

Question 1

- 1.1 Lindiwe is interested in early childhood education. She researched the number of learners enrolled in early childhood education in selected countries.

Die tabel hieronder toon die aantal leerders wat vir vroeekinderonderwys in geselekteerde lande ingeskryf is.

The table below shows the number of learners that were enrolled in early childhood education in selected countries.

Number of learners enrolled in early childhood education by country from 2014 to 2016/ Getal leerders wat vanaf 2014 tot 2016 per land vir vroeekinderonderwys ingeskryf is

Country/ Land	2014	2015	2016
Bulgaria/Bulgarië	240 622	241 123	232 025
Denmark/Denemarke	300 278	291 683	284 655
Germany/Duitsland	2 970 436	3 014 046	3 090 459
Ireland/Ierland	78 056	71 096	82 245
Greece/Griekeland	231 155	225 596	214 109
Cyprus/Ciprus	N	29 669	30 505
Slovenia/Slovenië	83 700	84 750	85 407
Serbia/Servië	189 304	192 005	199 790
Turkey/Turkye	1 064 190	1 158 826	1 221 165
Slovakia/Slowakye	158 195	161 906	163 740
United Kingdom/ Verenigde Koninkryk	1 596 803	2 035 420	2 248 162

[Adapted from appso.eurostat.ec/Europe.eu]

[Aangepas uit appso.eurostat.ec/Europe.eu]

Use the table to answer the questions that follow.

- 1.1.1 Determine the difference in the number of learners enrolled in Slovakia in 2015 and 2016.
- 1.1.2 The range of the number of learners enrolled for 2014 is 2 947 664.
- Calculate the value of **N** which represents the lowest number of learners enrolled for 2014.

Gebruik die tabel om die vrae wat volg te beantwoord.

- 1.1.3 Describe the trend shown by the number of learners enrolled in Greece.

- 1.1.1 Bepaal die verskil in die aantal leerders wat in 2015 en 2016 in Slowakye ingeskryf het. (3)
- 1.1.2 Die omvang van die aantal leerders wat vir 2014 ingeskryf het, was 2 947 664.
- Bereken die waarde van **N** wat die langste aantal leerders verteenwoordig wat vir 2014 ingeskryf het. (3)
- 1.1.3 Beskryf die tendens wat getoon word deur die aantal leerders wat in Griekeland ingeskryf het. (2)

- 1.1.4 Determine whether Turkey or the United Kingdom had the largest percentage increase from 2014 to 2016 regarding the number of learners enrolled in early childhood education. Show ALL your calculations.

- 1.1.5 Determine (as a decimal fraction) the probability of randomly selecting a country in this table which shows a decline in enrolment from 2015 to 2016.

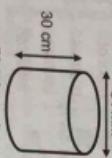
- 1.1.6 The cost per child for early childhood education in Denmark in 2016 was €520,83 per month, while the comparative cost in Slovenia was €350 per month.

Lindwive stated that the ratio of the total amount spent for all the learners enrolled in 2016 in Denmark compared to Slovenia is more than 5 : 1.

Verify her statement.

- 1.2 Lindwive bought two bags of dirty marbles from her neighbour at R20,00 per bag. Each bag contained 100 marbles. She intends to wash the marbles before selling them to her friends at school. She uses a cylindrical container to wash the marbles in, as shown in the diagram below.

Diagram van 'n cilindriese houer



(Nie volgens skaal getrekken nie)

Inner diameter = 64 mm
Binnekelderyllyn = 64 mm
Inner height = 30 cm
Binnendoogte = 30 cm

- 1.1.4 Bepaal of Turkye of die Verenigde Koninkryk van 2014 tot 2016 die grootste persentasie toenemende gehad het in die aantal leerders wat vir vroeekinderyls ingeskryf het. Toon AL jou berekening.

- 1.1.5 Bepaal (as 'n desimale breuk) die waarskynlikheid om ewekansig 'n land in hierdie tabel te kies wat vanaf 2015 tot 2016 'n afname in inskrywings toon.

- 1.1.6 Die koste per kind vir vroeekinderyls ondertoe in 2016 in Denemarke was €520,83 per maand, terwyl die vergelykbare koste in Slovenië €350 per maand was.

