Mathematics Grade 9 FAT 3

Accounting 200 (University of Johannesburg)

GRADE: 9
SUBJECT: MATHEMATICS
TERM THREE
FORMAL ASSESSMENT TASK - PROJECT

Name: _____

Class: _____ Date: _____

School: _____ Teacher:_____

FAT	Activity/Form	Learner's mark	Learner's %
3.1	PROJECT		
TOTAL			

Total: 60 Marks **Time: 1 period in the class**

Instructions:

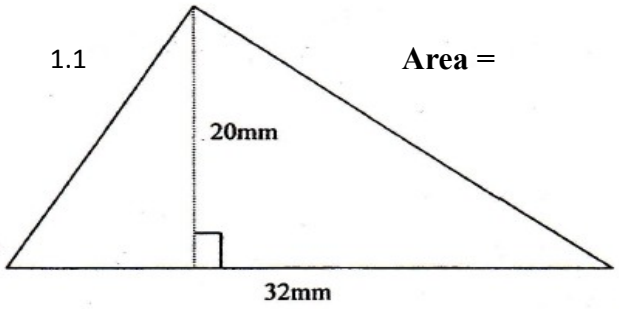
1) Write your name and date in the spaces provided.
2) All questions must be answered on the question paper.
3) Show ALL calculations clearly.
4) You may use an approved calculator.
5) It must be your own work.
6) Check your answers.
7) Note:
    a.
    b.
8) Indicate units of measurement where applicable.
9) Round ALL the final answers off to ONE decimal place unless stated otherwise.

Area, Surface area and Volume

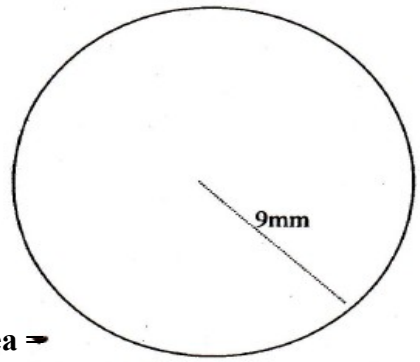
Question 1

1. Determine the area of the three shapes. Use the given formulae for the calculations.

1.1 **Area =**



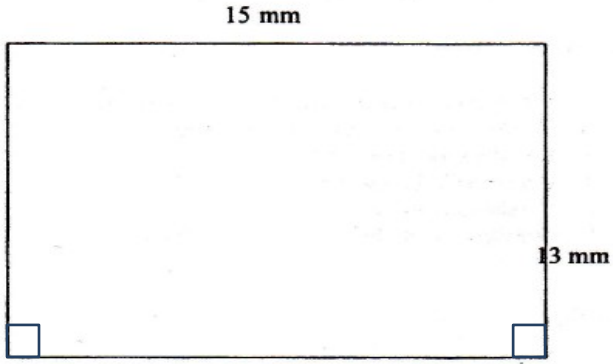
1.2



Area =
where

1.3

Area =



1.1 Area =

_____ (3)

1.2 Area = where

_____ (3)

1.3 Area =

_____ (3)

1.4 Name the shape that has the biggest area. (1)

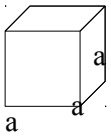
_____

[10]

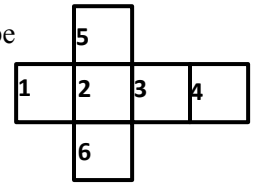
Surface Area Formulas

The surface area of a shape is the sum of the area of all the shapes that cover the surface of the object.

Surface Area of a Cube = $6a^2$ where *a* is the length of each side of the cube



The net of the cube



The surface area of a cube is the sum of the areas of the six sides of the cube.

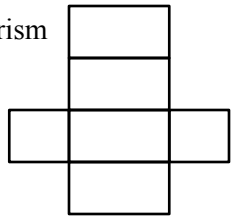
Each side of the cube is a square. A cube has 6 equal squares

Area of one square:

Therefore: Area of cube =

Surface Area of a Rectangular Prism = $2lb + 2bh + 2lh$ where *l* = length; *b* = breadth and *h* = height

The net of the rectangular prism



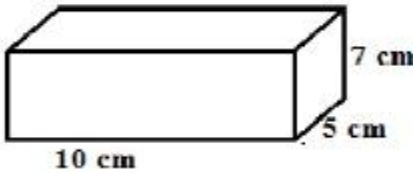
h

b

l

The surface area = $2lb + 2bh + 2lh$

Example: Find the surface area of this rectangular prism.



The surface area = $2lb + 2bh + 2lh$

= 2(10 X 5) + 2(5 X 7) + 2(10 X 7)

= 2 (50) + 2(35) + 2 (70)

= 100 + 70 + 140

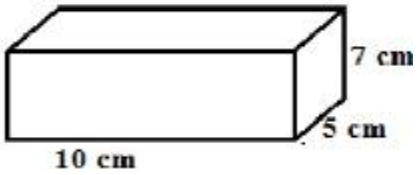
= 310

Area is always given as a square measure (.)

Volume = l x b x h where *l* = length; *b* = breadth and *h* = height

The volume of any regular prism is always: Area of base x height

Example: Find the volume of this rectangular prism.



Multiply the length (*l*) by the breadth (*b*) by the height (*h*).

Volume = 10 cm x 5 cm x 7 cm

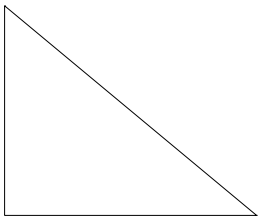
= 350 cm^3

Volume is always given as a cubic measure (.)

Question 2

The base of a prism is a right angled triangle with its two shorter sides equal to 4 cm and 8cm. The prism is 10cm long.

2.1 Complete the sketch by correctly filling in the dimensions. (5)



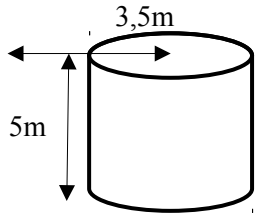
2.2 Calculate the volume of the prism. Use the formulae that were given previously. (5)

2.3 Convert the volume to m^3 and mm^3. (2 x 2=4)

[14]

Question 3

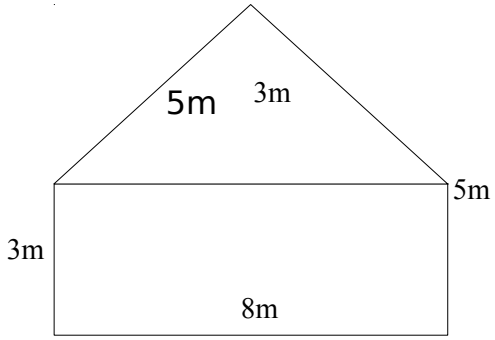
3.1 A water tank is 5m tall and has a diameter of 3,5m. Calculate the capacity (volume) of the tank. (4)
Use = 3,14.



3.2 Convert the answer to liters. Use

(2)

3.3 The owner of a large electronic storage building wants to install air-conditioning. The size of the air conditioner depends on the capacity of the building. Below is a diagram with the dimensions of the building. The diagram is not drawn to scale. Note: It consists out of a rectangular prism and a triangular prism. Calculate the volume of the building.
(9)



3.4 The building needs to be painted on the outside. Calculate the **surface area that needs to be painted.** Hint: Consider the areas that need to be painted very carefully!
(15)

3.5 The paint needed for one coat of paint for the building costs R110 per liter.
If 1 liter covers $5m^2$, calculate the cost of the paint. (3)

Question 4:

Determine the surface area of a cube with a side length of 3metres: (3)