MATHEMATICAL LITERACY

GRADE 12

TERM 2
2020
SCHOOL BASED ASSESSMENT TASK

MEASUREMENT

MARKS: 50

WEIGHTED MARK: 10

SUGGESTED TIME: 60 Minutes

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. Number the answers correctly according to the numbering system used in this question paper.

3. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

4. Show ALL calculations clearly.

5. Round off ALL final answers appropriately according to the context, unless stated otherwise.

6. Indicate units of measurement, where applicable.

7. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

8. Write neatly and legibly.

QUESTION 1

A HEALTHIER ME

1.1   A group of grade 12 learners have decided to start a 'healthier me' club at   school. Starting in January, 15 girls and 10 boys sign up on the first day. All learners have their weight and height measured. They also attend a wellness session presented by the school sport teacher , Mr Shabangu, He tells them the following:

As a start they should try to do some form of exercise 3-4 times a week.

- They should alternate (swap between) 20 – 30 minutes cardio exercise (e.g jogging, brisk walking, cylcling, swimming) and some light weight training (e.g use dumbbells, bar bells or gym machine) on different days.
- Eat 3 meals a day as well as 2-3 healthy snacks in between.
- Drink 2 litre of water per day
- They should first check with their doctor if they are healthy enough to start this type of programme.
- Do not exercise during the hottest part of the day, especially in summer.

Study the graph below and answer the questions that follow:
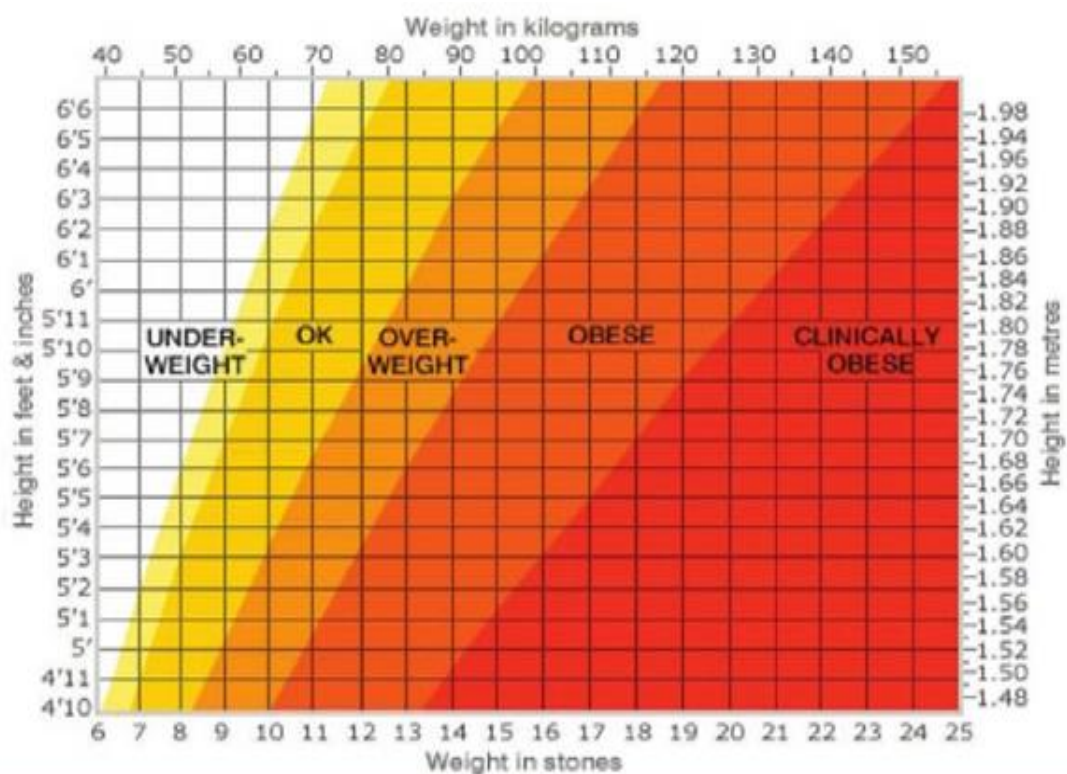
The following formula of body mass index (BMI) is being used in the chart above.

BMI=Weight (kg) ÷ Height (m²). Sechaba weighs 70 kg and is 1,6m tall.

1.1.1 What is his BMI?   (3)
1.1.2 In which category would he be placed? Use the above table?   (2)
1.1.3 Use the table above to determine his ideal weight.   (2)

1.2   Our Healthier Me club's BMI results are as follows: 8 of the girls and 4 of the boys have a BMI classification of 'Clinical Obese' 4 girls and 4 boys are 'Okay' and the remaining 3 girls and 2 boys are 'Underweight'. Plot this data on a compound bar graph indicating both the boys and girls in separate bars on the same graph.