Lindwive het beweer dat die verthouder vir die totale bedrag gespanneer vir al die leerders wat in 2016 in Denemarke in vergelyking met Slovenië ingeskryf het, meer as 5 : 1 is.

Verifieer haar bewering.

- 1.2 Lindwive het twee sakkie vull albasters by haar buren teen R30,00 per sak gekoop. Elk sak het 100 albasters bevat. Sy beloof om die albasters te was voordat sy dit aan haar vriende by die skool verkoop. Sy gebruik 'n cilindriese houer wat vir die albasters gaan was, soos in die diagram hieronder getoon.

Bag of marbles/
Sak met albasters



Volume van 'n enkele albaster = 2 cm³

You may use the following formulae:

$$\text{Volume of a cylinder} = \pi r^2 \times \text{height}$$

$$\text{Circumference of a circle} = 2\pi r$$

$$\text{Let wet: } 1\text{ 000 cm}^3 = 1 \text{ litre}$$

Use the above information to answer the questions that follow.

- 1.2.1 Lindwive made a profit of 120% from selling one bag of marbles.

Calculate in rand, the selling price of EACH marble.

- 1.2.2 To wash the marbles, Lindwive placed all the marbles from both bags into the cylindrical container. She then filled the container with water.

Lindwive stated that more than half a litre of water was required to fill the cylindrical container with the marbles already inside.

Verify, showing ALL calculations, whether the statement is valid.

- 1.2.3 Calculate, in cm, the outer circumference of the cylindrical container used to wash the marbles if the container is made of metal 0,5 mm thick.

Lindwive het beweer dat meer as 'n halve liter water nodig was om die cilindriese houer vol te maak met die albasters needs daarm. Sy het daarna die houer met water gevul.

Verifieer, met ALLE berekeninge getoon, of die bewering geldig is.

Question 2

The next table shows data about the marking team, hours worked, tariffs and the amounts claimed for the marking and moderation of these scripts.

Vraag 2

- 2.1 After an examination, a total of 2 808 Mathematical Literacy scripts were marked at a particular marking centre.

Die volgende tabel toon data oor die nasienspan, ure gewerk, tariewe en die bedrage geëlsis vir die nasien en moderering van hierdie skrifte.

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[39]

Marking team, hours worked, tariffs and amount claimed for marking and moderation!

Nasienspan, ure gewerk, tariewe en bedrose geels vir nasien en moderree!

		Hours worked per person (Ure par persoon gewerk)	Tariff (R/hr) Tarief (R/uur)	Amount (R) claimed per person/ per persoen geëls
Chief moderator (CM)	1	79	244,35	...
Hoofdmoderator (HM)	1	79	244,35	...
Internal moderator (IM)	5	A	211,75	13 763,75
Marker/ Nasieners	23	52	195,50	10 166,00
Total/notal	30

The marking process was planned as follows:

- * The first day of marking was a Monday, starting at 14:00.
- * Thereafter marking started at 08:00 and ended at 14:00 on a full marking day.
- * Paid working hours excluded tea, lunch and supper breaks.

The marking team was paid a travel allowance of R3,26 per km for a total of 11 542 km travelled.

The table below shows the times for actual marking and breaks for a full day.

Times for actual marking and breaks

Werklike nasienste en pauses

Start/ Begin	Tea 1/ Tee 1	Lunch/ Middagte	Tea 2/ Tee 2	Supper/ Aan印de	Finish/ Endig
08:00	10:00-10:15	13:15-14:00	15:15-15:30	17:45-18:30	20:00

Use the above information to answer the questions that follow.

- 2.1.1 Determine the total amount claimed by the chief moderator (CM) and the internal moderator (IM).

- 2.1.2 Calculate the value of A in the table in Question 2.1.

2.1.3 Markers are allowed a maximum number of marking hours based on the following formula:

$$\text{Number of marking hours} = \frac{\text{Total number of scripts} \times 28}{\text{Number of markers}} \times 60$$

$$\text{Geïnsistenteers} = \frac{\text{Totale geïnsistenteers} \times 28}{\text{Geïnsistenteers}} \times 60$$

- (a) Using the above formula, determine the expected time and the day on which the markers are likely to finish marking.

