JENN

Training and Consultancy

The path to enlightened education

MATHEMATICAL LITERACY 2019

GRADE 12 WEEKENDS REVISION STUDY GUIDE

TERM 2 WORK

Finance

Inflation, Exchange Rates

Maps and Scale

Types of scales, Distance Calculation, Positions, Relative positions

Measurement

Perimeter, Area, Surface Area, Volume and BMI,

Taxation

VAT, UIF, Income Tax

Compiled by
S. Mandizira

TOPIC: INFLATION

What is Inflation: Inflation is the measure of change in the purchasing/buying power of money over time.
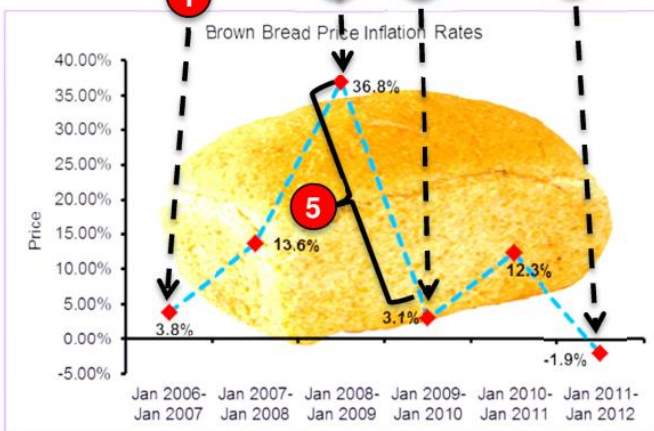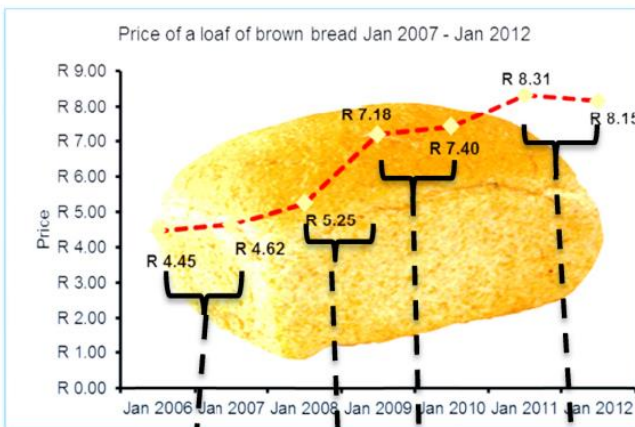*Inflation rate* is the percentage change in the cost of goods from one year (or month) to the next

General formula: Inflation rate $= \dfrac{\text{New value - Old value}}{\text{Old value}} \times 100$

Effects of inflation
   ✓ **Reduced purchasing/buying power**
   ✓ **Weakening of currency against major currency like US dollar**
   ✓ **Lower production in manufacturing industries**
   ✓ **Unemployment will rise**

Consider the following two graphs which show how the price of bread has changed from 2006 to 2012.

Prices of brown bread

Notes

① $\text{Inflation rate} = \dfrac{(R4,62 - R4,45)}{R4,45} \times 100$

$= \dfrac{R0,17}{R4,45} \times 100$

$= 3,8\%$

② **Largest increase in price**
Prices graph: steepest upward *slope*
Inflation graph: highest *value*

③ **Smallest increase in prices**
Prices graph: shallowest upward *slope*
Inflation graph: lowest *value*

④ **Decrease in prices**
Prices graph: *downward slope*
Inflation graph: *negative value*

⑤ **Downward slope on inflation graph**
This indicates that the *rate is decreasing* although the actual *price* is still *increasing* but at a *lower rate*.

Inflation rates of brown bread

ACTIVITY

Question 1

1.1	If the price of one liter of petrol was R13,51 in April 2017 and in April 2018 is R14,71, calculate the inflation rate. Use the following formula Inflation rate = $\dfrac{\text{New value - Old value}}{\text{Old value}} \times 100$ **(3)**

1.2

If a loaf of brown bread cost R12,49 in January 2017 and the inflation rate for January 2016 was 6,2%, calculate the cost of brown bread in January 2016.

1.3 What was the original price of a chocolate bar if a new price is R15,99 and has increased by 2,4%?

1.4 Mercedes VITO could be bought, brand new, for R307 230 in 2013. In 2014 **(4)** the cost of a new VITO was R321 993 and in 2015 it was R335 370.
1.4 Which year showed the highest inflation rate?

Question 2

The following table showed how the prices have changed over a month in 2012:

ITEMS	AUGUST 2012	SEPTEMBER 2012	% CHANGE
Sugar beans	R99,99	R9,.99	-2,0%
Cheese	R77,22	R95,95	24,3%
Mealie meal	R86,23	R87,98	A
Margarine	R18,43	R18,99	3,0%
Samp	R31,61	B	-5,1%
Rice	R71,24	R63,99	D
Brown sugar	C	R39,98	7,9%
Powdered milk	R29,74	R29,99	0,8%
Eggs	R46,98	R49,97	6,4%
Total basket	R498,50	R514,83	3,3%

2.1   Use the table above to CALCULATE the missing values of A- D.   (8)

2.2.   The two tables show the general inflation rate (consumer price index)and the food inflation rate (food price index) in South Africa for a period of 5 years:

Table 1: General Inflation Rate (Consumer Price Index)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
2007	6%	5,7%	6,1%	7%	6,9%	7%	7%	6,7%	7,2%	7,9%	8,4%	9%	7,1%
2008	9,3%	9,8%	10,6%	11,1%	11,7%	12,2%	13,4%	13,7%	13,1%	21,1%	11,8%	9,5%	11,5%
2009	8,1%	8,6%	8,5%	8,4%	8,0%	6,9%	6,7%	6,4%	6,1%	5,9%	5,8%	6,3%	7,1%
2010	6,2%	5,7%	5,1%	4,8%	4,6%	4,2%	3,7%	3,5%	3,2%	3,4%	3,6%	3,5%	4,3%
2011	3,7%	3,7%	4,1%	4,2%	4,6%	5,0%	5,3%	5,3%	5,7%	6,0%	6,1%	6,1%	5,0%

Table 1: Food Inflation Rate (Food Price Index)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ave
2007	8,3%	7,9%	7,8%	8,7%	9,1%	9,4%	10,2%	11,3%	12,0%	12,4%	13,3%	13,9%	10,4%
2008	13,6%	14,4%	15,6%	15,8%	16,9%	18,2%	18,5%	19,2%	17,9%	17,2%	16,9%	16,8%	16,7%
2009	16,1%	15,8%	14,9%	13,6%	12,1%	9,8%	7,6%	6,1%	4,8%	4,9%	4,0%	2,7%	9,3%
2010	1,6%	1,0%	0,5%	0,3%	0,1%	0,0%	1,1%	1,5%	1,2%	0,5%	1,1%	1,4%	0,8%
2011	2,9%	3,5%	5,1%	4,8%	6,3%	7,3%	7,5%	7,3%	8,7%	11,0%	11,1%	11,6%	7,2%

Use the tables above to answer the following questions:
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2.2.1	The graph that shows the annual average food inflation rate from 2007 to 2011 has been drawn on ANNEXURE A. On the same ANNEXURE A draw the graph that shows the annual average general inflation rate from 2007 to 2011.	(4)
2.2.2	Use the graphs and determine the year in which the difference between the average food inflation rate and the average general inflation rate was the biggest. Desmond father's monthly salary for	(2)

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|		December 2008 was R7 452,00. Calculate the decrease in the buying power of his salary in January 2009.	
2.2.3		His monthly salary increased by 8.3% during January 2009. What effect did this increase have on the actual buying power of his salary in January 2009	(3)
			[9]

ANNEXURE A

NAME OF LEARNER _____

General Inflation Rate vs Food Inflation Rate
2007 - 2011
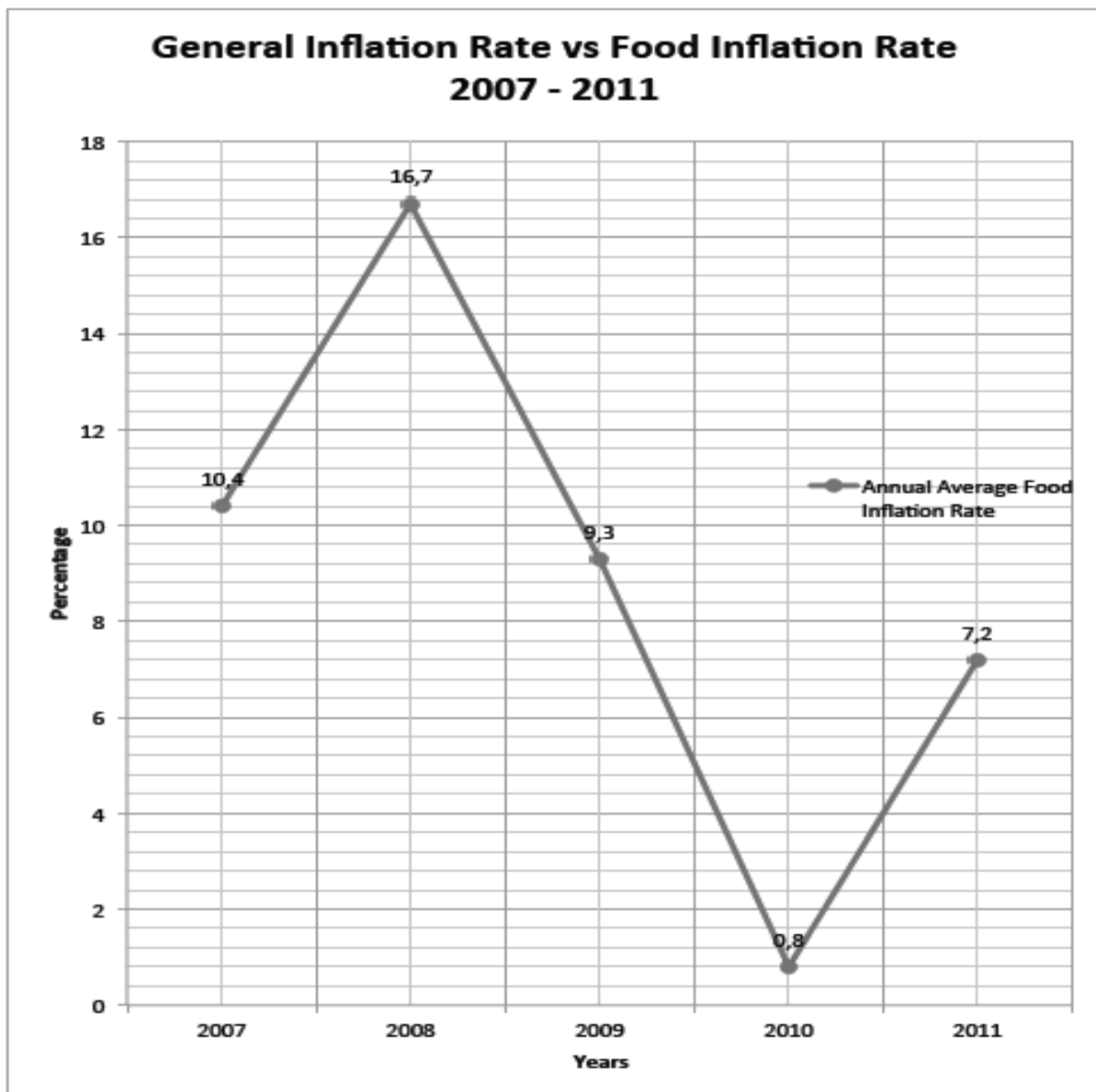
2.2.4

