

EXAMINATION	NATIONAL SENIOR CERTIFICATE
GRADE	12
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PAPER	1
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DURATION (HOURS)	3
NUMBER OF PAGES	20



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
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INSTRUCTIONS AND INFORMATION

1. This question paper consists of **5** questions and **20** pages.
2. Answer **ALL** the questions.
3. Number the answers according to the numbering system used in the question paper.
4. Use the Annexure as follows:
ANNEXURE A to answer **QUESTION 2.1.5**
5. Use the Answer sheets as follows:
ANSWER SHEET 1 to answer **QUESTION 4.1.3** and **QUESTION 4.1.5**
ANSWER SHEET 2 to answer **QUESTION 4.4.3**
6. Start each question on a new page.
7. An approved non-programmable and non-graphical calculator may be used.
8. Show **ALL** calculations clearly.
9. Round off **ALL** final answers according to the context, unless otherwise stated.
10. Indicate **ALL** units where applicable. Units **MUST** be shown in final answers.
11. Diagrams are **NOT** necessarily drawn to scale, unless otherwise stated.
12. Write neatly and legibly, in **BLUE** ink only.

QUESTION 1

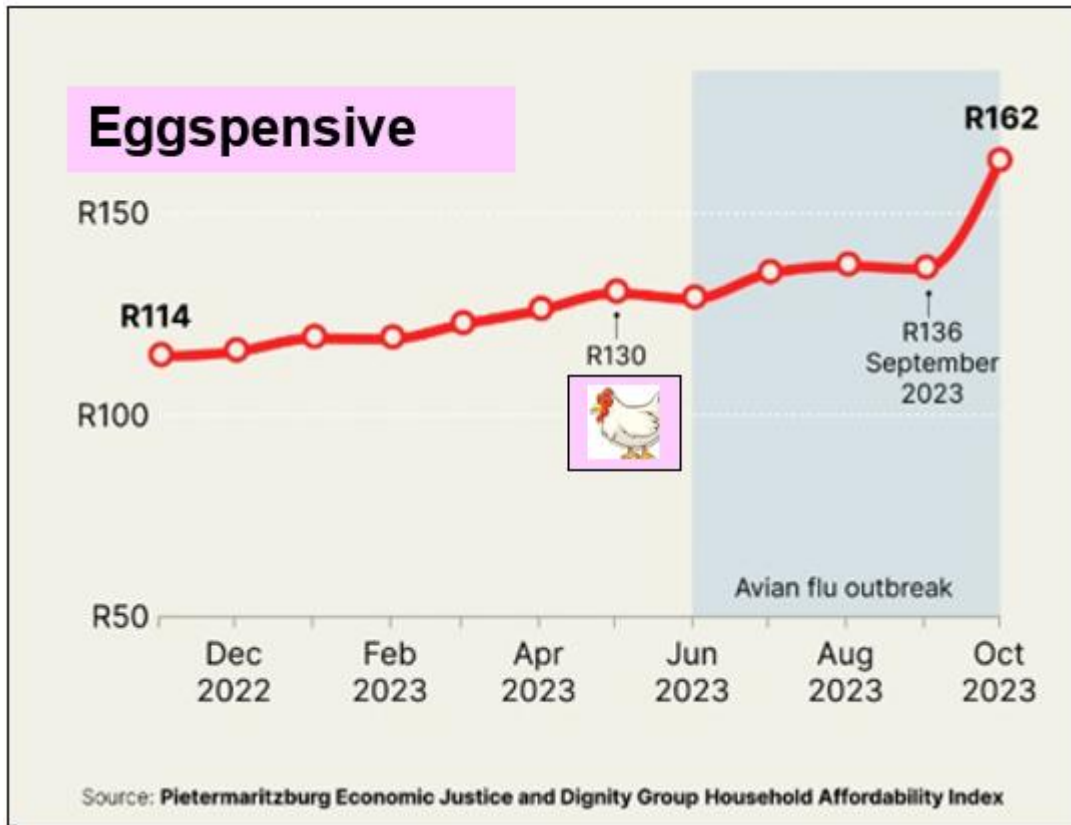
- 1.1 Astral Foods Ltd posted its first-ever loss in 23 years, as power outages and the most severe avian (bird) flu outbreak in its history led to rising costs for the South African company. The country's second-largest poultry producer by market value recorded a net loss of R512 million for the 12 months ending September 2023, a sharp decline from the R1,07 billion profit it reported the previous year. As a result, consumers faced a 50% increase in the price of a carton of 60 eggs.

[Source: <https://www.bloomberg.com/news/articles/2023-11-20/bird-flu-power-cuts-spawn-first-loss-at-south-africa-s-astral> and <https://www.enca.com/top-stories/significant-increase-poultry-product-prices>]

Use the above information to answer the questions that follow.