- (b) Determine the actual day and time when markers finished, according to the hours claimed, if marking started at 14:00 on Monday.

- (c) Give ONE possible reason why the markers finished before the expected time.

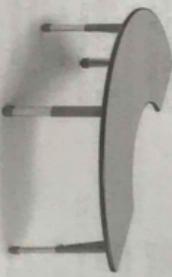
- (d) Geen EEN moontlike rede waarom die nasieners voor die verwagte tyd klaargemaak het.

- 2.1.4 A total amount of R400 000 was budgeted for the marking team at this particular marking centre.

- Verify whether this amount would be sufficient to pay the team for transport, marking and moderation of the scripts.

- The M and CM were allocated tables with semicircular-shaped table tops, as shown in the picture below. Lumka, the centre manager, explained that two semicircular table tops are made from one square piece of wood.

**Table with semicircular top/
Tafel met 'n halfsirkelvormige blad**



- (e) Geef 'n halfsirkelvormige tafelblade aan die M en CM toegeweek, soos in die voorbeeld hieronder getoon. Lumka, die sentrumbestuurder, het verduidelik dat twee halfsirkelvormige tafelblade uit een verkantige stuk hout gemaak word.

- (f) Tafels met halfsirkelvormige tafelblade is aan die M en CM toegeweek, soos in die voorbeeld hieronder getoon. Lumka, die sentrumbestuurder, het verduidelik dat twee halfsirkelvormige tafelblade uit een verkantige stuk hout gemaak word.

2.1.5 Nasieners word 'n moderreeën geïnsistenteers toegeweek, op die volgende formule gebruik:

$$\text{Aantal ure vir nasien} = \frac{\text{Geïnsistenteers} \times 60}{\text{Geïnsistenteers}}$$

Memo: 63

2.1.2 Bereken die waarde van A in die tabel van Vraag 2.1.

Memo: 63; 64

F2

The information on how the semicircular tops are cut from the square piece of wood is shown below. The dimensions of the wood are $2,7 \text{ m} \times 2,7 \text{ m}$ with a thickness of 38 mm.
You may use the following formulae:

Area of a square = side \times side.

$$\text{Area of a semicircle} = \frac{3,142 \times \text{radius}^2}{2}$$

$$\text{Volume of a rectangular prism} = \text{length} \times \text{width} \times \text{height}$$

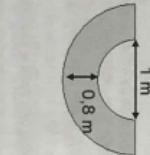
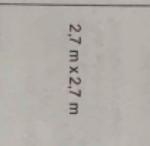
Square board with side $2,7 \text{ m}$ with a thickness of 38 mm .

Vierkante plank met sy $2,7 \text{ m}$ uit 'n vierkantige plank gesny

with a thickness of 38 mm /

Two semicircular-shaped tops cut from a square board

Twee halfsirkelvormige biale uit 'n vierkantige plank gesny



with a thickness of 38 mm /
met 'n dikte van 38 mm

Verify, showing calculations, whether Lumka's statement is valid.

Verifieer, deur berekeninge te toon, of Lumka se bewering geldig is.

F2

Die inligting oor hoe die halfsirkelvormige biale uit die vierkantige stuk hout gesny word is hieronder getoon. Die afmetings van die hout is $2,7 \text{ m} \times 2,7 \text{ m}$ en dit is 38 mm dik.

Jy kan die volgende formules gebruik:

$$\text{Oppervlakte van 'n vierkant} = \text{sy} \times \text{sy}$$

$$\text{Oppervlakte van 'n halsfik} = \frac{3,142 \times \text{radius}^2}{2}$$

- 2.2.2 The wood used is sold for R1 215 per cubic metre excluding VAT at 15%.
- Calculate the total cost, including VAT of the wood to make 12 semicircular table tops.

Question 3

- 3.1 A group of students at a nursing college wrote two tests for the same course. The table below shows the test scores, as percentages, of the students.

Vraag 3

- 3.1 A student who scores 85% or more for a test is awarded a distinction.