Below is a graph which shows the inflation rate for various years. Use it to answer the questions which follow:

Year-on-year Inflation rate: South Africa
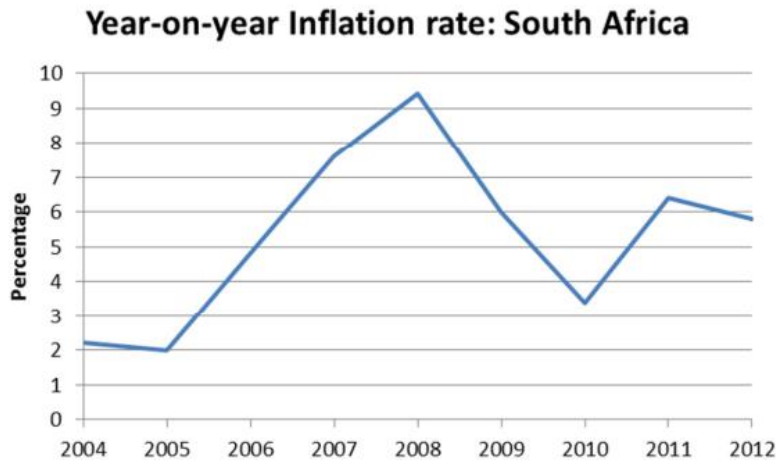
a)	Felicia looks at the graph and says: "Prices dropped from 2008 to 2010". She is incorrect. What is actually happening between 2008 and 2010?
b)	What would the graph look like if there was an overall decrease in prices in a year?
c)	Miriam received an annual increase of 6% in her salary every year from 2004 to 2008. She went on strike in 2008 for a greater increase. Why did she do this?

TOPIC: EXCHANGE RATES

Exchange rates specifies how one currency is worth in terms of the other on international trade and it changes on a daily basis; due to market trend
e.g 1$ = R14,00 OR R1 = 0.0714$
  ➢ A strong currency means that the currency has a higher value or greater worth than another currency.
e.g. 1$=R14,00 that means dollar is strong against rand/ rand is weak against dollar.
  ➢ A weak currency means that the currency has low value or lesser worth than another currency.
e.g. R1 = 0.0714$ that means rand is weak against dollar

ACTIVITY

Question 1

1   Thabo Mkhize is a businessman who visits various capital cities in Africa.

TABLE 1 below shows the exchange rate between eleven African currencies, United States dollar (US$) and the South African rand (ZAR).

TABLE 1: Exchange rate table for African currencies

CURRENCY	AMOUNT IN US$	AMOUNT IN ZAR
1 Algerian dinar	0,013592	0,10380
1 Angolan kwaza	0,010524	0,08160
1 Botswana pula	0,136131	1,05500
1 Egyptian pound	0,165683	1,28500
1 Ghanaian cedi	0,568235	4,41000
1 Kenyan shilling	0,012040	0,09340
1 Mozambican metical	0,036394	0,00030
1 Malawian kwacha	0,006009	0,04665
1 Nigerian naira	0,006345	0,04925
1 South African rand	0,128990	1,00000
1 Zambian kwacha	0,000189	0,00150

[Source: www.coinmill.com, 1 May 2012]

1.1 Which country had an exchange rate of US$ 0,012040 to ONE unit of its currency? (1)

1.2 Which of the currencies above gives you the largest amount in US$ for ONE unit of the currency? (2)

1.3 Thabo's accommodation in Zambia costs 25 976,87 kwacha.

Convert this amount to US$. (2)

1.4 Thabo bought goods in Ghana to the value of 1 345 cedi.

Calculate the value, in rand, of the goods Thabo had bought. (2)

Question 2

2. ABSA bank charges the following fees for foreign exchange transactions. Use these fees to answer the following questions:

2.1 R43 404,55 is required to purchase €3 500 in notes from ABSA bank according to the exchange rates.

Foreign exchange fees as at February 2013						
	Buying Foreign Curency from ABSA Bank			Selling Foreign Currency to ABSA Bank		
Transaction Type	Fee	Minimum	Maximum	Fee	Minimum	Maximum
Foreign notes	1,68%	R115,00	None	1,68%	R115,00	None
Traveller's Cheques	1.71%	R130,00	None	1.71%	R130,00	None

2.1.1 Calculate the fee that will be paid on the transaction.

2.1.2 Calculate the total amount in Rands that will be required to purchase €3 500.

LEARNER MANUAL

SCALES AND MAPS

Scale

What is a Scale?
A scale represents the relationship between a measurement on a model and the corresponding measurement on the actual object

| Types of Scales	
Number Scale	**Bar Scale**
Number Scales are always written in the form. **1 : 100** **Map : Reality** **This means that 1 unit on the map equals 100 units in reality**	**Also known as a linear scale, it is a means of visually showing the scale of the map.** **Example of a bar scale**

Maps

What is a Map?
A map is a two dimensional representation of an area of the earth's surface, e.g. country map; street map; building map, etc.

Relative positions on a map is used when describing the position or directions to someone in relation to surrounding landmarks.It is given by

Compass directions and applications

- There are four basic directions: North, South, East and West aligned at 90° to each other.
- Exactly halfway between the four basic directions (at 45° to each of the basic directions) are the secondary directions North East, South East, South West and North West. 'North West' means that it is exactly halfway between North and West.
- Compass directions can be used to indicate exact location
- Directions on major highways indicate the direction of travel to assist motorists in making the correct decision.
- Compass directions are used in construction to refer to the direction a building is facing (e.g. 'South Elevation' refers to the side that phases South, so a person looking at it from the outside would be facing North).
- In the Southern hemisphere, buildings are built with many rooms North-facing to get the most sun-exposure. The opposite is true in the Northern hemisphere.
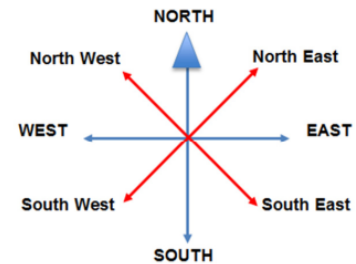
Knowing the direction of a road allows the motorist to be in the correct lane

Worked Example 1 :

1. If a distance of 28,5 cm is measured on the map. Calculate the actual distance in metres. Scale is 1 : 100   (2)

   Solution: 28,5 × 100 = 2850 cm

              2850 ÷ 100 = 28,5 metres

2. Calculate the actual distance if the distance on the map is 3,2 cm

                                              (2)

Solution: STEP 1 Measure the bar using your ruler

           5 cm represents 10 km in reality

           STEP 2 Write the bar scale measurement in the form of a numerical scale

           5 cm: 10 km

           5 cm: 1 000 000 cm (divide both sides by 5)

           1   : 200 000

      Then the actual distance = 3,2 cm × 200 000
                                 = 640 000 cm ÷ 100 000
                                 = 6,4 km
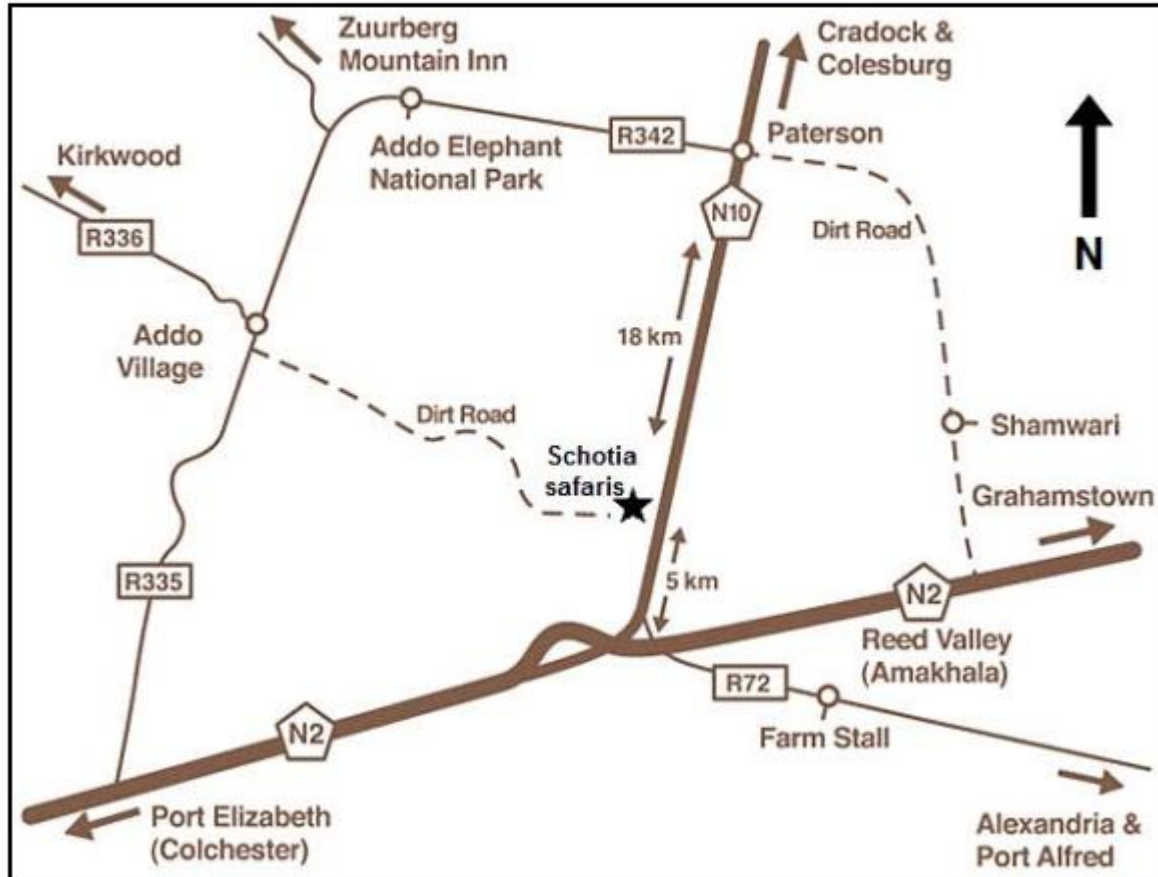
ACTIVITY

Question 1

The Eddison family is driving from Kirkwood to the Schotia Safaris Private Game Reserve in the Eastern Cape. They are also planning to visit the Addo Elephant National Park.

