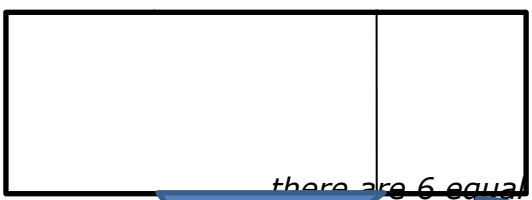
2.4

A 

B 

C 

D 

E 

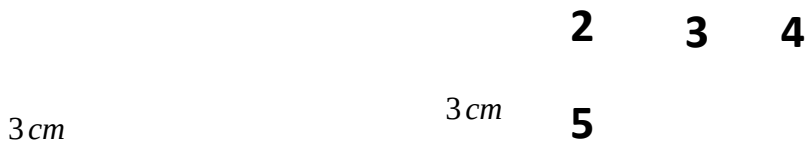
[8]

QUESTION 3

there are 6 equal squares



3.1



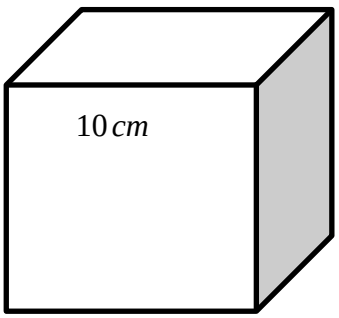
The **total surface area (TSA)** of the cube above can be calculated as follows:

TSA = area of square **1** + area **2** + area **3** + area **4** + area **5** + area **6**

3.1.1 Determine the area of square **1.** (1)

3.1.2 Determine the total surface area of the cube (i.e. the combined area of six squares together.) (2)

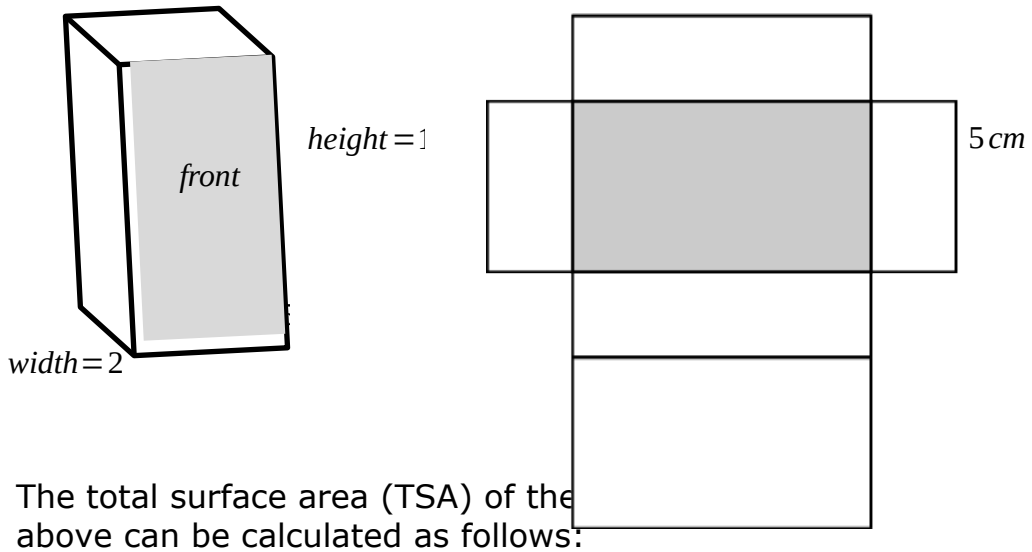
3.2 Determine now the total surface area (TSA) of the cube below:



(3)

The total surface area of a **rectangular prism**:

3.3



The total surface area (TSA) of the rectangular prism above can be calculated as follows:

- Area of the surface of the rectangle in **front** + area of the surface of the rectangle at the **back** (they are equal) +
- area of the surface of the rectangle on the **left** +area of the surface of the rectangle on the **right** (they are equal) +
- area of the surface of the rectangle at the **bottom** + area of the surface of the rectangular at the **top** (they are equal)

GIVEN:
The area of the rectangle in front = 15x5 = 75cm²

3.3.1 Determine the area of the rectangle on the left side of the rectangular prism. (2)

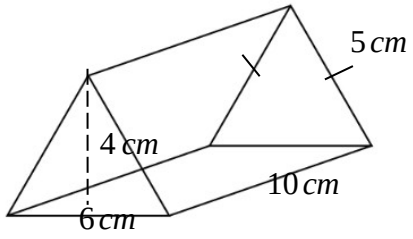
3.3.2 Determine the area of the rectangle at the bottom of the rectangular prism. (2)

3.3.3 Determine the total surface area (TSA) of the rectangular prism. (2)

3.4 The total surface area of a **triangular prism:**

In the figure, the equal sides of the isosceles triangles are 5cm each, the base is 6cm and the height is 4cm height.

The length of the rectangles are all 10cm



3.4.1 Draw the net of the triangular prism above.

- Indicate the dimensions of the sides of each figure clearly on your sketch.
- *Note your sketch need not to be on scale.* (4)

3.4.2 Calculate the area of the triangle in front of the triangular prism. (2)

3.4.3 Determine the area of the triangle at the back of the prism. (1)

3.4.4 Calculate the TSA (total surface area) of the triangular prism. (5)

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TOTAL 50