Use the information in the table to answer the questions that follow.

3.1.1 Explain, giving a reason, whether the above data is discrete or continuous.

3.1.2 Determine the median score for Test 2.

3.1.3 The mean score for Test 1 was 84%. Calculate the value of Y.

3.1.4 Identify the candidates whose test scores in both tests differed by 30%.

- 3.1.1 Verduijfele, met 'n rede, of die data hierbo diskreet of kontinu is.

- 3.1.2 Bepaal die mediaanpunt vir Toets 2.

- 3.1.3 Die gemiddelde punt vir Toets 1 was 84%. Bereken die waarde van Y.

- 3.1.4 Identifiseer die kandidate wie se toetspunte in beide toetses met meer as 30% verskil het.

Test/Toets	Students/Studente																	
	Paul	Oscar	Helen	Elsie	Fiona	Ian	Linda	Beauty	Charli	Rose	Kevin	Danie	Neo	Joan	Goitse	Mangi	Zena	Anita
1	89	90	87	90	83	83	94	73	88	Y	97	95	90	86	73	73	84	83
2	50	52	57	61	63	65	65	66	67	67	67	68	75	78	79	79	79	

(Adapted from www.sanc.gov.za)

A student who scores 85% or more for a test is awarded a distinction.

Use the information in the table to answer the questions that follow.

3.1.1 Explain, giving a reason, whether the above data is discrete or continuous.

'n Student wat 85% of meer vir 'n toets behaag, kry 'n onderskeidingsvrae wat volg, te beantwoord.

Gebrauk die inligting in die tabel om die vrae wat volg, te beantwoord.

3.1.1 Verduijfele, met 'n rede, of die data hierbo diskreet of kontinu is.

3.1.2 Bepaal die mediaanpunt vir Toets 2.

3.1.3 Die gemiddelde punt vir Toets 1 was 84%. Bereken die waarde van Y.

3.1.4 Identifiseer die kandidate wie se toetspunte in beide toetses met meer as 30% verskil het.

3.1.5 Calculate the value of the inter-quartile range for Test 2.

F2

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F2

3.1.5 Bereken die waarde van die inter-kwartielomvang vir Toets 2.

3.1.6 Express, in simplified fractional form, the probability of randomly selecting a candidate who did not get a distinction for Test 1.

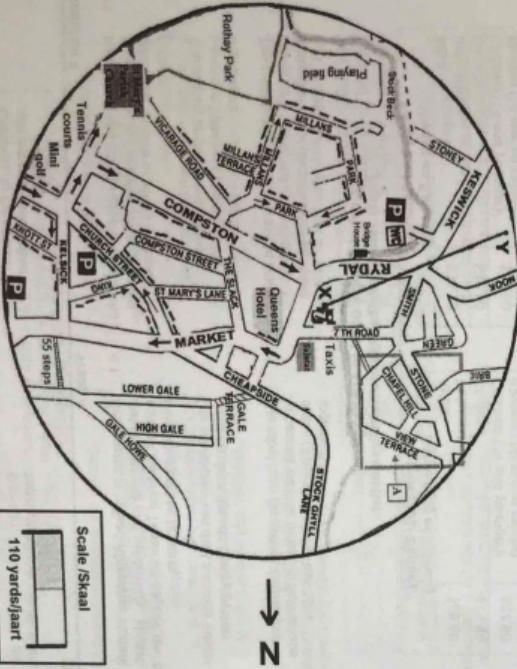
3.1.5 Bereken die waarde van die inter-kwartielomvang vir Toets 2.

Key / Sleutel

P	Public car park Openbare parkeerterrein
i	Information Inligting
A	Parking in this area is not allowed / Parkering word nie in hierdie gebied toegelaat nie Maximum 1 hour free parking Vry parkering tot 1 uur Maximum 1 uur gratis parkering voor 5 nm.
— — —	

- 3.2 Mangiwe, one of the students at the nursing college, visited the Ambleside town centre and stayed at the Queens Hotel for one week.
- The Ambleside town centre map is given below.

- 3.2 Mangiwe, een van die studente by die verpleegkoloegie, het die middestad van Ambleside besoek en vir een week in die Queens Hotel geby.
- Die kaart van Ambleside se middestad word hieronder gegee.



