
Question 1

Jordan inherited a game farm, called "Lodge Supreme". He needs to fix and update several aspects of the lodge.

Jordan notices that the rate charged for the chalets has not changed in the past five years.

Jordan het 'n wildsplaas genaamd "Lodge Supreme" geerf. Hy moet verskeie aspekte van die plaas herstel en moderniseer.

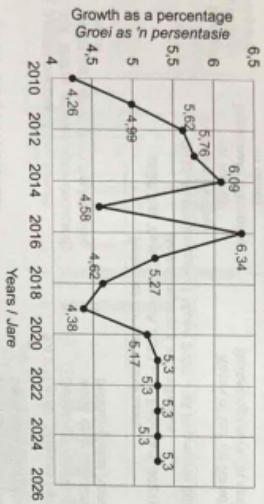
Jordan merk op dat die tarief wat vir die chalets gevra word die afgelope vyf jaar nie verander het nie.

1.1 He states that "... even though there are more people visiting the lodge now than there were five years ago, the lodge is making less money than it did five years ago." Explain how this is possible.

1.1 Hy sê: "Selfs al besoek meer mense nou die plaas as vyf jaar gelede, maak die plaas minder geld as wat dit vyf jaar gelede gemaak het." Verduidelik hoe dit moontlik is.
(2)

Jordan found the following graph showing the annual inflation rates as a percentage from 2010.

South Africa's annual inflation rate as a percentage /
Suid-Afrika se jaarlikse inflasiekoeur as 'n persentasie



[Source: www.statista.com]

1.2.1 Calculate the average change in the inflation rate over the past five years, including 2020, rounded to two decimal places.

1.2.2 Explain why the graph has values for years that are still in the future.

- 1.3 Jordan decides that he is going to increase the cost per night for each of the chalets by 5,16%, except for the Luxe suite for which he is going to charge R5 800 per night.
- The table below shows the prices for the three types of chalets available in the lodge.

1.3.1 Calculate the new cost per night of the standard and family standard chalets. Round off your answer to the nearest hundred.

1.3.2 Calculate the percentage increase that Jordan proposes for the Luxe suite. Use the following formula:

$$\text{Percentage difference} = \frac{\text{oorspronklik} - \text{verskil}}{\text{oorspronklik}} \times 100\%$$

1.4 Jordan decides to run a special on the Family standard chalet. He will charge R4 000 per night but will decrease the amount by R100 per person occupying the chalet.

1.4.1 Use the information above to complete the table below:

Number of people/ Getal mense	1	2	3	4	5	8	9	10
Cost per night (R)/ Koste per nag (R)	4 000	3 900						

1.4.2 Write an equation that shows the relationship between the cost per night **C** and the number of people staying in the chalet.

1.4.3 The graph below shows the cost of renting the family standard chalet at the usual rate. On the same set of axes, draw the graph that represents renting the chalet at the special rate.

(Remember to include all missing graph elements.)

- 1.2.2 Verduidelik waarom die grafiek waardes het vir jare wat nog in die toekoms is.
- 1.3 Jordaan besluit dat hy die koste per nag vir elkeen van die chalets met 5,16% gaan verhoog, behalwe vir die Luxe-suite waaroor hy R5 800 per nag gaan.
- Dit tabel hieronder toon die huidige prys vir die drie tipes chalets wat op die plaas beskikbaar is.

Type/ Slaapplek	Sleep/ Slaapplek	Cost per night/ Koste per nag
Standard/Standaard	2-4 people/2-4 mense	R2 400
Family standard/Familiestandaard	4-10 people/4-10 mense	R3 000
Luxe suites/Luxe-suite	2-4 people/2-4 mense	R5 200

- 1.3.1 Bereken die nuwe koste per nag van die standaard en familie standard chalets. Rond jou antwoord af tot die naaste honderd.

1.3.2 Bereken die persentasietoename wat Jordaan vir die Luxe suite voorstel. Gebruik die volgende formule:

$$\text{Persentasieverhouding} = \frac{\text{oorskotlike klink} - \text{oorspronklike klink}}{\text{oorspronklike klink}} \times 100\%$$



[Source: <www.timeslive.co.za>]

2.1

Use the above information to answer the questions that follow:

2.1.1 There is an average of 261 working days in a year.

Show with calculations, that a driver spends an average of more than an hour a day in traffic.

2.1.2 The average consumption of petrol is 9.4 litres/100 km.

The average travelling speed of a commuter is 50 km/h.

The petrol price is R15.84/litre (as at 1 January 2020).

If a commuter spends an average of 1 hour in traffic per day, calculate the cost of petrol for a commuter in traffic per year.