- 1.1.1 Write 1,07 billion using numerals only. (2)
- 1.1.2 Complete the following sentence by selecting the correct word from the options given in the bracket.
Profit is an amount of money that you (**gain/lose**) when you receive more for something than it cost you. (2)
- 1.1.3 Answer TRUE or FALSE.
- a. Astral Foods Ltd is a South African company. (2)
- b. A R512-million net loss is equivalent to a R0,512 billion net loss. (2)
- c. Astral Foods Ltd experienced a similar loss before. (2)
- d. In September 2023, consumers were paying double of what they were paying for 60 eggs prior to September 2023. (2)
- 1.1.4 The government decided to compensate farmers by providing R50 for each bird that died. Calculate the total compensation amount received if a farmer lost 500 birds. (2)
- 1.1.5 The risk of human transmission was estimated at 0,03% during the avian flu outbreak. If the South African population is 60 million, calculate the expected number of human cases. (3)

1.2 According to the data, the cost of 60 eggs increased between November 2022 and October 2023.



[Source: <https://businesstech.co.za/news/lifestyle/729867/egg-prices-shoot-up-in-south-africa/>]

Use the above information to answer the questions that follow.

- 1.2.1 Name the type of graph represented above. (2)
- 1.2.2 Over how many months was this data collected? (2)
- 1.2.3 During which month in 2023 did consumers pay R130 for 60 eggs? (2)
- 1.2.4 Calculate the price increase for 60 eggs from September 2023 to October 2023. (2)

[25]

QUESTION 2

2.1 Dr Sipehele Moepi, a 48-year-old veterinarian at Greenside Animal Hospital in Johannesburg, is contemplating emigrating to boost his income. Below is an incomplete salary slip for March 2024, with his PAYE contribution and total deductions missing.

Veterinarian: A doctor that maintains the health and welfare of animals and treats sick or injured animals.

[Source: SAVC.org.za]

Greenside Animal Hospital				SALARY SLIP
252 Barry Hertzog Ave, Greenside, Johannesburg, 2193				
Contact: (011) 6464210				
EMPLOYEE INFORMATION		PAY DATE	PAY TYPE	PRACTICE NUMBER
Full Name: Dr Sipehele Moepi		2024/03/31	Monthly	2437465
Vilakazi Street, Soweto, JHB		PAYROLL #	PAYMENT METHOD	TAX NUMBER
South Africa		1234567	EFT	1056739875
Phone: +27 83 567 8633				
Email: s.moepi@greenside.co.za				
EARNINGS				
Basic salary		R27 300		
Travel allowance		R1 200		
GROSS EARNING		R28 500		
DEDUCTIONS				
PAYE tax				
Pension Fund			R1 500	
Medical Aid - Discovery Classic			R1 250	
UIF			R177,12	
TOTAL DEDUCTIONS				

[Source: <https://www.greensidevet.co.za/contact-us/> and <https://www.salaryexplorer.com/average-salary-wage-comparison-south-africa-veterinarian-c201j6235>]

Study the above information and then answer the questions on the following page.

2.1.1 Match the words in the second column with the correct definitions in the first column. For example: F: Gross salary.

DEFINITION	WORDS
A. An amount of money deducted from your income tax dependent on your age.	Taxable Income
B. The salary that the employer pays you before any deductions.	Tax threshold
C. If you are earning less than this amount of money (annually), you do not pay tax as this means you are earning less than the taxable salary.	Gross salary
D. The gross salary less the tax deductibles.	Medical aid tax credits
E. This is a form of tax relief provided by the government for those who contribute to a medical aid scheme.	Rebate

(5)

2.1.2 The maximum contribution for the Unemployment Insurance Fund (UIF) has increased from R1 784,64 per year to R2 125,44 per year, effective from 1 June 2021.

An employee contributes 1% of their gross monthly salary to the UIF.

[Source: Bowmanslaw.com]

Explain with calculations why Dr. Moepi's salary slip reflects a UIF payment of R177,12.

(3)

2.1.3 When contributing to a pension fund, a person qualifies for a maximum tax deduction of up to **27,5%** of their taxable income.

[Source: <https://www.taxtim.com/za/guides/tax-investments-what-you-need-to-know/>]

Use calculations to show that Dr Moepi can deduct the full R1 500 he contributes towards a pension fund each month for tax purposes.