Use the map to answer the questions that follow.

3.2.1 Identify the road in which parking is not allowed.

3.2.1 Identifiseer die straat waar parkering nie toegelaat word nie.

3.2.2 Mangiwe travels from Keswick to Rydal Road.

3.2.2 Mangiwe ry vanaf Keswick na Rydalweg.

3.2.3 Give ONE reason why she cannot turn right into Compton Road.

3.2.3 Gee EEN rede waarom sy nie regs kan draai nie.

3.2.3 Give the general direction of the Queens Hotel from the tennis courts.

3.2.3 Gee die algemene rigting van die Queens Hotel vanaf die tennissbane.

3.2.4 On the map, X is a point at the information centre and Y is a point at the University of Cumbria.

3.2.4 X op die kaart is 'n punt by die informasie sentrum en Y is 'n punt by die Universiteit van Cumbria.

3.2.4 Use the scale on the map to calculate, in yards, the straight-line distance from X to Y.

3.2.4 X op die kaart is 'n punt by die informasie sentrum en Y is 'n punt by die Universiteit van Cumbria.

3.2.5 Mangiwe parked in Church Street from 12:00 to 15:25. A traffic officer who monitors the area issued her with a fine.

3.2.5 Mangiwe het vanaf 12:00 tot 15:25 in Kerkstraat (Church) geparkeer. 'n Verkeerskonstabel wat die gebied monitor, het haar beboet.

Note: A fine is the amount of money that someone has to pay if there is an offence.

- (a) Write down for which offence the traffic officer issued her with a fine.

Let wet: 'n Boete is die bedraag geld wat iemand moet betaal as daar 'n oordreding is.

(a) Skryf neer vir watter oordreding die verkeerskonstabel haar beboet het.

- (b) Mangiwe was fined £79,75 by the traffic officer.

Calculate, to the nearest £, the rate per hour for this fine.

- (b) Die verkeerskonstabel het Mangiwe met £79,75 beboet.
Bereken, tot die naaste £, die koers per uur vir hierdie boete.

[5]

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Question 4

- 4.1 Kelumwense is a South African student who is on holiday in Australia. He went to the Lawrence Theatre to attend a musical concert.

The seating arrangements of the Lawrence Theatre is shown on the next page.

The table below shows the single ticket prices for a visit to the theatre in Australian dollar (inclusive of Australian VAT of 10%).

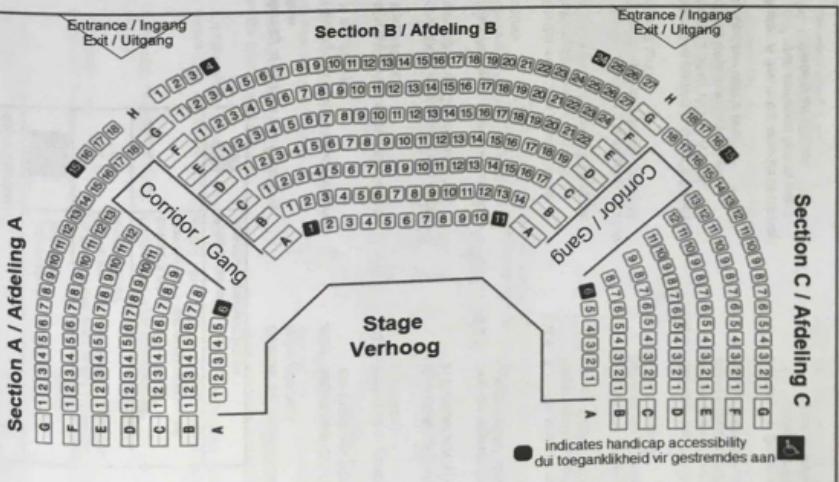
Friday and Saturday/ Vrydag en Saterdag		Thursday and Sunday/ Donderdag en Sondag	
Adult/ Volwassene	\$34,70	Adult/ Volwassene	\$28,60
Student	\$30,50	Student	\$28,40
Children (14 and younger)/ Kinderen (14 jaar en jonger)	\$17,60	Children (14 and younger)/ Kinderen (14 jaar en jonger)	\$17,60

Cost of a single ticket in Australian dollar/ Koste van 'n enekelkaartjie in Australiese dollar	
Friday and Saturday/ Vrydag en Saterdag	Thursday and Sunday/ Donderdag en Sondag
Adult/ Volwassene	\$34,70
Student	\$30,50
Children (14 and younger)/ Kinderen (14 jaar en jonger)	\$17,60

[Aangepas uit: <https://www.theatrelawrence.com>]

Use the seating plan and the above information to answer the questions that follow.