Below is a map indicating routes and towns around Schotia Safaris Private Game Reserve.

FIGURE 4:

ROUTE MAP OF SCHOTIA SAFARIS TO ADDO ELEPHANT NATIONAL PARK

SCALE: 1 : 360 000

[Source:allafricaventures.com]

Use the information and the route map above to answer the questions that follow.

a)	Give the general direction of the Addo Elephant National Park from Schotia Safaris. (2)
b)	Identify the names of the roads that must be travelled on between Kirkwood and Schotia Safaris, via Addo Elephant National Park. (3)
c)	Use the scale of the map to determine the real distance between Schotia Safaris and Paterson in kilometres. Round your answer off to two decimals. (3)

Question 2

2 | Mr Coetzee uses the following map of South Africa to plan his trips between the different national parks:

[Source: SA Venues.com]

Use the map to answer the following questions.

2.1   Write down the grid reference for the Vaalbos National Park.   (2)

2.2   Which national parks are situated in the Western Cape?   (2)

2.3   In which general direction is Kimberley from East London?   (2)

2.4   It took Mr Coetzee 30 minutes to fly the distance of 153 kilometres between Kimberley and Bloemfontein.

Calculate the average speed in kilometres per hour.

Use the formula: **Average speed** = $\dfrac{\textbf{distance travelled}}{\textbf{time taken}}$

(3)

Question 3

While Jackie was searching for more information about Muscat she came across the following distance chart. On the chart Muscat is the centre point of the concentric circles.
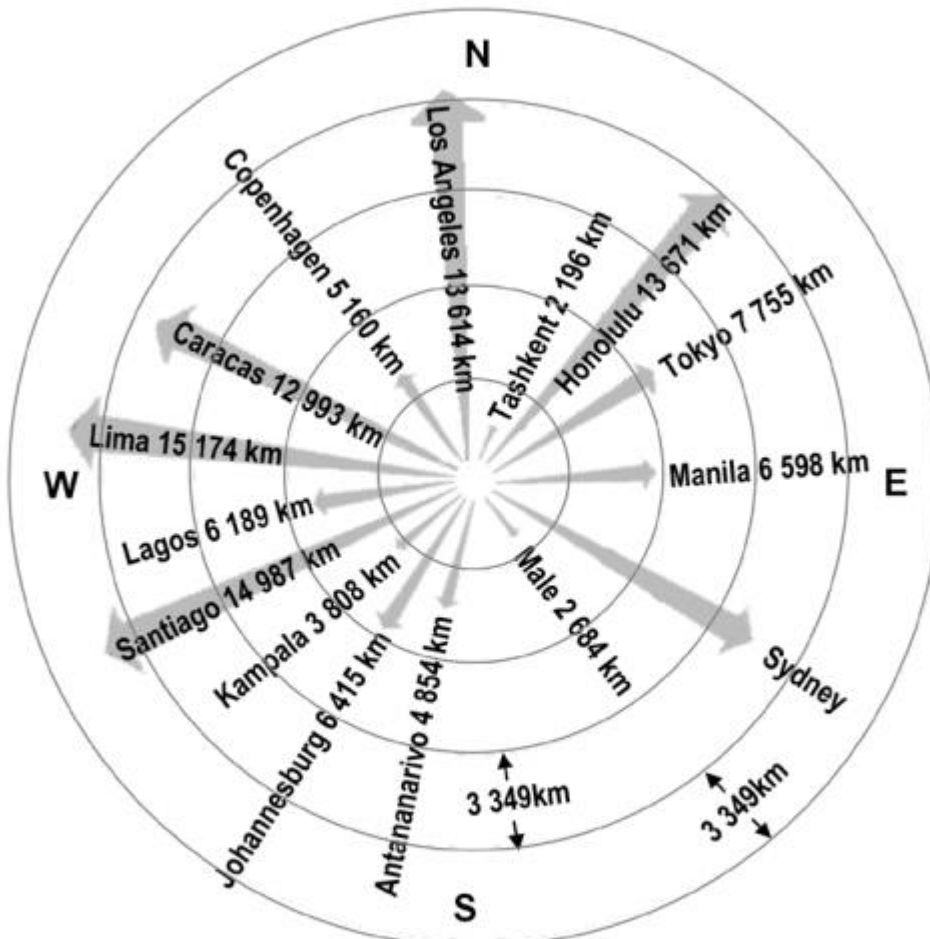
NOTE: Concentric circles are circles having the same centre.

[Source: www.dateandtime.com]

Use the distance chart above to answer the following questions.

3.1	In what general direction is Johannesburg from Muscat?	(2)
3.2	Kampala is a capital city in Africa. Explain why it would not be possible to calculate the distance between Johannesburg and Kampala using this distance chart.	(2)
3.3	The distance between each of the concentric circles on the chart is 3 349 km, as shown on the chart. Calculate the approximate distance from Muscat to Sydney.	(3)

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Question 4

4.1 | Gadibolae used the strip map of the route from East London to Harrismith on ANNEXURE B while planning his trips around the Free State, Eastern Cape and Lesotho.

4.1.1 Place the route part description below in the correct order for a journey from Bethlehem to the Tussen-die-Riviere Game Farm.

Key	Route part description
A	Turns left into N1 pass Bloemfontein
B	Then travels 56 km to the destination
C	Turn right at Smithfield
D	Travelling along N5 in a westerly direction

(4)

4.1.2 Gadibolae travelled from Maseru via Bethlehem to Winburg at an average speed of 90km/h. After approximately 2 hours 5 minutes he stopped in a small town.

Determine the town where he stopped.

You may use the formula:
Distance = Speed × Time

(4)

4.1.3 Show through calculations, using the distances on the left and right-hand side of the strip chart, that the plotted point found between Queenstown and Aliwal North along N6 is approximately 20km from Aliwal North.
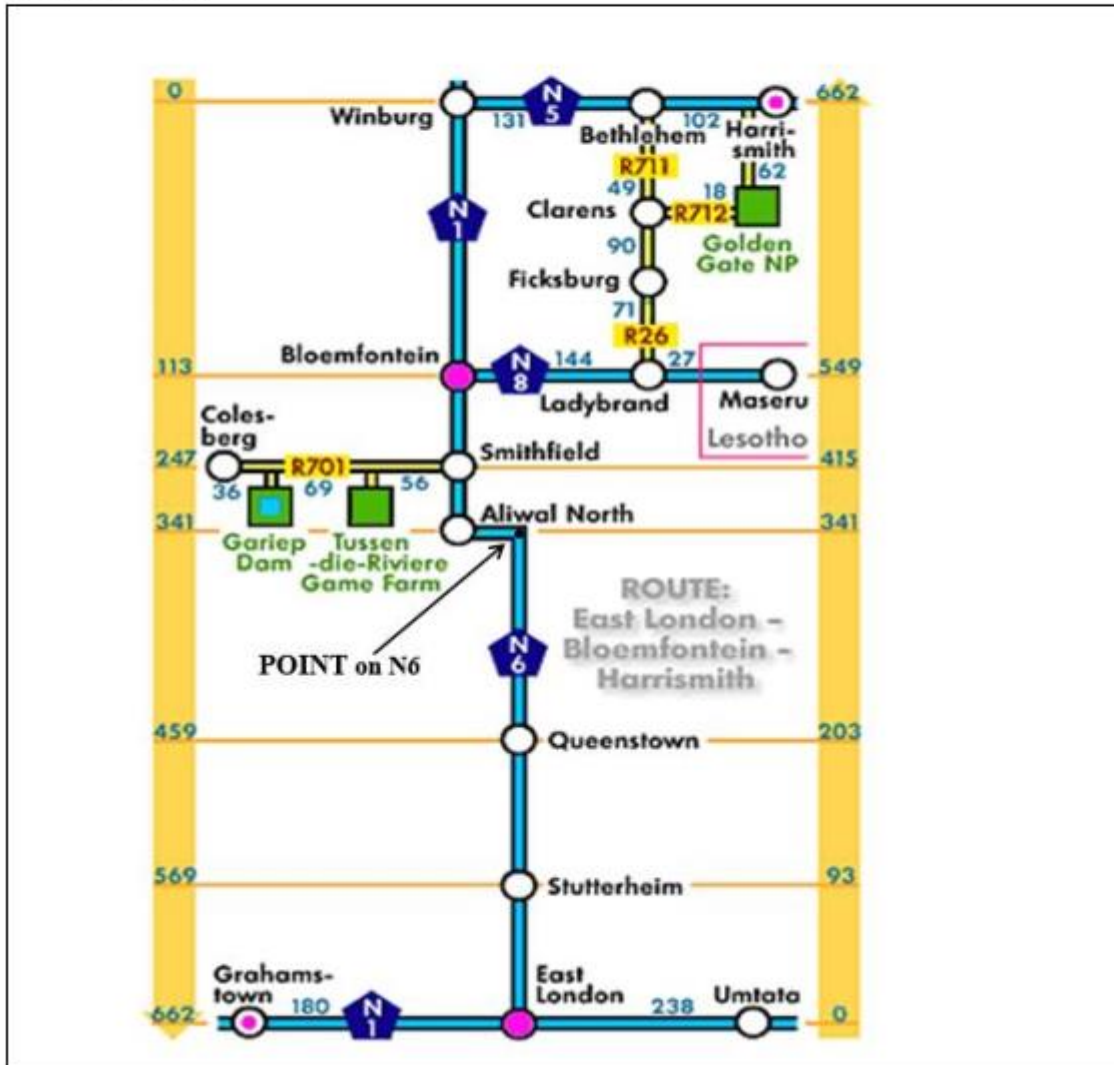
(5)

4.1.4 Measured directly from the strip map, the distance between Umtata and East London is shorter than the distance in real life between Grahamstown and East London. Explain with a reason.
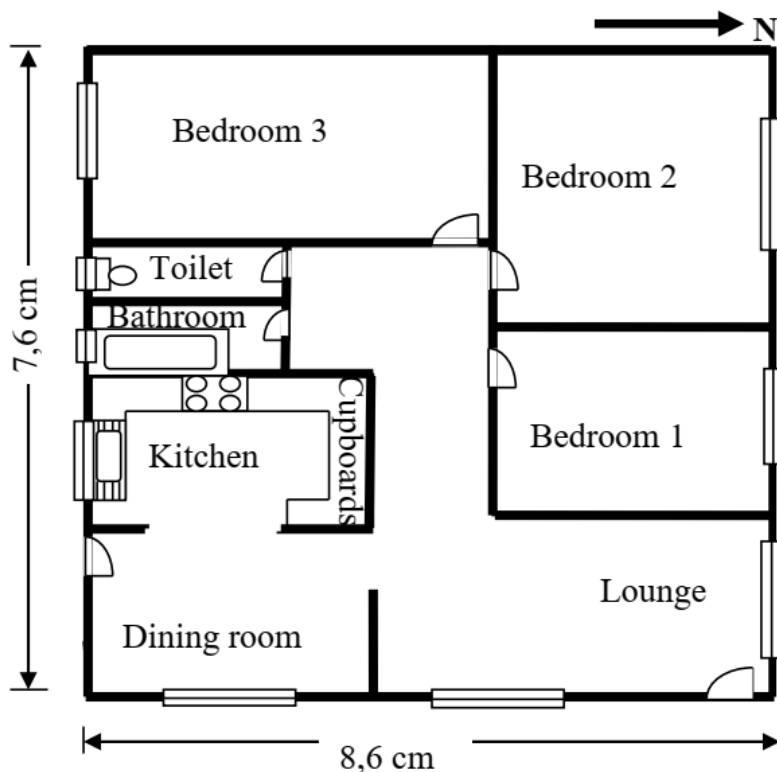
(2)

QUESTION 4.1

STRIP CHART OF ROUTE EAST LONDON TO BLOEMFONTEIN AND HARRISMITH

Source: https://www.aa.co.za and *southafrica-enroute accommodation guide*

Question 5

Below is a floor plan of Mrs Van der Linde's house in Kimberley. Next to the floor plan is a key for the symbols used in the floor plan.