(3)

2.1.4 Show, with calculations, that Dr Moepi's annual taxable income is R324 000.

(3)

2.1.5 Use the 2023/2024 tax table in **ANNEXURE A** to answer the questions that follow.

a. In which tax bracket will Dr Moepi's tax be calculated? (2)

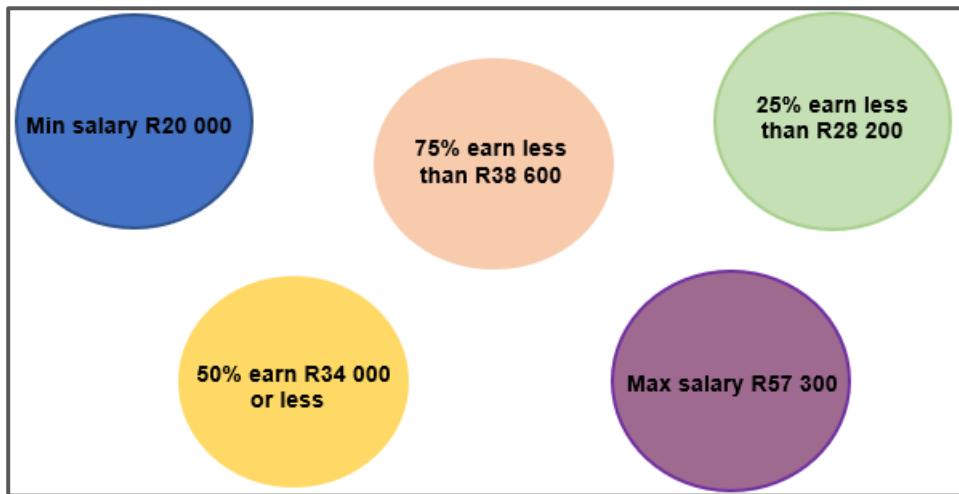
b. Calculate the total annual tax he owes before any deductions. (3)

c. Dr Moepi has a wife and a daughter for whom he contributes to medical aid. Calculate his annual medical aid tax credit. (3)

d. Calculate his final monthly tax payable after deductions. (5)

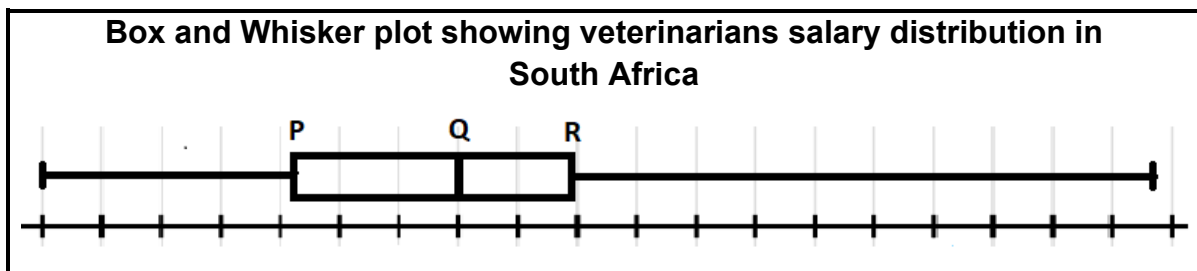
e. Hence, calculate Dr Moepi's nett monthly income. (2)

2.2 Dr Moepi searches online to determine if his monthly salary is fair. He finds the following information which shows the monthly salaries of veterinarians in South Africa.



[Source: <https://www.salaryexplorer.com/average-salary-wage-comparison-south-africa-veterinarian-c201j6235/>]

The Box and Whisker plot below shows the above salary distribution values (in thousands of rands).



Use the above information to answer the questions that follow.

2.2.1 Write only the correct salary amounts next to the letters **P**, **Q** and **R**. (3)

2.2.2 Calculate the interquartile range. (2)

2.2.3 In your opinion, does Dr Moepi feel he is underpaid? Give a reason for your answer. (2)

2.2.4 Dr Moepi receives an increase in salary in 2025. His amended salary is R29 250 a month.

[Source: <https://www.axiomatic.co.za/2025/02/06/south-africa-2025-salary-forecast-feb-2025/>]

Use calculations to show that this increase does not fall in line with an inflation rate of 4,1%. (3)

[39]

QUESTION 3

3.1 Taylor Alison Swift is an American singer-songwriter who has gained significant public attention and built a massive fan following. Through her song writing, artistry, entrepreneurship, and advocacy, she has made a profound impact on the music industry, popular culture, and politics. Her net worth is reportedly estimated at 1,1 billion US dollars.

[Source: https://en.wikipedia.org/wiki/Taylor_Swift]

Taylor Swift generates income from several sources. Below is a table showing her earnings from touring.