The following formula may be used:

$$d = s \times t$$

2.2

In 2017, a global survey was done to see how much time was spent in traffic in cities around the world. See the results listing some South African cities in the table below.

City/ Stad	Rank positions out of all cities surveyed/ posisie onder alle stede wat betrek is	Hours spent in traffic per year/ Ure per jaar in verkeer deurgebring	Peak times/ Spitslys (off-peak/ Dagtid (butte spits))
Cape Town/ Kaapstad	41	49	25% 11%
Johannesburg	55	46	18% 7%
Durban	163	26	15% 8%
Pretoria	257	26	14% 8%
Pretoriaansitzing	464	20	12% 9%
East London/ Oos-Londen	576	17	10% 8%
Port Elizabeth	317	15	9% 6%
Bloemfontein	346	15	9% 7%
Witwatersrand/ Witwatersrand	999	9	6% 5%
Vanderbijlpark	1306	4	3% 2%

[Source: 2017 INRIX Global traffic score card]

Use the table to answer the questions that follow.

2.2.1 Determine the range of the rank positions of the cities given.

2.2.2 The table states that 25% of the time spent in traffic in Cape Town was during peak time. Determine the amount of time spent in traffic in Cape Town during peak times in the format, hours : minutes.

Question 3

The South African national netball team is called the SPAR Proteas, as they are sponsored by the SPAR group.

3.1 On the next page is a table that shows the data for the players in the team. The table shows the player's name, field positions (Pos), date of birth (DOB), height, the clubs they play for and their nationality (Nat).

Die Suid-Afrikaanse nasionale netbalspan word die SPAR Proteas genoem, aangesien hulle deur die SPAR-groep gesponsored word.

3.1 Op die volgende bladsy is 'n tabel wat die data vir die spelers in die span nooi. Die tabel toon die speler se naam, veldposisies (Pos), geboortedatum (DOB), lengte en die klub waarvoor hulle speel en hul nasionaliteit (Nat).

Gebruik die tabel op die volgende bladsy om die vrae wat volg te beantwoord.

[17] (4)

2.2.2 Die tabel dui aan dat 25% van die tyd wat in Kaapstad in verkeer deurgebring is, gedurende spitslys was. Bepaal die hoeveelheid tyd wat gedurende spitslys in Kaapstad in verkeer deurgebring is in die formaat ure : minute.

Toon met berekening dat 'n bestuurder gemiddeld meer as 'n uur per dag in verkeer deurbring. (4)

Use the table on the next page to answer the questions that follow.

Gebruik die tabel op die volgende bladsy om die vrae wat volg te beantwoord.

2.2.1 Bepaal die variëasiewyke van die posisies van die stede wat gegee word. (2)

[17] (4)

2.2.2 Die tabel dui aan dat 25% van die tyd wat in Kaapstad in verkeer deurgebring is, gedurende spitslys was. Bepaal die hoeveelheid tyd wat gedurende spitslys in Kaapstad in verkeer deurgebring is in die formaat ure : minute.

[17] (4)

South Africa SPAR Proteas roster

Name	Players				Coaches	
	Pos	DOB	Height	Club	Nat	
Lenize Potgieter	GS, GA	02/05/1994	1.88 m (6 ft 2 in)	Southern Steel	■ ■	Head coach
Ine-Mari Venter	GS, GA	21/04/1995	1.92 m (6 ft 4 in)	Melbourne Vixens	■ ■	Dorette Badenhorst Assistant coach
Maryka Holtzhausen	GA, WA	02/06/1987	1.81 m (5 ft 11 in)	Severn Stars	+	• Nicole Cusack & Dumisani Chauke
Renske Stoltz	GA, GS	30/10/1992	1.69 m (5 ft 7 in)	—	Y	
Erin Burger	C, WA, WD	10/02/1987	1.76 m (5 ft 9 in)	Stingers	Y	
Izette Griesel	C, WA	—	—	—	Y	
Khanyisa Chawane	C	14/01/1996	1.69 m (5 ft 7 in)	Crimzums	Y	
Bongiwe Msomi (c)	C, WA	19/01/1988	1.66 m (5 ft 5 in)	Wasps Netball	Y	• (c) – Captain • (cc) – Co-Captain • (vc) – Vice-Captain
Shadine van der Merwe	GD, GK, WD	25/11/1992	1.79 m (5 ft 10 in)	Surrey Storm	Y	• # – Injury / maternity leave • (TRP) – Temporary Replacement Player
Karla Pretorius	GD, WD	12/03/1990	1.81 m (5 ft 11 in)	Sunshine Coast Lightning	Y	
Phumza Maweni	GK, GD	04/09/1984	1.87 m (6 ft 2 in)	Sunshine Coast Lightning	Y	
Zanele Vimbelala	GD, GK	28/04/1989	1.82 m (6 ft 0 in)	Aloes	Y	