Scale 1 : 110

5.1	Use the KEY next to the floor plan to determine the number of windows shown on the plan.	(2)
5.2	Write down the name(s) of the room(s) of which the door(s) is/are facing east.	(3)
5.3	Explain the meaning of the scale 1 : 110 given on the floor plan.	(2)
5.4	Determine the scale length of the southern wall on the floor plan.	(2)
5.5	Determine the actual length (in metres) of the eastern wall using the given scale and the scale length of the wall. **Hint: 1 m = 100 cm**	(3)

TOPIC: PERIMETER, AREA, SURFACE AREA & VOLUME

What is Perimeter, Area, Surface Area and Volume

Perimeter is the distance right round any two- dimensional shape.
Area is the space covered by any two- dimensional shape.
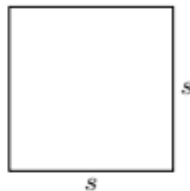Volume is the amount of space that a substance or object occupies, or that is enclosed within a container.

2D SHAPES SUMMARY OF FORMULAE
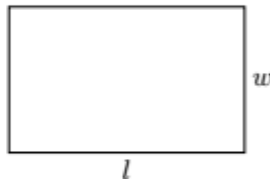
SQUARE
$s =$ side
Area: $A = s^2$
Perimeter: $P = 4s$

RECTANGLE
$l =$ length, $w =$ width
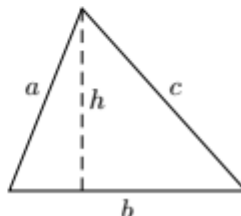Area: $A = lw$
Perimeter: $P = 2l + 2w$

TRIANGLE
$b =$ base, $h =$ height
Area: $A = \frac{1}{2}bh$
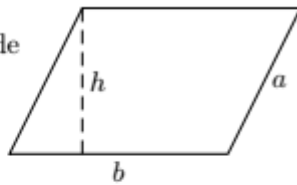Perimeter: $P = a + b + c$

PARALLELOGRAM

b = base, h = height, a = side
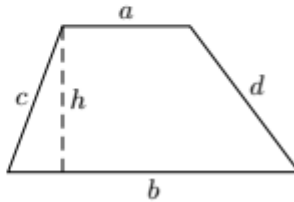Area: $A = bh$
Perimeter: $P = 2a + 2b$

TRAPEZOID

a, b = bases; h = height;
c, d = sides
Area: $A = \frac{1}{2}(a + b)h$
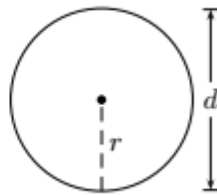Perimeter:
$P = a + b + c + d$

CIRCLE

r = radius, d = diameter
Diameter: $d = 2r$
Area: $A = \pi r^2$
Circumference: $C = 2\pi r = \pi d$

ANNULUS

r = inner radius,
R = outer radius
Average Radius: $\rho = \frac{1}{2}(r + R)$
Width: $w = R - r$
Area: $A = \pi(R^2 - r^2)$
   or $A = 2\pi \rho w$
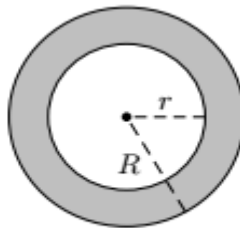
Right prisms and right cylinders:
- always have a pair of **congruent** bases which are parallel to each other
- the bases are perpendicular to the lateral surfaces
- the base of a right prism is a polygon and the base of a right cylinder is a circle.
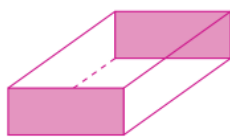
rectangular prism   triangular prism   right cylinder
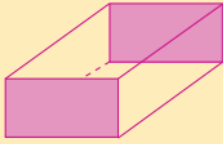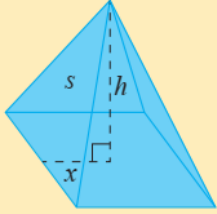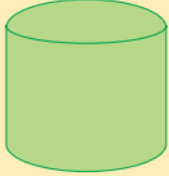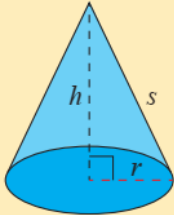
In the figures:
- the shaded surfaces are the bases
- the unshaded surfaces are rectangles which make up the lateral surface area
- the height of a right prism is the **perpendicular height** or perpendicular distance between the bases
- the lateral surface area of a right cylinder is a rolled-up rectangle with dimensions $2\pi r$ and h.

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Summary of formulae:
(h represents the perpendicular height and s the slant height)

Solid	Shape	Volume	Total surface area
Right prism		Area of base $\times h$	area of base + areas of lateral surfaces
Right pyramid		$\frac{1}{3}$(Area of base) $\times h$	area of base + areas of all triangles
Right cylinder		$\pi r^2 h$	$2\pi r^2 + 2\pi rh$
Right cone		$\frac{1}{3}\pi r^2 h$	$\pi r^2 + \pi rs$
Sphere		$\frac{4}{3}\pi r^3$	$4\pi r^2$
Hemisphere		$\frac{2}{3}\pi r^3$	$3\pi r^2$ (includes flat circular surface)

ACTIVITY

Question 1

Marieka is building a vegetable shade tunnel in her yard to grow the vegetables she needs for her coffee shop. The vegetable shade tunnel is shown in the photographs below.

Net shade cloth

Vegetable shade tunnel
with open door

Vegetable shade tunnel
with closed door
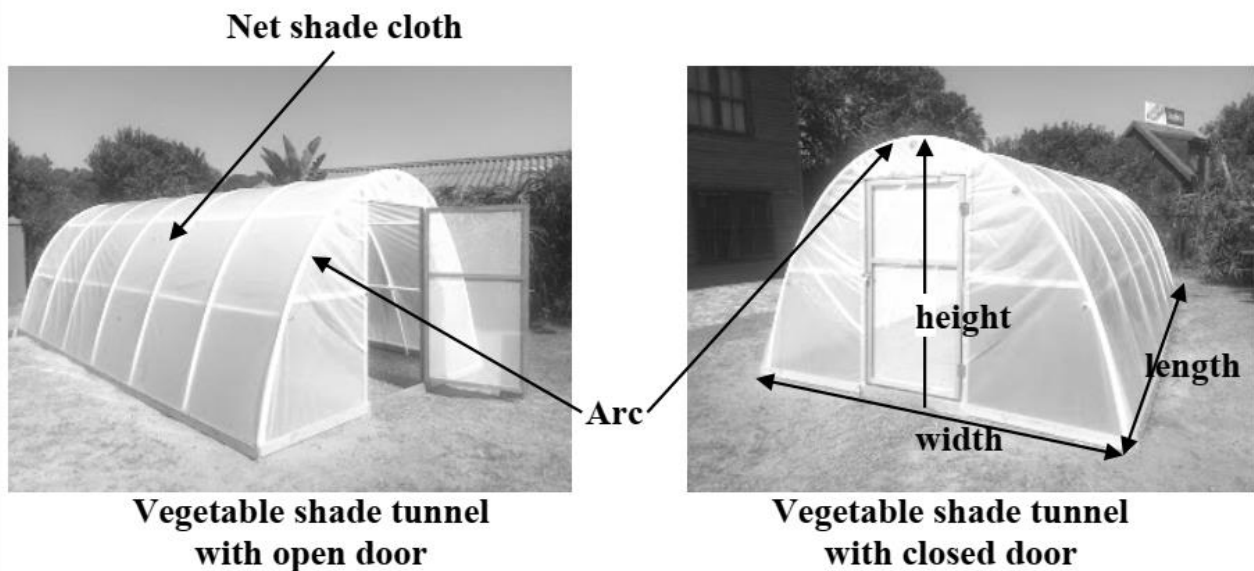
The dimensions of the vegetable shade tunnel are as follows:

Length = 6,5 m; width = 4,4 m; maximum height = 2,2 m

The vegetable shade tunnel is exactly half of a cylinder.

1.1	Calculate the length of the arc of the vegetable tunnel. Give your answer correct to TWO decimal places. Use the formula: **P = Length of arc = π × r**, where π = 3,142 r = radius	(3)
1.2	Determine the minimum amount of net shade cloth required to cover the whole tunnel by calculating the surface area of the vegetable tunnel. The following formula may be used: **Surface area = π × r² + P × ℓ**, where π = 3,142 r = radius P = length of arc ℓ = length of vegetable tunnel	(4)
1.3	Determine the perimeter of the garden enclosed by the vegetable tunnel. Use the formula: **Perimeter = 2 × (Length + Width)**	(2)

1.4	Marieka wants to spread compost with a uniform thickness of 0,05 m over the enclosed garden area.	
	Calculate the volume of compost required.	
	Use the formula: **Volume = Length × Width × Height**	(3)

Daniel is building a chicken coop and downloaded the floor plan from the internet. He intends to put concrete floors in the chicken coop.

The coop is going to be built with wood.