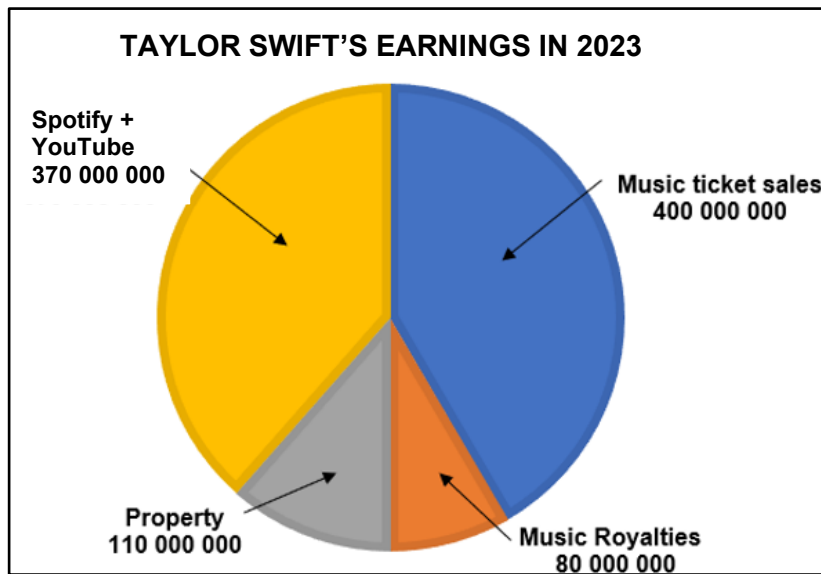
Earnings from touring			
NAME OF TOUR	YEARS	SHOWS	EARNINGS
Fearless Tour	2009 – 2010	118	\$66,5 million
Speak Now Tour	2011 – 2012	110	\$123,7 million
The Red Tour	2013 – 2014	86	\$150,6 million
1989 World Tour	2015	85	\$250,7 million
Reputation Stadium Tour	2018	53	\$345,7 million
Eras Tour	2023 – 2024	151	\$1,1 billion

[Source: <https://chisto.com/taylor-swift-stats-2024-interesting-facts-and-world-records/>]

Use the above information to answer the questions that follow.

- 3.1.1 Determine how many shows Taylor Swift performed between 2009 and 2024. (2)
- 3.1.2 Determine Taylor Swift’s median earnings. (2)
- 3.1.3 Identify the outlier in the earnings column. (2)

3.2 Taylor Swift’s total earnings in 2023 was \$960 million. Shown below are the sources of Taylor Swift’s earnings in dollars for 2023.



[Source: <https://chisto.com/taylor-swift-stats-2024-interesting-facts-and-world-records/>]

Use the above information and pie chart to answer the questions that follow.

- 3.2.1 Write down her total earnings for 2023. (2)
- 3.2.2 Show, with calculations, that the percentage of her total earnings from music ticket sales in 2023 was 41,67% rounded to two decimal places. (3)
- 3.2.3 A YouTuber claims that the section for music ticket sales on the pie chart measures 120° . Verify, with calculations, whether the YouTuber’s claim is valid, without using a protractor. (3)

3.3 Beyoncé and Rihanna are also artists who made it to the top 5 ranking list.

- 3.3.1 In a survey of music listeners, it was found that 50% of respondents chose Taylor Swift as their favourite female artist, 30% chose Rihanna and 20% chose Beyoncé. Determine the probability of randomly choosing a respondent that does not select Rihanna as their favourite artist. (2)

3.3.2 Together, Taylor Swift and Rihanna, have sold a total of 174 million albums worldwide as solo artists.

[Source: Wikipedia]

If the ratio of Taylor Swift’s album sales to Rihanna’s album sales is estimated at 2:1, calculate how many albums each artist sold worldwide. (4)

3.3.3 Taylor Swift’s latest album, The Tortured Poet’s Department, sold 2,4 million albums in its first five days.

[Source: Billboard.com]

If the album continues to sell at the same rate, calculate how much money she will earn in a full four-week sale.

(4)

3.4 Taylor Swift has many followers and subscribers over multiple social media platforms. The data representing her social media following is shown below.



[Source: Techreport.com]

Show, using calculations, that Taylor Swift had a total of more than 500 000 000 followers across all platforms during 2024.

(3)

[27]

QUESTION 4

- 4.1 Peter is the manager of a cleaning business called SkitterBlink. SkitterBlink cleans homes, offices and restaurants.



The monthly expenses for his business include the following:

- R8 000 for wages and
- R50 per hour or part thereof for water, soap and electricity.

Peter charges R525 per hour for the cleaning of a home or office.

[Source: www.skitterblink.co.za]

Use the above information to answer the questions that follow.

- 4.1.1 If n represents the number of hours worked, identify which formula given below represents Peter's income and which one represents his expenses.

Formula 1	$525n$
Formula 2	$8\,000 + 50n$

(2)

- 4.1.2 Use the given formulae in QUESTION 4.1.1 to find the missing values **A**, **B** and **C** in the table below.

(3)

Number of hours	0	5	10	30	C
Expenses	R8 000	A	R8 500	R9 500	R10 500
Income	B	R2 625	R5 250	R15 750	R26 250

- 4.1.3 Use the completed table in QUESTION 4.1.2 to draw the expenses graph on the set of axes provided on **ANSWER SHEET 1**. The income graph has already been drawn for you.

(3)

- 4.1.4 Select the correct definition for the break-even point in the context of this question. Write the definition number only.

Definition 1	The point where SkitterBlink's income and expenses are equal.
Definition 2	The point where SkitterBlink starts making a loss.
Definition 3	The point where SkitterBlink starts making a profit.