                                                                           (5)

1.3   Why, in your opinion, is it not healthy to be either over or under weight?   (3)

1.4   Is it possible that a weight of 97kg can be regarded as a healthy weight for someone? Explain your answer.   (3)

[18]

QUESTION 2

2.1   A cylindrical barrel (drum) contains 42 gallons of oil. The diameter of this barrel is 18 inches.

PICTURE OF A BARREL/DRUM:

You may use the following information:

1 gallon = 3,78541 litres

1 inch = 2,54cm

1ml = 1 cm³

Volume = π × r² × h, let π = 3,142
Surface area of cylinder with a closed lid and base = (2 × π × r²) + (2 × π × r × h)

2.1.1   Determine the radius of a barrel (drum) in centimetres.   (3)

2.1.2   Show, by calculations, that the height of the barrel of oil is 96,82 cm.   (5)

2.1.3   Calculate the surface area of this barrel in m².   (5)

[13]

QUESTION 3

3.1   Below is a wooden crate used to load 20-litre paint tins. The table below shows
        the dimensions of the tins and the crate.

TABLE 1: Dimensions of a tin and the wooden crate

TIN OF PAINT		WOODEN CRATE	
Diameter	Height	Width	Height
32cm	33cm	1,1m	1,26m

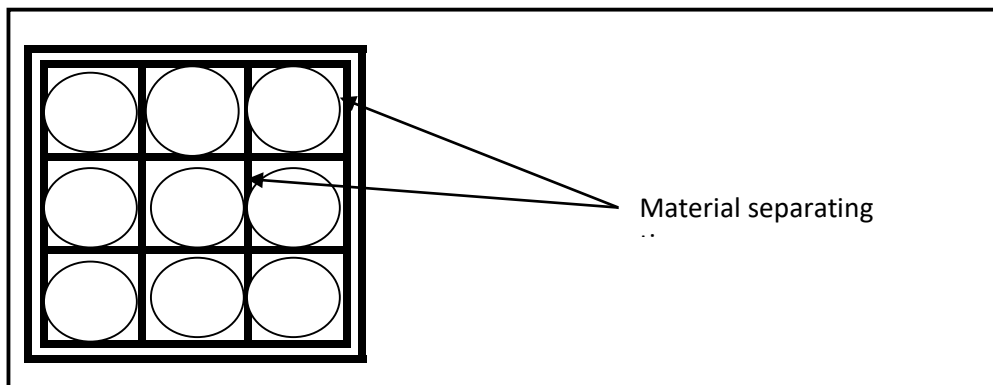
3.1.1   Use the dimensions of the tin to determine the height of the crate if 3 tins
        are loaded on top of each other.   (2)

        NOTE: There is no space between the tins when loaded on top of each other.

3.1.2   Hence show that the volume of the wooden crate is approximately 0,9m^3. (6)

        NOTE: Tins are separated by material which is 10mm thick as shown in the
                top view below.

   You may use the following formula:

        Volume of a Rectangular prism = length x width x height

3.1.3   The crate contains six tins of white paint, two tins of red paint and a tin of
        green paint. Determine the probability of randomly offloading a tin with
        green or red paint.   (3)

        [11]

QUESTION 4

4.1   Ronald last successful project was to dig a cylindrical hole to secure a
        trampoline for his children.

The dimensions of the hole he dug:
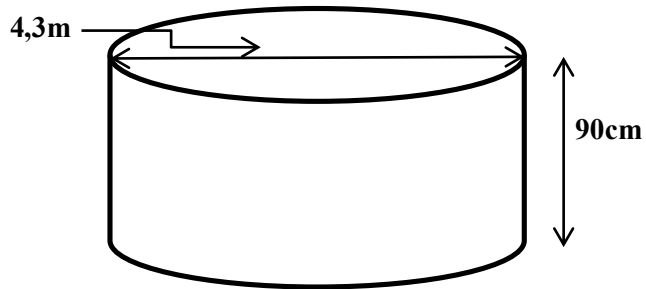
Although Themba has reused some of the excavated (dug up) sand, he still has two-thirds of the sand left over. A company is prepared to collect the sand free of charge provided it is more than 5 m³.

4.1.1   Calculate the area of the base of the hole in square metres,
        rounded off to 2 decimal places.
        Area = π x r^2, where r = radius and π = 3,142   (3)

4.1.2   Determine, showing all calculations, whether there is enough
        sand for the company to come and collect free of charge.
        Volume = Area of base × height   **(5)**

                                                                                  [8]