FIGURE 3: FLOOR PLAN OF THE CHICKEN COOP
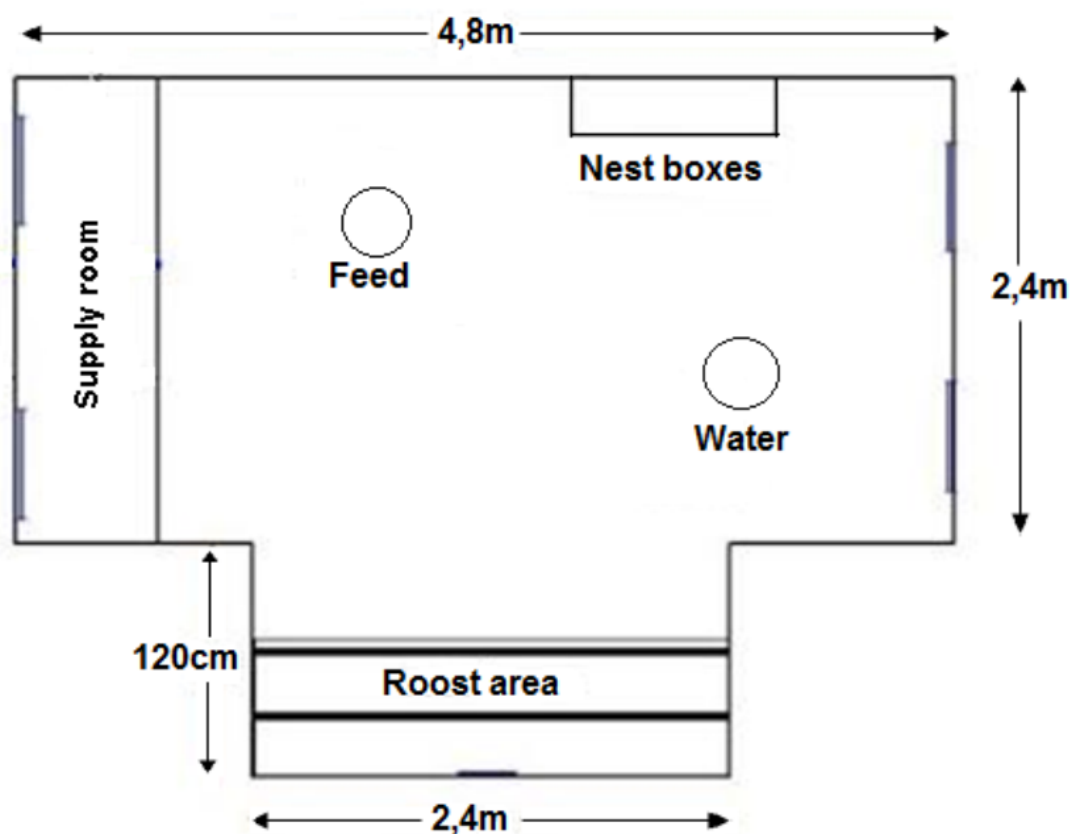
Study the floor plan and answer the questions that follow.

1.5	Determine the perimeter of the chicken coop.	(3)
1.6	Calculate the area of the floor of the chicken coop.	
	You may use the following formula:	
	Area = length × width	(3)

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Question 2

Mr Buthelezi installed a circular window in the centre of a square wall, as shown in the diagram below. He intends painting the wall.

The diameter of the circular window is 144 cm.

The length of each side of the square wall is 230 cm.

The shortest distance between the edge of the window and the edge of the wall is shown as **k** in the sketch.

2.1	Determine the length of the radius of the window.	(1)
2.2	Determine the value of **k** in centimetres.	(3)
2.3	Calculate the circumference of the window. Use the formula: **Circumference of a circle = $\pi \times$ d**, where **d** = the diameter of the window, and using $\pi = 3{,}14$	(3)
2.4	Calculate the area of the wall that he needs to paint. Use the formulae: **Area of a circle $= \pi \times \left(\dfrac{d}{2}\right)^2$** **Area of a square $= s^2$** where **d** = diameter of the circle, and using $\pi = 3{,}14$, 　　　　**s** = length of the side of the square	(4)

Question 3

A caterer was hired to cater for the Grade 12 farewell function. A caterer promised to donate a box of fudge to each matriculant. The photo of a fudge, diagram and the dimensions of the box are shown below. Fudge will be cut into triangular shapes with the thickness of 3 cm.

Diagram of the box of fudge

15 cm

5 cm

5 cm

3 cm

5 cm

5 cm
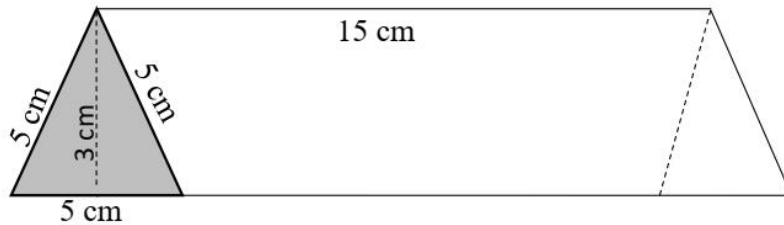
Photo of a fudge

3.1	Determine the number of fudge pieces that can fit into the full box.	(2)
3.2	3.2.2 Calculate the total surface area of the box. You may use the following formula: **Surface area of a triangular prism = 3 (length × width) + 2($\frac{1}{2}$ × base × height)**	(3)
3.3	Calculate the volume of the triangular box. You may use the following formula: **Volume of a triangular prism = $\frac{1}{2}$ × base × height of the triangle × height of the prism.**	(2)

The step at the front door of Maria's house is in the shape of a symmetrical trapezium based prism as shown below. The step is made of concrete. The top (**A**) and sides (**B** and **C**) will be tiled.
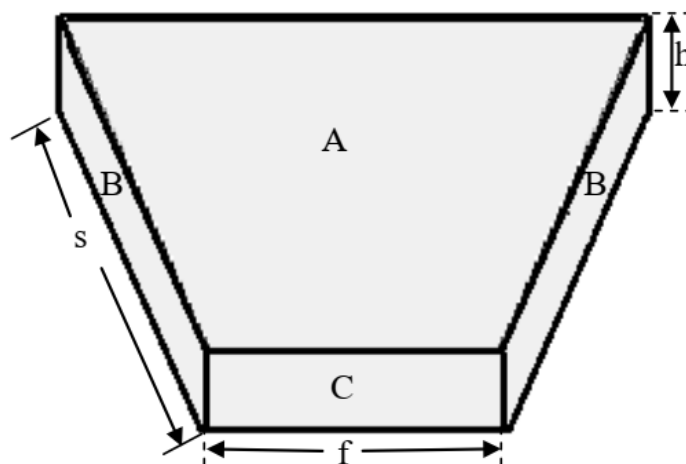
The dimensions of the step are as follows:

f = length of the front of the step = 1,3 m
s = length of the slanting side = 1,6 m
h = height of the step = 0,12 m

A = Area of the trapezium = 2,52 m^2
B = Area of the slanting side of the step
C = Area of the front of the step

| 3.4 | | |

a)	Concrete is made by adding water to a mixture of cement, sand and stone in the ratio: **cement : sand : stone = 1 : 2 : 4** How many wheelbarrows of stone will Maria need for $1\frac{1}{2}$ bags of cement if one bag of cement equals one wheelbarrow of cement? (3)
b)	Calculate the volume of concrete (in m³) required for the step. Use the formula: **Volume of the step = area of the trapezium × height of the step** (2)
c)	Maria wants to tile the top and side surfaces of the step. Calculate, rounded off to ONE decimal place, the total area that will be tiled. Use the formula: **Total tiled area (in m²) of the step = A + (2s + f) × h** (4)
d)	Maria decides to put a metal strip on the top edge of the step. Calculate the length of the strip. Use the formula: **Total length of the strip = f + 2s** (2)

Question 4

Dr. Brooks is planning on building a swimming pool to cool off during hot summer days and to entertain his family and friends. The pool consists of a rectangular shape at the one end and a semi-circular shape at the other end of the pool. Study the picture below and answer the questions that follow.
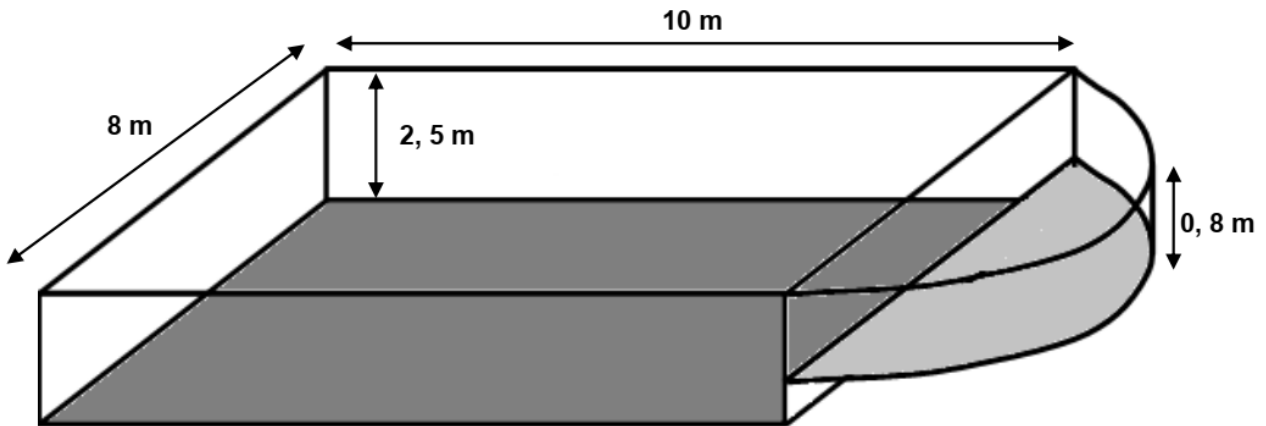
4.1	Calculate the circumference of the semi-circular part of the pool. *Use the formula:* **Circumference = diameter × π** *Use π = 3, 142*	(3)
4.2	Hence, calculate the perimeter of the entire pool.	(3)
4.3	3.3.1 Determine the radius of the half cylindrical part of the pool.	(2)
	3.3.2 Calculate the area of the semi-circular part of the pool. *Use the formula:* **Area of a semi-circle = ½ (π × r²)** *Use π = 3, 142*	(4)
4.4	Hence, calculate the volume of water for the cylindrical part of the pool. *Use the formula:* **Volume of a half cylinder = ½ (π × r² × depth)** *Use π = 3, 142*	(4)
4.5	Calculate the volume of water for the rectangular prism. *Use the formula:* **Volume = length × width × depth**	(4)
4.6	Determine the total volume of water required to fill the pool to the top.	(2)
4.7	If 1 m³ = 1 000 *l* and 1 000 *l* = 1 *kl*, determine the total kilolitres of water needed to fill the swimming pool. Round-off your answer to the nearest kilolitre.	(3)
4.8	The recommended temperature for a recreational pool is 29 ⁰C. Convert this temperature to degrees Fahrenheit. *You may use the formulae:* **⁰F = (1, 8 × ⁰C) + 32** **⁰C = (⁰F – 32) ÷ 1, 8**	(2)

Question 5

Franz is a citrus farmer in Zebediela, Limpopo. He supplies oranges to the local and export market.

The harvesting of oranges requires various phases. Oranges are first hand-picked and collected into cylindrical baskets. The baskets are then emptied into a trailer to be transported to the packing house.

Franz also has another company that makes orange juice.

Cylindrical section

Consider all oranges to be spherical in shape. The average diameter measurement of an orange is 90 mm.