(2)

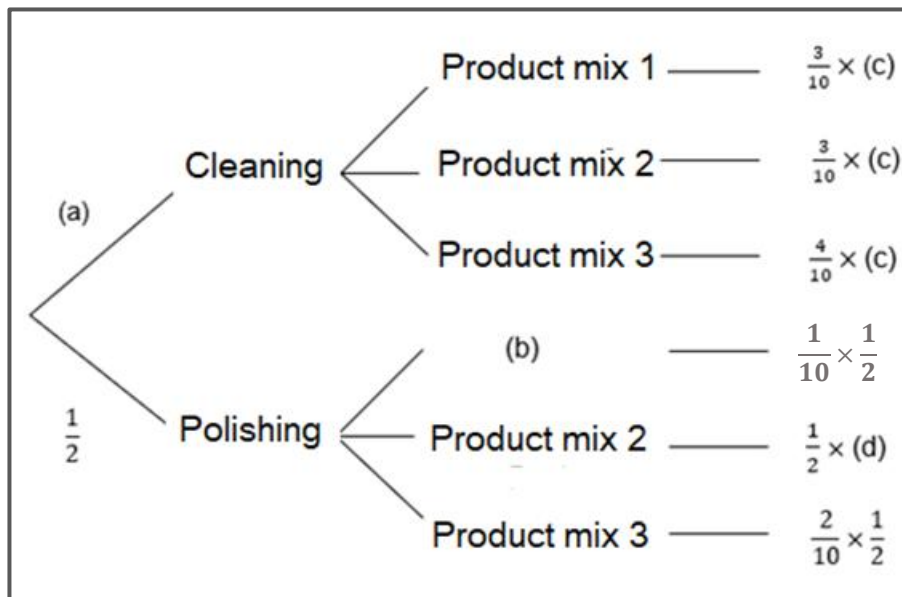
4.1.5 Using your graph from QUESTION 4.1.3, determine the number of hours that must be worked for SkitterBlink to break-even. Label this point as **X** on your graph. (2)

4.1.6 Peter aims to make a profit of R15 750. Calculate the number of hours he needs to work in order to achieve this goal. (4)

4.2 Sarah, who works for SkitterBlink, has a range of cleaning materials in her trolley. She has an equal number of cleaning products and polishing products. The table below shows the distribution of 3 product mixes she can randomly choose from.

Cleaning material	Cleaning	Polishing
Product mix 1	3	1
Product mix 2	3	7
Product mix 3	4	2

4.2.1 Use the above information to complete the tree diagram below. Write down only the LETTER of the alphabet and your ANSWER next to it.



(4)

4.2.2 Determine the probability, that if Sarah picks a product mix at random, that she will pick polishing product mix 2. (2)

4.3 Customers have been complaining that SkitterBlink uses a significant amount of water at the customer’s expense during cleaning. They believe they should receive a discount based on the amount of water the cleaners use.

In response, Peter decides to investigate the cost of water, by looking at the domestic water tariff table below.

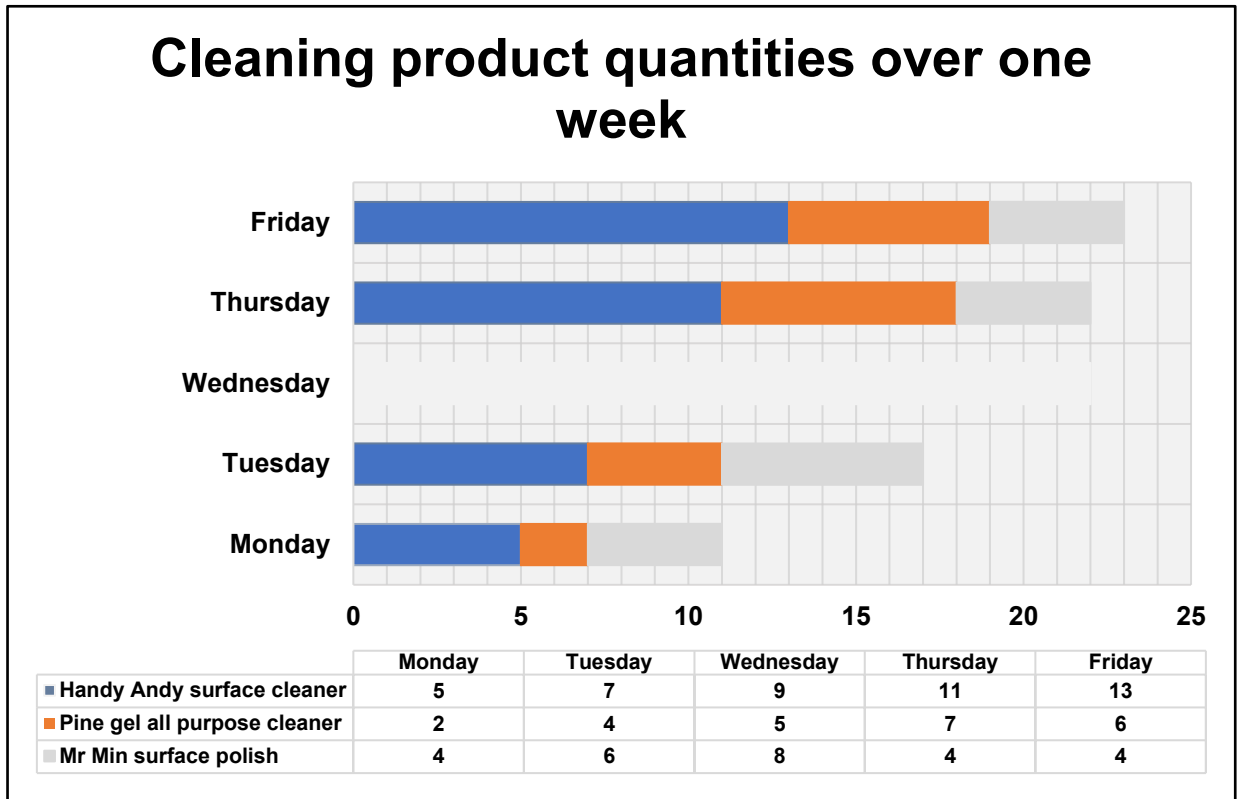
Water tariffs (Domestic Full and Domestic Cluster)	
Water steps 1kℓ = 1000 litres	Rands (incl. VAT) per kℓ
Step 1 (More than 0kℓ to 6kℓ)	R33,24
Step 2 (More than 6kℓ to 10,5kℓ)	R52,90
Step 3 (More than 10,5kℓ to 20kℓ)	R115,00
Step 4 (More than 20kℓ to 35kℓ)	R345,00
Step 5 (More than 35kℓ to 50kℓ)	R920,00
Step 6 (More than 50kℓ)	R920,00

