ASSIGNMENT 1 (COMPULSORY)

Due Date	Unique Number
3 August 2018	860767

Submit your answers online through myUnisa. No extensions will be granted for submission of this assignment. ***NO*** *manual or posted submissions will be allowed.*

Question 1

Simplify: $\frac{\frac{x}{y}-\frac{y}{x}}{\frac{x^2+2xy+y^2}{x^2-y^2}}$

1) $\frac{(x-y)^2}{(x+y)^2}$
2) $\frac{(x+y)^2}{(x-y)^2}$
3) $\frac{xy}{(x-y)^2}$
4) $\frac{(x-y)^2}{xy}$

Question 2

Simplify: $\frac{\frac{1}{x}+\frac{1}{y}}{\frac{1}{x^2}-\frac{1}{y^2}}$

1) $\frac{xy}{x-y}$
2) $\frac{x-y}{xy}$
3) $\frac{xy}{y-x}$
4) $\frac{y-x}{xy}$

Question 3

Simplify: $(2^2)^3 - (3^2)^2$

1) 0
2) 47
3) -17
4) -49

Question 4

Simplify: $(x^2y^3)^3(x^5y)^{-2}$

1) x^8y^4
2) $\frac{y^7}{x^4}$
3) $x^{14}y^{11}$
4) $\frac{x^8}{y^2}$

Question 5

Solve: $\sqrt{k^2-4} = k-4$

1) $k = \frac{3}{2}$
2) $k = 2$
3) $k = \frac{5}{2}$
4) $k = 1$

Question 6

Solve: $\frac{k}{2k+1} = \frac{3}{8}$

1) $k = \frac{3}{2}$
2) $k = -1$
3) $k = \frac{-8}{13}$
4) $k = 1$

Question 7

A stock brokerage firm has received nine enquiries regarding new accounts. In how many ways can these inquiries be directed to any three of the firm's account executives, if each account executive is to handle three inquiries?

1) 1 680 ways
2) 60 480 ways
3) 243 ways
4) 13 440 ways

Question 8

How many poker hands of 5 cards can be dealt from a standard deck of 52 cards?

1) 311 875 200 ways
2) 2 598 960 ways
3) 260 ways
4) 120 ways

Questions 9 and 10 are based on the following information:

An investor has decided to purchase shares in the stock of three companies: one engaged in aerospace activities, one involved in energy development, and one involved in electronics. After some research, the account executive of a brokerage firm recommended that the investor considers stock from five aerospace companies, three energy companies, and four electronics companies.

Question 9

In how many ways can the investor select the group of three companies from the executives list?

1) 24 ways
2) 120 ways
3) 12 ways
4) 60 ways

Question 10

Suppose that the investor has decided to purchase in the stock of two aerospace companies, two energy development companies, and two electronics companies. In how many ways can the investor select the group of six companies for the investment from the recommended list of five aerospace companies, three energy development companies, and four electronics companies?

1) 120 ways
2) 60 ways
3) 180 ways
4) 480 ways

Question 11

A mixture contains 2 parts of substance A for every 5 parts of substance B. If the total weight of the mixture is 50kg, determine how much of substance B is in the mixture (correct to two decimal places).

1) 14.29kg
2) 10.00 kg
3) 35.71kg
4) 40.00kg

Questions 12 and 13 are based on the following information:

Luke's biology notebook is 30cm long and 20cm wide. The dimensions of his desk are in the same proportion as the dimensions of his notebook.

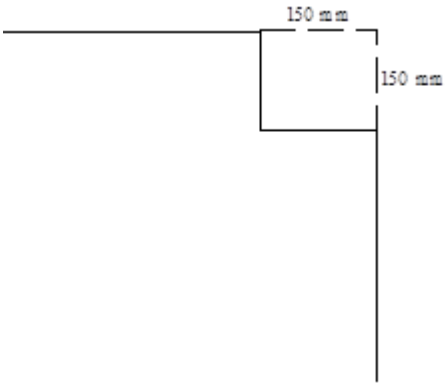
Question 12

If the desk is 90cm wide, calculate the area of the top of the desk.

1) 12 150 cm^2
2) 1 800 cm^2
3) 12 960 cm^2
4) 2700 cm^2

Question 13

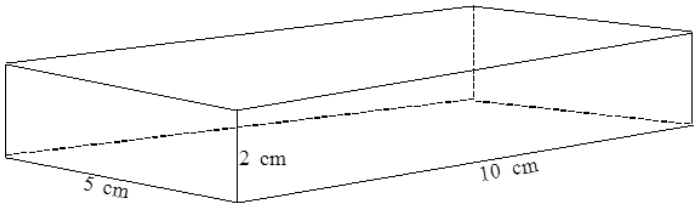
Luke covers the corner of his desk with a square cupboard, as illustrated in the diagram. Calculate the perimeter of the visible part of the top of his desk.