Gebruik die stiplekplan en die inligting hierbo om die vrae wat volg, te beantwoord.



Seating plan of the Lawrence Theatre in Australia with seating capacity of 288. Berekening van die Lawrence-Theater in Australië met 'n stiplekkapasiteit van 288.

- 4.1.1 Determine, as a percentage, the probability of randomly selecting an odd numbered seat for a disabled person from all the seats in the theatre.

- 4.1.2 Identify the row and seat number for a person who is seated as follows:
- * In Section B.
 - * Fourth row from the stage
 - * In the middle seat.

4.1.3 Keitumetse is seated in D7 of Section A. He has to assist his friend in A11 after the show.

Describe the shortest possible path he would follow to reach A11.

- 4.1.4 Sections A to C had the following number of people attending on a Thursday.

	Adults/ Volwassenes	Students/ Studente	Children (14 and younger)/ Kinders (14 en jonger)
Section A/ Afdeeling A	53	15	9
Section B/ Afdeeling B	57	32	15
Section C/ Afdeeling C	40	10	9

There was a claim that an amount of exactly \$5 796, excluding Australian VAT, was collected on that day.

Verify, with calculations, whether this claim is CORRECT.

Friday show.

Calculate how much the ticket costs in South African rand.

Use the exchange rates below.

Exchange rate / Wisselkoers

$$1 \text{ Australian dollar (AUD)} = 0.71 \text{ United States dollar (USD)}$$

$$1 \text{ Australiese dollar (AUD)} = 0.71 \text{ Amerikaanse dollar (USD)}$$

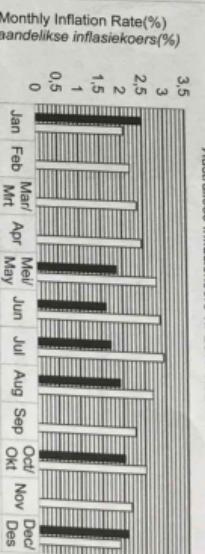
$$1 \text{ United States dollar (USD)} = 14.43 \text{ South African rand (ZAR)}$$

$$1 \text{ Amerikaanse dollar (USD)} = 14.43 \text{ Suid-Afrikaanse rand (ZAR)}$$

Write in Australia, Keitumetse studied the inflation rate.

Graphs and data regarding the monthly inflation rate for 2017 and 2018 in Australia are shown below.

Australian Inflation Rate for 2017 and 2018
Australiese inflasiekoers vir 2017 en 2018



Use the information to answer the questions that follow.

- 4.2.1 Complete the FIVE missing bars for 2017.

- 4.2.2 Comparing 2017 with 2018 state the month in which the difference in the inflation rate was the greatest and calculate this difference.

- 4.2.3 Keitumetse noted the trend in the inflation rate from the end of October 2018 to the end of December 2018.

- 4.2.3 Keitumetse het die tendens in die inflasiekoers vanaf die einde van Desember 2018 waargeneem.

- He then stated that a car costing AUD156 831.36 at the end of October 2018 would cost AUD6 500 more in January 2019.

Gebrauk die wisselkoers hieronder.

Verify, showing ALL calculations, whether his statement is CORRECT.

Verifieer, en toon ALLE berekeninge, of sy stelling KORREK is.

[34]

4.2 Terwyl Keitumetse in Australië was, het hy die inflasiekoers bestudeer. Hieronder word die grafiese en data ten opsigte van die maandelikse inflasiekoers vir 2017 en 2018 in Australië getoon.

vir 2017 en 2018 in Australië getoon.