[Source: <https://www.iol.co.za/capeargus/news/everdropcounts-with-new-water-tariffs-heres-what-capetonians-now-pay-15788261> - ammended]

Use the above water tariff table to calculate the total cost of consuming 37 kℓ of water.

(6)

4.4 Peter is concerned about the quantity of cleaning products his staff uses in a week. He selected his top 3 most used products, collected data, and created the stacked bar graph below.



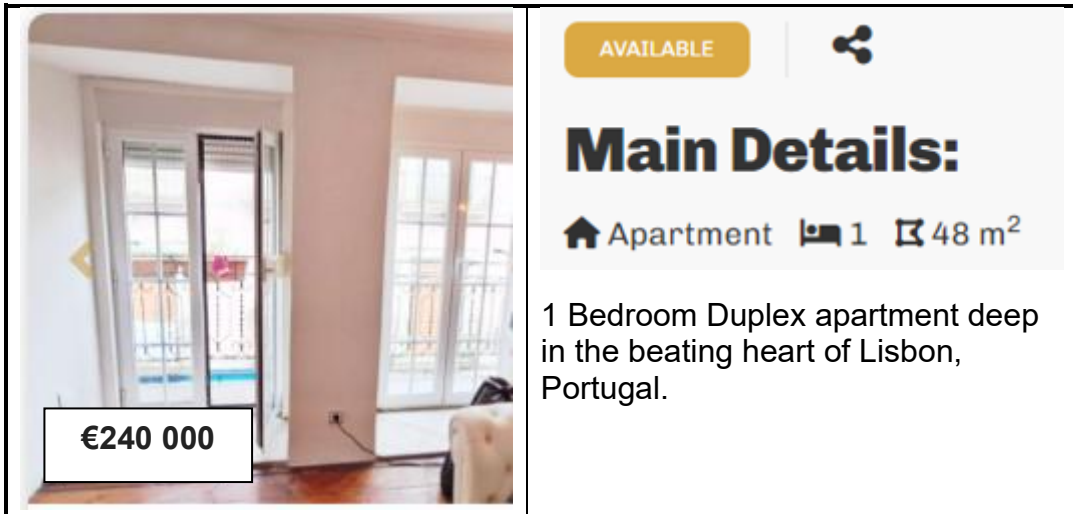
Use the above graph to answer the questions that follow.

- 4.4.1 Calculate the total number of products used during this week. (2)
- 4.4.2 Show, using a calculation rounded to the nearest percentage, that Pine gel contributed to 25% of the total quantities of products used for the week. (3)
- 4.4.3 The data for Wednesday has been omitted. Complete the bar graph on the graph given on **ANSWER SHEET 2**. (3)
- 4.4.4 If the pattern in the graph continues, determine how much Handy Andy will be used the following week Monday. (2)

[38]

QUESTION 5

- 5.1 Tshepiso wants to move to Portugal after she has matriculated. Her parents decide to buy property there and rent it out as an investment until Tshepiso finishes her studies. They start looking around and discover the following apartment for sale.