Player profiles: [Team website](#)

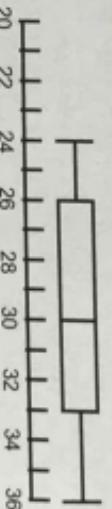
[Source: [wikipedia.org](https://en.wikipedia.org)]

Last updated: 23 May 2019

[Bron: [wikipedia.org](https://en.wikipedia.org)]

- 3.1.1 Determine how many different field positions there are in a netball team.

- 3.1.2 The box and whisker plot below shows the ages of the players in 2020. By referring only to the year in which they were born and the plot below, determine the names of the players who lie in the top 25% of this data set.



Ages of netball players/Ouderdomme van netbalspelers

(5)

- 3.1.3 The team coach calculated the average age of all her players including Izette Griesel to be 29,5 years. She estimated Izette Griesel's age to be 29 years. Show with calculations whether her estimate is correct.

- 3.1.4 Determine Izette Griesel's height (in feet and inches to 2 decimal places), if her height in metres is 1,9.

Note: $1 \text{ m} = 3,28 \text{ ft}$ and
 $1 \text{ ft} = 12 \text{ in.}$

- 3.1.5 Give a suitable reason why Izette Griesel's data is omitted.

- 3.1.6 Determine the probability that a netball player chosen at random from this team, plays in an Australian club team, indicated with an Australian flag

- 3.1.7 Determine the probability that a netball player chosen at random from this team, can play in a centre position (indicated with a "C") or play in an Australian club team, indicated with an Australian flag

- 3.1.1 Bepaal hoeveel verskillende veldposisies daar in 'n netbalspan is.

- 3.1.2 Die houer-en-punt-stipping hieronder toon die ouderdomme van die spelers in 2020. Bepaal die name van die spelers wat in die boonste 25% van hierdie datastel lê deur slegs na die jaar waarin hulle gebore is en die stipping hieronder te verwys.

- 3.1.3 Die spanaaglijster het bereken dat die gemiddelde ouderdom van al haar spelers met Izette Griesel ingesluit 29,5 jaar is. Sy het beraam dat Izette Griesel se ouderdom 29 jaar is. Toon met berkeninge of haar beraming korrek is. (5)

- 3.1.4 Bepaal Izette Griesel se lengte (in voete en duime tot 2 desimale plekke) indien haar lengte in meter 1,9 is.

Let wel: $1 \text{ meter} = 3,28 \text{ voet (ft)}$ en
 $1 \text{ voet} = 12 \text{ duim (in)}$ (4)

- 3.1.5 Gee 'n geskikte rede waarom Izette Griesel se data weggelaat is. (2)

- 3.1.6 Bepaal die waarskynlikheid dat 'n netbalspeler wat ewekansig uit hierdie span gekies word in 'n Australiese klubspan speel wat met 'n Australiese vlag aangedui word. (2)

- 3.1.7 Bepaal die waarskynlikheid dat 'n netbalspeler wat ewekansig uit hierdie span gekies word in 'n hierdie span eerder gesente (met 'n "C" aangedui) kan speel of in 'n Australiese klubspan (met 'n Australiese vlag aangedui) speel. (4)

The Netball World Cup was held in Liverpool, England, in 2019. The SPAR Proteas made it to the semi-finals. SPAR agreed that they would pay the team R200 000 if they got to the semi-finals, a quarter of a million rand if they came third, R150 000 if they came second and R1 million if they won the World Cup.

Although they did not win, SPAR decided to give the team a lump sum of R1.2 million which they would share amongst the players, the assistant coaches and the coach.

[Source: <www.sport24.co.za>]

Use the above information to answer the questions that follow.

3.2.1 If the team had won the World Cup, and if they had received 10% of the amount promised for qualifying for each of the rounds as incentives as well as the 1 million rand for winning, calculate the total accumulated amount the team would have received from SPAR.

3.2.2 If the lump sum money they received from SPAR was 9% more than the previous year, calculate the amount received in the previous year.