5.1	Approximately 2,5 kg of oranges are used to make 1 ℓ of juice. The juice is poured into 5 ℓ plastic bottles. Determine the number of 5 ℓ bottles of juice that can be made from 400 kg of oranges. (3)
5.2	Determine the: 1.2.1 Surface area (in mm^2) of an orange (3) 1.2.2 Volume (in mm^3) of an orange (2) The following formulae may be used: **Surface area of a sphere = $4 \times \pi \times r^2$** **Volume of a sphere = $\dfrac{4}{3} \times \pi \times r^3$** where π = 3,14 and r = radius
5.3	The cylindrical section of a basket has a height of 25 cm and a diameter of 30 cm. The space in the cylindrical basket not occupied by the oranges is 113 040 mm^3. Franz states that a basket can hold at most 44 oranges. Verify, by showing ALL the necessary calculations, whether Franz's statement is correct. The following formula may be used: **Volume of a cylinder = $\pi \times r^2 \times h$** where π = 3,14, r = radius and h = height (7)

Franz uses rectangular boxes to pack the oranges as shown in the diagram below.
He then packs the boxes of oranges into the rectangular trailer of his truck for delivery.

Open box of oranges

Measurements of the box
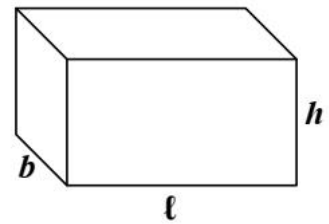
b = breadth = 0,215 m
ℓ = length = 0,3 m
h = height = 0,235 m

The boxes can be arranged in the trailer in two possible ways with the top of the box always facing upwards as shown in the two options below:

OPTION 1	OPTION 2
Layout on the floor of the trailer:	Layout on the floor of the trailer:

The trailer is imported and the dimensions are given as:

Length = 394 inches; breadth = 119 inches; height = 94,5 inches

NOTE: 1 inch = 2,54 cm

5.4	Show, with calculations, which ONE of the two options (Option 1 or Option 2) you would advise Franz to use so that he can pack the maximum number of boxes on the floor of the trailer. (9)

Question 6

Danny bought a braai drum to cater for those customers who wanted 'shisanyama' or grilled meat. The braai drum is made by cutting a cylindrical drum in half and placing it on a stand, as shown in the picture below.

The **semi-cylindrical braai drum** has a diameter of 572 mm and a volume of 108 ℓ.

A **rectangular metal grid** with dimensions 1% greater than the dimensions of the braai drum is fitted on top.

H = Height of the drum

D = Diameter of the drum

The following formulae may be used:

Volume of a cylinder $= \pi \times (\text{radius})^2 \times (\text{height})$ where $\pi = 3,14$

Area of a rectangle = length × breadth

$1\ell = 1\ 000\ 000\ \text{mm}^3 = 0,001\ \text{m}^3$

6.1	Danny filled $\frac{1}{3}$ of the base of the drum with sand. Give TWO practical reasons why sand was placed in the braai drum.	(4)
6.2	Calculate the length (in mm) of the rectangular metal grid. Show ALL your calculations.	(9)

Question 7

To reduce her electricity bill, Mrs Ntanzi decides to install a solar geyser on the roof of her house.

Cylindrical storage tank

The solar geyser consists of rectangular solar panels and a cylindrical storage tank as shown in the diagrams.

The solar panels use sunlight to heat the water stored in the cylindrical tank. The heated water can then be used in the house.

Solar panels

Solar-heated water

There are altogether six people in Mrs Ntanzi's household.

Solar panels

B = 1,5 m

L

Cylindrical hot water tank

h
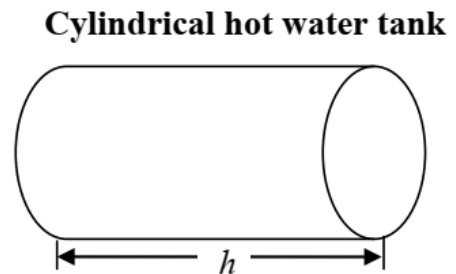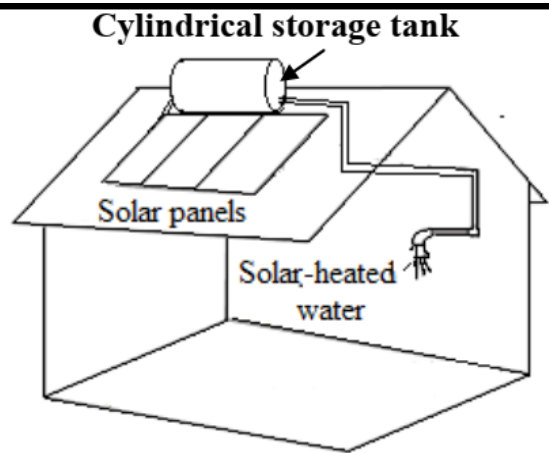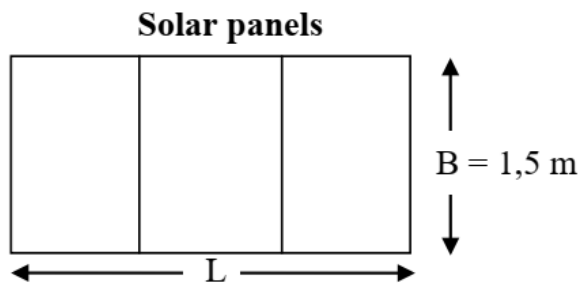
You may use the following formulae:

Area of a rectangle = length × breadth

Volume of a cylinder $= \pi \times r^2 \times h$ where r = radius, h = height and using $\pi = 3,14$

7.1	Mrs Ntanzi was told that she needed solar panels with an area of 2 m² for the first two members in her household and thereafter an area of 0,7 m² for each additional member.	
	(a) Determine the total length (L) of the solar panels needed by Mrs Ntanzi if the breadth (B) is 1,5 m.	(6)
	(b) The hot water tank on the roof has a volume of 150 ℓ and a height (h) of 1,2 m. Calculate (to the nearest cm) the length of the radius of the tank if 1 ℓ = 1 000 cm³.	(6)
7.2	Jake's Plumbers and Electricians normally charge R12 490 to supply and install the solar geyser. They offered a discount of R4 500 on the type of geyser Mrs Ntanzi ordered.	
	Mrs Ntanzi currently pays an average of R888,83 per month for electricity. She calculated that 45% of her electricity usage is for water heating.	
	She states that if she can save 45% on her monthly electricity bill, she will be able to recover the cost of the solar geyser within two years.	

Determine whether Mrs Ntanzi's statement is valid. Justify your answer, showing ALL relevant calculations. (6)

BODY MASS INDEX ACTIVITIES

Question 1

1 Ms Kriel, an educator and coach for the girls' soccer team at Eastville High School, wants to raise funds for new soccer gear (outfits). She came up with the idea of having a "Miss Eastville High" beauty contest. All the girls that are interested collected the entry forms from Ms Kriel.

In order for entrants to be successful, they must meet the following criteria:

❖ Height (length) in meters must be at least 1,55 m.
❖ Weight (mass) in kilograms must be at least 55 kg.
❖ Body Mass Index (BMI)* must be normal.

*NB.
BMI is a measure to determine the best weight range for a person's health.

BMI	MEANING
Below 18,5	Underweight
18,5 – 24,9	Normal weight
25 – 29,9	Overweight
30 and above	Obese

After the closing date Ms Kriel recorded the following data from the entrants **(E*)**:

Table 2

E*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Height	1,56	1,63	1,55	1,70	1,52	1,59	1,30	1,55	1,60	1,68	1,67	1,65	1,56	1,55	1,53	1,51
Mas	56	60	44	70	52	60	45	61	61	57	62	72	55	71	58	55
BMI	N	N	U	N	N	N	OW	OW	N	N	N	OW	N	O	N	N

KEY:

N – Normal; U – Underweight; OW – Overweight; O – Obese

1.1 Ms Kriel claims that some of the entrants did not meet the criteria. Is this statement valid or not? Use ONE example from the table to justify your answer. (4)

1.2   How many entrants do not qualify for the contest?   (2)

1.3   Show that the average (mean) height of the entrants who qualify is
      1,62 m.   (3)

1.4   Determine the median weight for the entrants who qualify.   (3)

Question 2

The Minister of Health advised people to take care of their health. Doret
checked her health status using the Body Mass Index (BMI) chart below.
She wants to live a normal and healthy lifestyle.

Study the chart below and answer the questions that will follow.
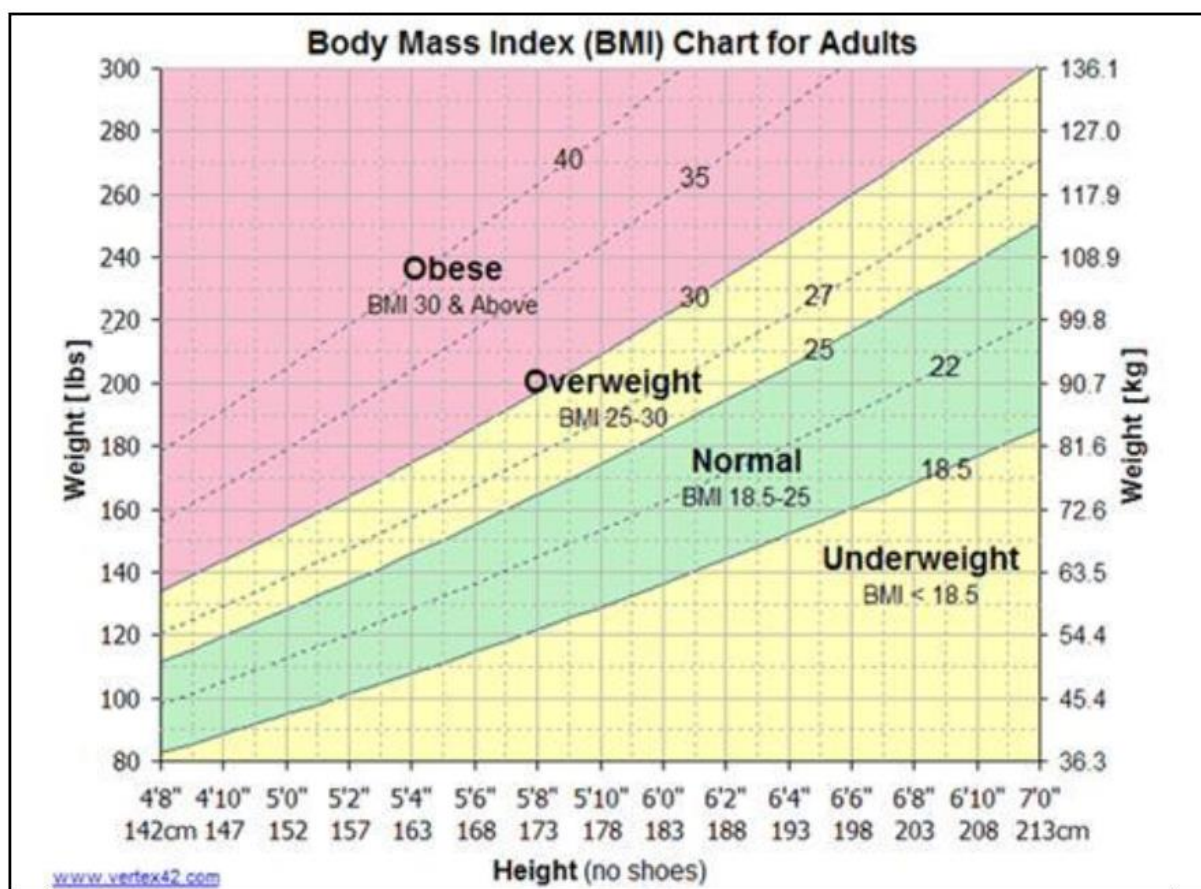
a)	What is the normal weight for a person whose height is 1,83 m?	(2)
b)	Doret weighs 110 kg and she is 1,68 m tall. Calculate her Body Mass Index (BMI) using the formula: $$BMI = \frac{mass\ in\ kilograms}{(height\ in\ meters)^2}$$	(3)
c)	How would you categorise Doret's health according to the BMI?	(2)

32

VALUE ADDED TAX (VAT)

What is VAT?
VAT stands for *Value Added Tax*. **Value Added Tax (VAT)** is levied on the supply of goods and services by vendors or it is a tax businesses charge when they supply their goods and services. We have to pay VAT on most of the things that we buy.