€240 000

AVAILABLE

Main Details:

🏠 Apartment 🛏️ 1 📏 48 m²

1 Bedroom Duplex apartment deep in the beating heart of Lisbon, Portugal.

[Source: <https://www.portugalhomes.com/>]

Use the above information to answer the questions that follow.

- 5.1.1 Commission is the fee paid to the sales agent for their services. It is a percentage of the agreed sale price negotiated at the time of the listing of a property.

Her parents need to pay the sales agent a commission of 2,3% on the sale of the house.

Calculate, in €, the cost of the commission.

(2)

- 5.1.2 Other costs associated with the sale include bond registration, transfer fees and an initiation fee. These costs amount to R18 810,00 which is equivalent to €944,29.

[Source: <https://www.revolut.com/currency-converter/convert-eur-to-zar-exchange-rate/?amount=1>]

Calculate the exchange rate, rounded to two decimal places, in the form:

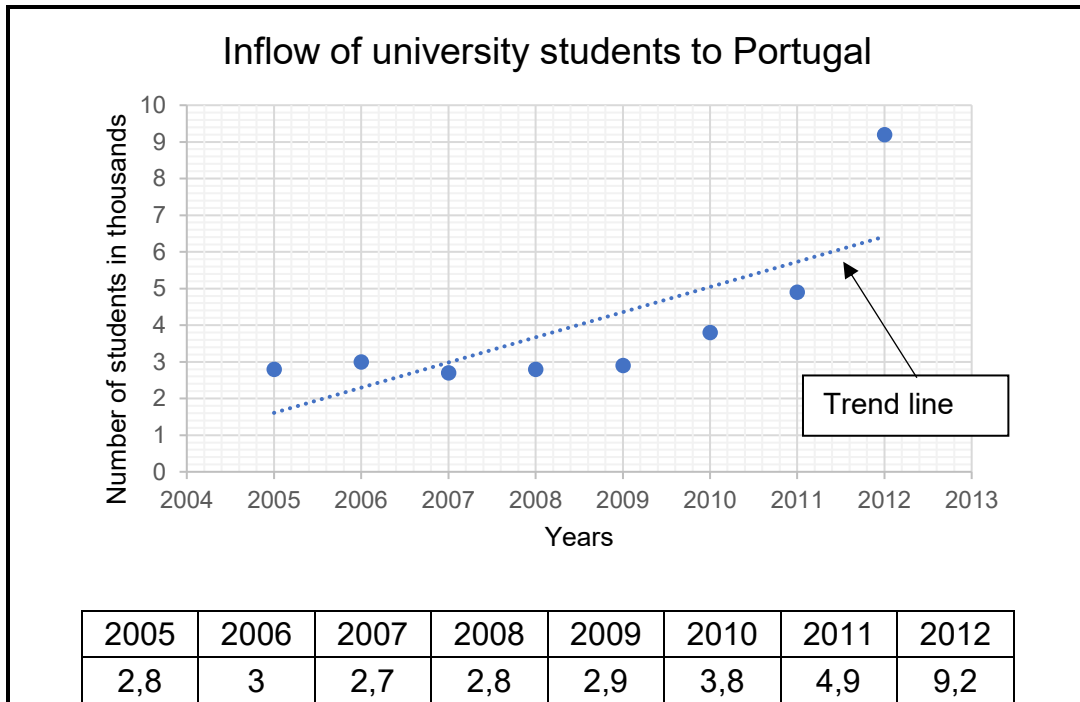
€1 = R.....

(3)

- 5.1.3 The bond registration cost for the €240 000,00 apartment is €31 200,00. Calculate, the bond registration cost as a percentage of the cost of the apartment.

(3)

5.2 Tshepiso plans to study nursing. While researching universities in Portugal, she found an article that mentioned Portugal experienced a significant influx of university students from European countries between 2005 and 2012. The representation below shows the inflow of university students to Portugal.



[Source: <https://www.statista.com/statistics/434890/portugal-inflow-of-university-students-from-european-countries/>]

Use the above representation to answer the questions that follow.

5.2.1 Choose from the word block below the type of chart represented above.

Bar Graph	Line graph	Scatterplot
-----------	------------	-------------

(2)

5.2.2 The type of data represented is (**discrete/continuous**) data. Write down only the correct word from the options in brackets.

(2)

5.2.3 Determine the year in which there was the least deviation from the trend line. Determine the number of students that came to Portugal during that year.

(2)

5.3 Tshepiso's parents plan to save for her studies in Portugal by investing R10 000 for two years with compound interest. In the first year, the interest rate is 4,3% per annum, and in the second year, the interest rate increases to 5,1% per annum.

Calculate the total amount Tshepiso's parents will receive at the end of the two years.

(4)



- 5.4 After conducting research, Tshepiso's parents determined that it would be more cost-effective to purchase the textbooks required for her studies in South Africa, rather than in Portugal, so that she can bring them with her.