3.3 Below is a table of some of the results of the games played by the SPAR Proteas.

Match teams/ Wedstrydsopname	Datum/ Telling	Score/ Uitslag
SPAR Proteas vs England Roses	1/12/2019	54 – 48
SPAR Proteas vs England Roses	30/11/2019	53 – 59
Australian Diamonds vs SPAR Proteas	20/7/2019	53 – 55
SPAR Proteas vs England Roses	19/7/2019	47 – ?
SPAR Proteas vs Uganda	17/7/2019	65 – 37

H2



3.2

Die Netballwêreldkelder is in 2019 in Liverpool, Engeland, gehou. Die SPAR Proteas het dit gehaald en SPAR het bereik te betrek indien hulle die halfeindstryd bereik, 'n kwartmiljoen rand indien hulle derde kom, R750 000 indien hulle tweede kom en R1 miljoen indien hulle die Wêreldbekker wen. Alhoewel hulle nie gewen het nie, het SPAR besluit om die span 'n enkelbedrag van R1.2 miljoen te gee wat hulle tussen die spelers, die hulpvergaders en die afrijet sou verdeel.

[Bron: <www.sport24.co.za>]

Gebruik die inligting hierbo om die vrae wat volg te beantwoord.

3.2.1 Indien die span die Wêreldbekker gewen het en indien hulle 10% van die belangrikste beding as aansporing ontvang het vir kwalifiseering vir die kampioenskapselektiewe, soweel as die 1 miljoen rand vir die wens, bereken die totale oogloepie bedrag wat die span van SPAR sou ontvang het.

3.2.2 Indien die enkelbedrag geld wat hulle van SPAR ontvang het 9% meer was as die vorige jaar, bereken die bedrag wat in die vorige jaar ontvang is. (4)

Hieronder is 'n tabel van 'n paar van die uitslae van die wedstryde wat deur die SPAR Proteas gespeel is.

H2

3.3.1 Calculate the median points scored by the South African team.

3.3.2 Write down the final score of the match on the 19/7/2019 if the goal difference for South Africa was (-11).

3.3.3 Draw a stacked bar graph representing the scores of the South African team and the scores of their opponents for each match.

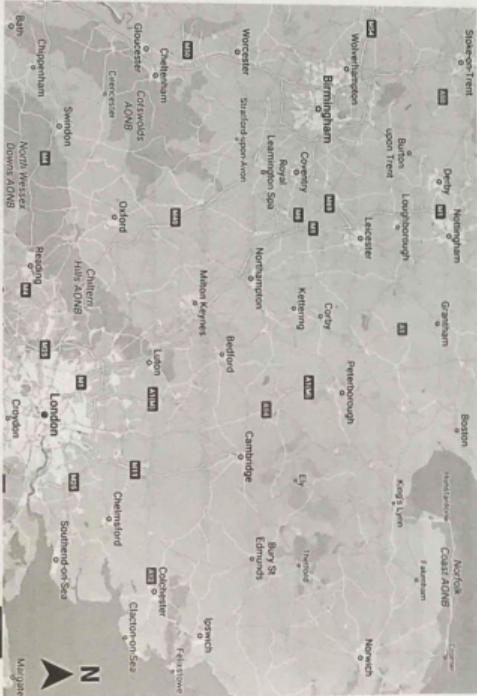
3.4 The SPAR Proteas played in 3 different cities in England, namely Nottingham, London and Birmingham as shown in the map of England below.

3.3.1 Bereken die medianspompunte wat deur die Suid-Afrikaanse span aangelewer is.

3.3.2 Skryf die aandeling van die wedstryd op 19/7/2019 neer indien die doelskotskalf vir Suid-Afrika (-11) wes.

3.3.3 Teken 'n stapesdiagramgrafiek wat die telling van die Suid-Afrikaanse span en die telling van hul opponente vir elke wedstryd voorstel.

3.4 Die SPAR Proteas het in 3 verskillende stede in Engeland gespeel, naamlik Nottingham, London en Birmingham soos op die kaart van Engeland hieronder aangedui.



Use the above map to answer the questions that follow.

3.4.1 Determine in kilometres the total distance as the crow flies from Nottingham to London to Birmingham.

Memo: 89; 90

Gebruik die kaart hierbo om die vrae wat volg te beantwoord.

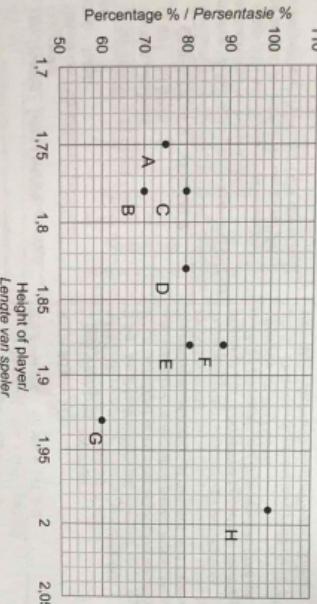
3.4.1 Bepaal in kilometer die totale afstand in 'n reël van Nottingham na Londen na Birmingham.