Definition: Value Added Tax is a tax on the supply of goods and services which is eventually borne by the final consumer, but which is collected at each stage of the production and distribution chain.

Information: Currently the Standard rate of VAT in South Africa is 15% and **this is the rate to be used when answering all questions**.

VAT CONCEPTS

Zero-rated items	Zero-rated items are goods or services which are taxed at a rate of 0%, e.g. milk, brown bread, maize, fruit, etc.
VAT-exempted items	These items involve services that are not subject to VAT at either the standard rate or zero rate, e.g. childcare services, educational services, etc.
Standard rate	In South Africa Standard-rated supplies are taxed at the rate of 15%.
VAT- able items	These items are goods or services that are subject to VAT.
VAT Output	VAT paid on items purchased and can be claimed back from SARS. It is VAT, which your company would charge on items, which it, sells. Thus a company could wish to sell an item and added to the amount a standard rate tax would be charged.
VAT Input	VAT on Sales and income and must be paid over to SARS. It is VAT that you pay on all your business expenses and for which you have a tax invoice. It also relate to VAT that is paid on other goods and services bought or rented for the business.
VAT Control	Is a summary of the VAT Input and Output and shows whether the business owes SARS money or whether SARS owes the business money.

VAT CALCULATIONS

Including or adding Value Added TAX (VAT) to the price of an item at a VAT rate of 15%.

VAT at a standard rate of 15%			
Net price (price before tax)	**Multiplied by**	**1,15**	**= Gross price (price after tax)**
Examples			
a. R100	Multiplied by	1,15	= R115
	Adding percentage		R100 + 15% x R100 = R100 + R15 = R115
b. R20 050,55	Multiplied by	1,15	= R23 058,13
	Adding percentage		R20 050,55 + 0,15 x R20 050,55 = R20 050,55 + R3 007,58 = R23 058,13

VAT exclusive to VAT inclusive: price **multiplied by 1,15** lead to purchase price.

Opposite of the above → reverse process

Vat inclusive to Vat exclusive: VAT included price **divided by 1,15** lead to the original price

VAT rate of 15%.			
Gross price (price after tax)	**Divided by**	**1.15**	**= Net price (Price excluding VAT)**
Price after tax (VAT included)	**Divided by**	**1.15**	**= Price before tax (Net price)**
R23 058,13	Divided by	1.15	=R20 050,55 (Original price)
R17,73	Divided by	1.15	=R15,42

ACTIVITY

Question 1

Mrs Rose received a cash-sale slip after she bought some goods at CT-Haven at the Cape Town International Airport.

Below is a copy of the cash-sale slip with some of the details omitted.

```
                      CT-HAVEN

            Cape Town International Airport
           Domestic Departures, Opposite Gate 8
                   Tel: (+2721) 1234567
                   VAT Reg# 461010565
                     TAX INVOICE

    1705359 Reg 1 ID 41  14:54  01/11/11

    CHOCOLATE SLAB          3  @   14,95       ...
    BANGLES               ...  @   13,95     97,65
    JOY MAGAZINE            1  @   24,95     24,95
    SUBTOTAL                                167,45

    TOTAL (EXCLUDING VAT)                      ...

    TOTAL (INCLUDING VAT)                   167,45
    CASH PAYMENT                            167,45
    AMOUNT TENDERED                         200,00
    CHANGE                                   32,55

            Receipt total includes 14% VAT
           RETAIN AS PROOF OF PURCHASE
```

NOTE: VAT is value-added tax.

.1   How much did Mrs Rose pay in total for the THREE slabs of chocolate?   (2)

.2   How many bangles did Mrs Rose buy?   (2)

.3   A *Joy* magazine costs R21,89 excluding VAT. Calculate the amount of VAT paid on the *Joy* magazine.   (2)

.4   Calculate the total (excluding VAT) for the goods bought.   (3)

Question 2

In a no fee school, book packs (stationary) are supplied to Grade 10, 11 and 12 learners in the ratio 5 : 3 : 2. There are different stickers for each of these grades; blue for Grade 10, beige for Grade 11 and green for Grade 12. Each book pack cost R320,00 including VAT (15%).

2.1 The Grade 10 learners received 250 book packs. How many packs were supplied for the whole school? (5)

2.2 A government official states that the 15% VAT charged on the total number of book packs is more than the total cost of 50 book packs. Verify, with calculations to show whether the statement is valid or not. (7)

UNEMPLOMENT INSURANCE FUND (UIF)

Main UIF considerations

Employee contribution (deducted off their salary) = 1% of gross income

Employer contribution (paid on behalf of the employee) = same amount as the employees contribution

Total UIF contribution = 2% (of the employees gross income)

ACTIVITY

ROBERT PAYSLIP
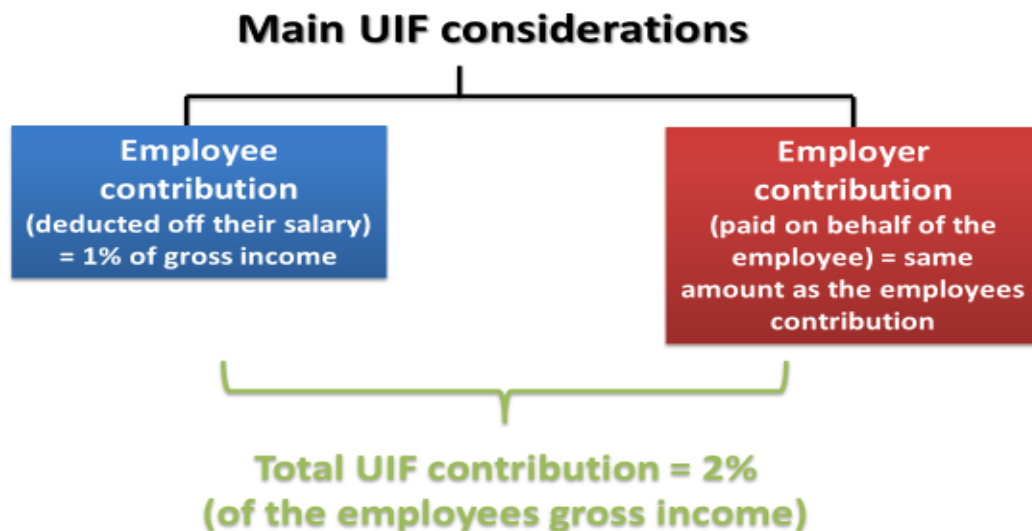
Description	Earnings	Deductions
	LEAP Environmental Strategies	
Pay slip number 312 Robert E Wills		
Date employed: 01/06/2010	Run number 443	
Occupation: Environmental Impact Manager	Salary period: 01/06/2015 – 30/06/2015	
Employee number: LES 113	Identity number: 8203025013089	

Description	Earnings	Deductions
Basic Salary	15 500,00	
Travel allowance	3 400,00	
Medical Aid		1 230,00
Pension fund		A
Staff loan		500,00
UIF employee contr.		B
Tax – regular earnings		1 439,60
Tax – allowances		510,00
Totals	18 900,00	C
Net Pay	D	

Robert is an employee at LEAP Environmental Strategies. He is planning to go on holiday with his wife. To plan for the trip they analysed his income and deductions as they appear in the pay slip. Then they started saving 10% of the basic salary towards the trip monthly. Use the salary slip below to answer the following questions:

1.1.1   Calculate the missing value A, if Robert contributes 7,5% of his monthly salary to the pension fund. (3)

1.1.2   Calculate Robert's UIF contribution at B. (3)

1.1.3   Determine the total amount LEAP Environmental Strategies will pay over towards UIF for this employee. (2)

1.2   Calculate the missing values at C and D. (4)

1.3   Determine what percentage Robert is being taxed on for his travel allowance. (3)

1.4   How much will Robert save towards a trip quarterly? (4) (4)

[19]

INCOME TAX

Term	Meaning
Gross Salary	The total amount earned in a month. This includes all types of salary (e.g. salary, overtime, bonuses, etc.)
Deductions	These are amounts that need to be subtracted from the gross salary *before* money is deposited into the employee's bank account. These include items such as UIF, Pension, Medical Aid, Trade Union Fees, Loan repayments, Tax, etc.
Net Salary	Also known as 'take home pay'. This is the amount that is deposited into an employee's bank account. It is calculated as follows: **Net Salary = Gross Salary - Deductions**
Income Tax	This is a tax on all sources of income (e.g. salary, interest income, rental income, etc.). It is calculated on the taxable income.
Taxable Income	This is different from Net Salary although the calculation looks similar. **Taxable Income = Gross Income – Tax-deductible Deductions**
Gross Income	This is different from gross salary (above) because it includes all forms of income, e.g. salary, rental income, textbook royalties, etc.
Tax deductible Deductions	These are specific deductions that are subtracted from the gross income before tax is calculated. There are two types of taxable deductions: *Salary-based deductibles*: subtracted from the gross salary by the employer before the salary is paid. These include: UIF, Pension fund contributions, etc. *Non-Salary deductibles*: These may be paid out of an employee's take-home pay, e.g. donations to charities, certain medical expenses. There are limits placed on deductibles, e.g. the maximum amount that can be deducted for pension is 7,5% of the gross salary.
Non-tax Deductible Expenses	The majority of expenses are not tax deductible. These are generally living expenses, e.g. food, rent, fuel, entertainment, etc. Only tax deductible deductions reduce the amount of taxable income owed.
Taxable Deductions	Some deductions subtracted from an employee's payslip are taxable. Although the employee receives less money they still have to pay tax on the larger amount of money that they earned. Examples include: loans from an employer, a garnishee order, monthly payments to the employer for services rendered, etc.

INCOME TAX BRACKETS AND FORMULAE

SARS (South African Revenue Services) publish **new tax rates for every tax year**. The table below shows the rates for the tax year ending 28 February 2019. More information is available on the SARS website.