1) 450 cm
2) 420 cm
3) 225 cm
4) 255 cm

Question 14

Find the surface area of the following rectangular prism (closed box):



1) 100 cm^2
2) 240 cm^2
3) 160 cm^2
4) 50 cm^2

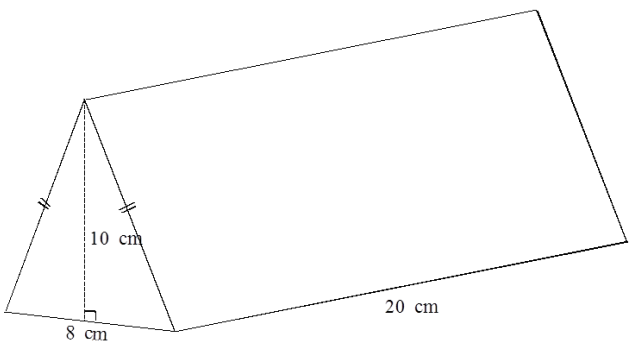
Question 15

A path of width 90cm is constructed around the outside of a 24m by 18m rectangular area of grass. Calculate the area of the path, in m^2, rounded to two decimal places.

1) 57.51 m^2
2) 75.84 m^2
3) 82.08 m^2
4) 78.84 m^2

Question 16

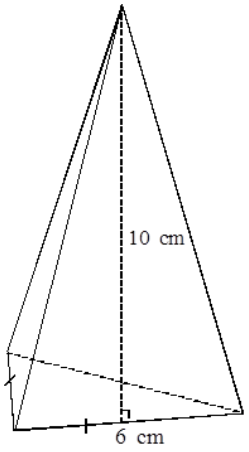
Find the volume of the triangular prism:



1) 1 200 cm^3
2) 600 cm^3
3) 1 600 cm^3
4) 800 cm^3

Question 17

Find the area of the sides of the following triangular pyramid (correct to one decimal place):



1) 90.0 cm^2
2) 180.0 cm^2
3) 105.6 cm^2
4) 211.2 cm^2

Question 18

A tank has a square base, with sides the length of each 1m. The height of the tank is 1.2m. The tank is filled with fabric softener to a mark of 20cm from the top. If there is no wastage, calculate the maximum number of 750ml bottles that can be filled with fabric softener from the tank.

1) 1600
2) 750
3) 1333
4) 133

Questions 19 to 21 are based on the following information:

Nthabiseng wants to buy an iPad that costs £120. The exchange rate is currently £1 = R14. She estimates that the exchange rate will drop to £1 = R9 in a month.

Question 19

How much will the iPad cost (in rand) if she buys it now?

1) R1680
2) R600
3) R720
4) R1080

Question 20

How much will she save if the exchange rate drops to R9?

1) R1680
2) R600
3) R720
4) R1080

Questions 21

How much will she lose if the exchange rate increases to R19?

1) R600
2) R720
3) R1680
4) R2280

Question 22

The population of Umtata in 2003 was 4 146 580 and for Queenstown it was 12 238 300. What is the index of population for Umtata compared to Queenstown?

1) 86.2
2) 33.9
3) 294.9
4) 116.0

Question 23

According to statistics, in 1995, the average salary of workers with at least 15 years' experience in Umtata and Queenstown was R20 828 per month. In 2001, it was R24 165 per month. What is the index of monthly earnings of workers with at least 15 years' experience in Umtata and Queenstown?

1) 294.9
2) 116.0
3) 33.9
4) 86.2

Questions 24 and 25 are based on the following information:

In the table below are prices and quantities of items bought in the year 2000 and 2010. Use the year 2000 as the base year.

	2000		2010	
Item	Price (R)	Quantity	Price (R)	Quantity
Toothpaste	8.99	6	14.99	6
Shampoo	19.99	4	32.99	5
Headache Tablets	5.99	2	9.99	3
Antiperspirant	10.99	3	19.99	4

Question 24

Determine the Laspeyres Price Index

1) 120.61
2) 60.45
3) 165.42
4) 82.91

Question 25

Determine the Paasche Quantity Index.

1) 82.91
2) 165.42
3) 120.61
4) 60.45