(6)

- 3.4.2** Die gemiddelde spoed van die toerbus was 37,28 miles/hour. Toon met berekenings dat dit ekwivalent is aan 60 km/h indien gegee word dat 1 km/h = 0,621371 miles/hour.
- 3.4.2** Die gemiddelde spoed van die toerbus was 37,28 myl/juur. Toon met berekenings dat dit ekwivalent is aan 60 km/h indien gegee word dat 1 km/h = 0,621371 myl/juur.

- 3.5** Below is a scatter plot that shows the goal rate percentage versus the height of the players.
- 3.5** Hieronder is 'n spreidingsdiagram wat die doelkeerspersentasie versus die lengte van die spelers toon.

**Percentage of goals scored vs height of the players/
Persentasie doele aangeteken vs lengte van die spelers**



3.5.1 Consider the following statement:

- "A player on this team that is 1.78 m tall has a goal success rate of 80%." Justify why this statement might be FALSE.

3.5.1 Overweeg die volgende stelling:

- "'n Speler in hierdie span wat 1.78 m lank is, het 'n doelsukseskoers van 80%." Reverdig waarom hierdie stelling daar ONWAAR kan wees.
- 3.5.2 Describe, in detail, the trend in the scatter plot by referring to the context. Refer to any possible outliers in your explanation.**
- 3.5.2 Beskryf die tendens in die spreidingsdiagram in detail deur na die konteks te verwys. Verwys in jou verduidelijking na enige moontlike uitloskere.**

Question 4

Vraag 4

- 4.1** Tshepo is a 75 year old male who currently earns a monthly gross salary of R14 000. He also still pays UIF, which is 1% of his gross salary and a monthly pension of R102.

- 4.2** Determine Tshepo's net monthly income.

- 4.3** Tshepo, at his age, would prefer not paying any income tax at all. Analyse his current monthly salary to determine how much less he must currently be earning for him to be exempt from paying tax.

[Source: www.sans.gov.za] [Brie: www.sans.gov.za] (11)

- 4.1** Tshepo is 'n 75-jarige man wat 'n maandelikse

- inkomste.

(3)

- 4.2** Bepaal Tshepo se netto maandelikse inkomste.

- 4.3** Op sy ouderdom sal Tshepo verkiets om glad nie enige inkomstebelasting te betaal nie. Ontleef sy huidige maandelikse salaris om te bepaal hoeveel minder hy tans moet verdien om van die belasting van belasting vrygestel te wees.

(5)

(19)

(150)

- 4.1** Tshepo sê dat as hy 10 jaar jonger was, younger, he would have paid R7 703,28 in annual taxes. Show with calculations whether Tshepo's statement is valid, using the Income Tax table below.

2020 tax year (1 March 2019 – 29 February 2020)

Taxable Income (R)	Rates of Tax (R)
1 - 195 650	18% of taxable income aboveven belabbare inkomste bo 195 650
195 651 - 305 850	35 253 + 20% of taxable income aboveven belabbare inkomste bo 195 650
305 851 - 423 300	63 883 + 31% of taxable income aboveven belabbare inkomste bo 305 850
423 301 - 555 600	100 263 - 36% of taxable income aboveven belabbare inkomste bo 423 300
555 601 - 708 310	147 891 + 39% of taxable income aboveven belabbare inkomste bo 555 600
708 311 - 1 500 000	207 448 + 41% of taxable income aboveven belabbare inkomste bo 708 310
1 500 001 and aboveven meer	532 041 + 45% of taxable income aboveven belabbare inkomste bo 1 500 000

Tax Rebate/Belastingkorting	Tax Year/Belastingjaar	Tax Threshold/Belastingdempel
Primary/Primêre	2020	
Secondary (65 and older)/ Sekondêre (65 en ouer)	R14 220	R19 000
Tertiary (75 and older)/ Tertiêre (75 en ouer)	R7 794	R122 300
	R2 601	R136 750

[Source: www.sans.gov.za] [Brie: www.sans.gov.za] (11)

- 4.1** Tshepo sê dat as hy 10 jaar jonger was, younger, he would have paid R7 703,28 in annual taxes. Show with calculations whether Tshepo's statement is valid, using the Income Tax table below.

Tshepo sê dat as hy 10 jaar jonger was, younger, he would have paid R7 703,28 in annual taxes. Show met berekeninge dat dit ekwivalent is aan 60 km/h indien gegee word dat 1 km/h = 0,621371 miles/hour.

H2