Statutory rates individuals	
Taxable annual Income (R)	**Rates of tax(R)**
0 - 195 850	18% of taxable income
195 851 – 305 850	35 253 + 26% of taxable income above 195 850
305 851 – 423 300	63 853 + 31% of taxable income above 305 850
423 300 – 555 600	100 263 + 36% of taxable income above 423 300
555 601 – 708 310	147 891 + 39% of taxable income above 555 600
708 310 – 1 500 000	208 587 + 41% of taxable income above 701 300
1 500 001 and above	532 041 + 45% of taxable income above 1 500 000
Tax rebates individuals	
Primary rebate	R14 067
Secondary rebate (for persons 65 years and older)	R7 713
Tertiary rebate (for persons 75 years and older)	R2 574
Tax thresholds individuals	
Persons under 65 years	R78 150
Persons 65 years and older	R121 000
Persons 75 years and older	R135 300

Important terminology for tax tables

Term	Meaning
Tax Bracket	- A range of taxable incomes that are charged according to a set rate of tax. - The values are the *annual* taxable amounts. - The higher the bracket, the higher the tax rate for that portion of the taxable income.
Tax Rebate	- An amount that is deducted from the tax that has to be paid. - It is a *maximum* amount. Therefore if someone owes less tax than the total tax rebate they will pay no tax but will NOT receive the amount left over in cash. - Only people who pay tax are eligible for the rebate. - There are three rebates. Everyone is eligible for the primary rebate. Tax payers who are 65 years and older qualify for the additional secondary rebate. Tax payers who are 75 years and older qualify for all three rebates.
Tax Threshold	- This is the minimum salary a person must earn before tax is charged. - Below the threshold, the person's tax will be cancelled by the tax rebate.

Medical scheme tax credit (MTC): It is an amount that can be deducted from the amount of tax payable if the individual is a member of an approved medical scheme. This amount is announced every year. For the tax year ending 28 February 2019, the MTC is R310 per month for the individual, R310 for the first dependant and R209 for each additional dependant.

WORKED EXAMPLES

In this example we investigate the use of the table above to calculate the amount of tax payable by individuals. It is important to note that the formulae provided in the table are based on ANNUAL taxable income.

1   Lesedi is a cashier (25 years old) at a supermarket with a gross monthly income of R5 500. Determine the amount of tax payable by Lesedi per year.

2   Menyatso is a 45-year-old public servant with a gross income of R35 500 per month, of which he contributes 7,5% to a pension fund. He also contributes to an approved medical scheme for himself, his wife and three children.

    2.1   Calculate his taxable annual income.
    2.2   Calculate the annual amount of tax payable by Menyatso.
    2.3   What is the monthly amount of tax payable by Menyatso?

SOLUTIONS

1   Gross annual income
    = R5 500 x 12 = R66 000
    This is less than the threshold of R78 150, therefore Lesedi will pay NO TAX.

2.1   Menyatso's taxable income
    = Gross income – pension fund contribution
    = R35 500 – 0,075 x R35 500
    = R32 837,50 per month
    = R394 050 per year

> Menyatso qualifies for MTC of 2xR270 + 3xR181 per month

2.2   His taxable income is in the third bracket from the top (305 851 – 423 300)
    Tax payable per year
    = R63 853 + 31% of taxable income above R305 850 – rebate applicable - MTC
    = R63 853 + 0,31 x R (394 050 – 305 851) – R14 067 – 12 x (2 x 310 + 3 x 209)
    = R63 853 + 0,31 x R88 199 – R14 067 – R14 964
    = R62 163, 69

> Menyatso qualifies for the primary rebate

2.3   Monthly amount of tax payable
    = R62 163, 69 ÷ 12
    = R5 180, 30

ACTIVITY

Question 1

Mr Fortune is a 40-year-old male who receives a basic monthly salary of R20 416,67 and an annual bonus equal to his basic monthly salary. His gross annual income for the 2013/2014 tax year is made up of his basic monthly salary and annual bonus.

He contributes 6% of his basic monthly salary towards his pension fund, but no pension contribution is deducted from his annual bonus.

The following table showing the annual income tax deductions for individuals and special trusts for the 2013/2014 tax year is used by Mr Fortune to calculate his income tax payable to SARS.

TABLE 2: Annual income tax deductions for individuals and special trusts

2013/2014	
INCOME TAX: INDIVIDUALS AND SPECIAL TRUSTS	
Tax rates (year of assessment ending 28 February 2014)	
Individuals and special trusts	
Taxable income (R)	**Rate of tax (R)**
0–165 600	18% of taxable income
165 601–258750	29 808 + 25% of taxable income above 165 600
258 751–358 110	53 096 + 30% of taxable income above 258 750
358 111–500 940	82 904 + 35% of taxable income above 358 110
500 941–638 600	132 894 + 38% of taxable income above 500 940
638 601 and above	185 205 + 40% of taxable income above 638 600
Tax rebates	
Primary	R12 080
Secondary (Persons 65 year and older)	R6 750
Tertiary (Persons 75 year and older)	R2 250

NOTE:

1. Annual income tax is calculated on income after the total pension contributions have been deducted.

2. Income tax payable on annual bonus amounts is spread equally over 12 months.

[Source: www.sars.gov.za]

1.1   Calculate Mr Fortune's gross annual taxable income.   (4)

1.2   Use the annual income tax table above to calculate his annual income tax
       payable for the year ending 28 February 2014.   (5)

1.3   Hence, calculate Mr Fortune's net monthly salary if only income tax and
       pension deductions are considered.   (3)

Question 2

2.1 **TABLE 1** below shows an income and expenditure statement of John's Vegetable
     Stall in a small town in the Eastern Cape.
     The statement shows a comparison of budgeted and actual values for the year 2017.

     TABLE 1

John's Vegetable Stall Budgeted and Actual values for the year 2017 (Values in Rand)			
ITEM	**INCOME**	**BUDGET**	**DIFFERENCE**
Vegetables (Type S) sales	3 250	2 750	500
Vegetables (Type T) sales	4 500	4 200	300
Additional income from air time sales	1 200	1 000	200
Total Income	**A**	7 950	1 000
	EXPENSES	**BUDGET**	**VARIANCE**
Vegetables (type **S**) costs	1 440	1 500	**B**
Vegetables (type **T**) costs.	2 600	**C**	200
Airtime	1 000	1 000	0
Delivery	800	880	(80)
Total Expenses	**5 840**	**5 780**	60
Net profit (Loss)	**3 110**	**2 170**	940

     2.1.1   Calculate the value of **A**.   (2)

     2.1.2   Determine the value of **B**.   (2)

     2.1.3   Calculate the budgeted value **C** for the Vegetables type **T**.   (2)

     2.1.4   Identify the item within the 'Expenses' which could have been the main
              cause for the business to declare less profit.   (2)

2.2 Mrs John, 68 years old, is a consultant at ABC company and earns a monthly gross
     salary of R65 000. She earns a performance bonus of 75 % of her monthly salary in
     December. Her pension contribution is 7,5% of her monthly gross salary and she pays
     R1 050 per month to the medical aid fund.

     2.2.1   Calculate Mrs John's annual gross salary.   (2)

     2.2.2   Calculate Mrs John's annual pension fund contribution.   (2)

2.2.3 Calculate Mrs John's annual medical aid fund contribution. (2)

2.2.4 Show that Mrs John's performance bonus is R48 750. (2)

2.2.5 Determine Mrs John's annual taxable income. (4)

2.3 **TABLE 2** below shows the income tax brackets for the 2016/2017 financial year.

INCOME TAX FOR 2016/2017 FINANCIAL YEAR	
Taxable Income (Rand)	**Rates of tax (Rand)**
R0–R188 000	18% of each R1
R188 001–R293 600	R33 840 + 26% of the amount above R188 000
R293 601–R406 400	R61 296 + 31% of the amount above R293 600
R406 401– R550 100	R96 264 +36% of the amount above R406 400
R550 101– R701 300	R147 996+ 39% of the amount above R550 100
R701 301 and above	R206 964 +41% of the amount above R701 300

REBATES		TAX THRESHOLD	
Primary:	R13 500	Below age 65:	R75 000
Secondary:	R7 407	Age 65 and over:	R116 150
Tertiary:	R2 466	Age 75 and over:	R129 850

Use **TABLE 2** and the information in QUESTION 2.2 to answer the questions that follow.

2.3.1 Identify the taxable income group in which Mrs John's income falls. (2)

2.3.2 Calculate the rebate Mrs John will receive. (2)

2.3.3 Calculate the actual tax to the nearest rand that Mrs John will pay for the 2016/2017 financial year.
You may use the formula:
Actual tax = Income tax calculated on taxable income – Rebate (4)

2.3.4 Hence, calculate Mrs John's net annual salary.
You may use the formula:
Net annual salary = Annual taxable income – Actual tax (3)

2.4 Mr Mana took out a loan of R400 000 from DFK Bank to fund his phone business. The loan was offered at an interest rate of 15,5% per annum compounded annually.

2.4.1 Calculate, without the use of a formula, the interest Mr Mana will have to pay for two years. (4)

2.4.2 Mr Mana specialises in two types of phones: **Phone D** and **Phone E**, that are imported from China at a cost price of R1 750 and R2 000 respectively. The prices include VAT of 15% (Value Added Tax).
Calculate the VAT amount on **Phone D**. (3)

2.4.3 He buys the phones in a ratio **Phone D : Phone E = 3:2**.
Determine the number of **Phone E's** on an invoice with an order of 60 **Phone D's.** (2)

2.4.4 Calculate the total cost of **Phone D's** and **Phone E's** he bought. (3)

2.4.5 Convert the total cost of the phones in Chinese Yuan.
Use the exchange rate: **R1 = 0,52709 Chinese Yuan (CNY)** (3)

Question 3

Simon, a 32-year-old from Botswana had a monthly taxable income of 20 840 pula and paid 39 570 pula tax in the 2017/18 tax year. He claimed that he paid less tax than what he would have paid if he worked in South Africa and had the same monthly taxable income. Verify his claim by making use of the exchange rate and TABLE 3 below.

Exchange Rate : R1 = 0,74 BWP **(BWP – Botswana pula)**

TABLE 3: SOUTH AFRICA INDIVIDUALS TAX TABLE FOR 2017/18

Taxable income	Rates of tax
R0 - R189 880	18% of each rand
R189 881- R296 540	R34 178 + 26% of the amount above R189 880
R296 R541 - R410 460	R61 910 + 31% of the amount above R296 540
R410 461 - R555 600	R97 225 + 36% of the amount above R 410 460
R555 601 - R708 310	R149 475 + 39% of the amount above R555 600
R708 311 – R1 500 000	R209 032 + 41% of the amount above R708 310
R1 500 001 and above	R533 625 + 45% of the amount above R1 500 000

Rebates

Primary	R13 635
Secondary	R7 479
Tertiary	R2 493

(10)

Source:www.fin24.com

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