[Source: <https://webuytextbooks.co.za/collections/all/netcare-nursing>]

If the textbooks cost R7 650 in total, including 15% VAT, calculate the total cost before 15% VAT was added.

(3)

[21]

GRAND TOTAL: [150]

ANNEXURE A

QUESTION 2.1.5: Dr Moepi's PAYE calculation

Annual taxable income (R)	Rates of tax (R)
1 – 226 000	18% of taxable income
226 001 – 353 100	40 680 + 25% of taxable income above 226 000
353 101 – 488 700	73 726 + 31% of taxable income above 353 100
488 701 – 641 400	115 762 + 36% of taxable income above 488 700
641 401 – 817 600	170 734 + 39% of taxable income above 641 400
817 601 – 1 731 600	239 452 + 41% of taxable income above 817 600
1 731 601 and above	614 192 + 45% of taxable income above 1 731 600

Tax Rebates		Tax Thresholds	
Tax rebate	Tax Year 2024	Age	Tax Year 2024
Primary (Under 65)	R17 235	Under 65	R95 750
Secondary (65 years and older)	R9 444	65 and older	R148 217
Tertiary (75 years and older)	R3 145	75 and older	R165 689

Monthly Medical Aid Tax Credits	
Principal Member	R364
First dependent	R364
Each additional dependent	R246

[Source: <https://www.sars.gov.za/tax-rates/income-tax/rates-of-tax-for-individuals/>]

ANSWER SHEET 1 (ATTACH TO ANSWER BOOK)

QUESTION 4.1.3 and 4.1.5: SkitterBlink Costing Structure

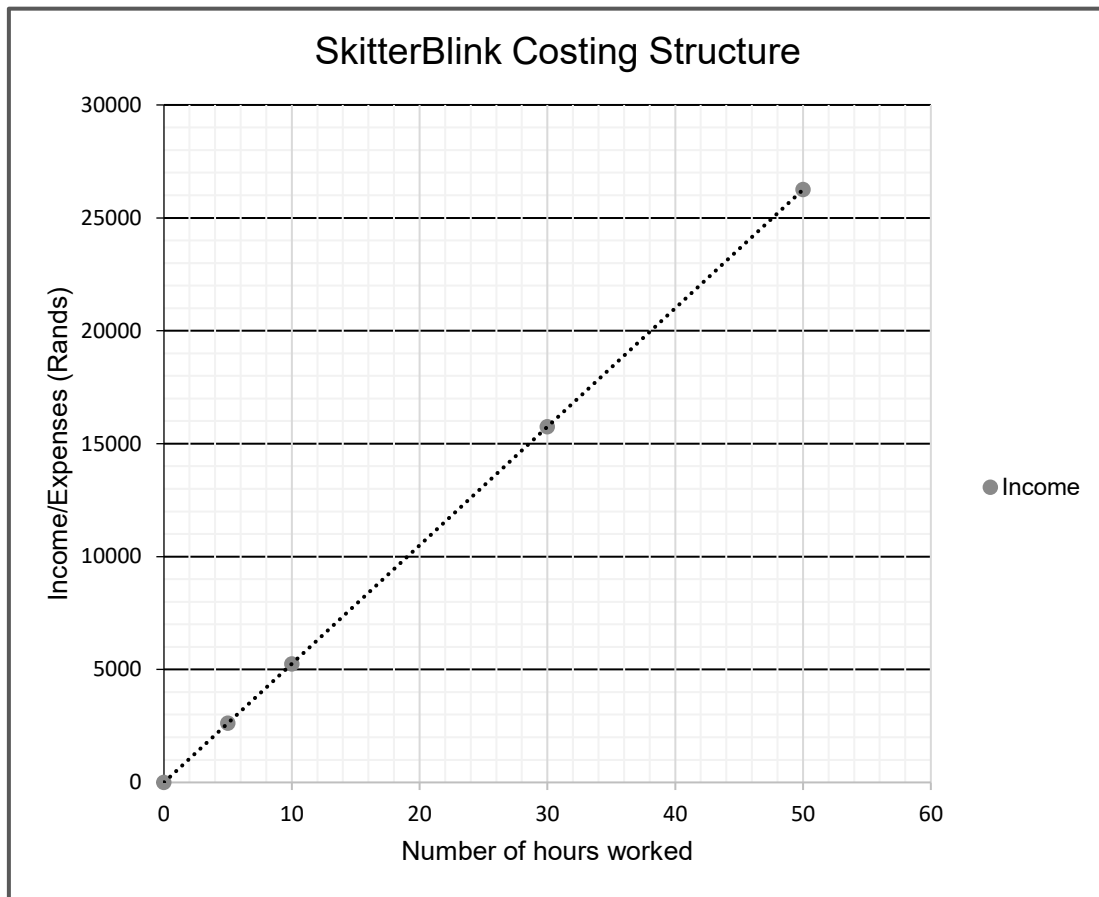
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4.1.3



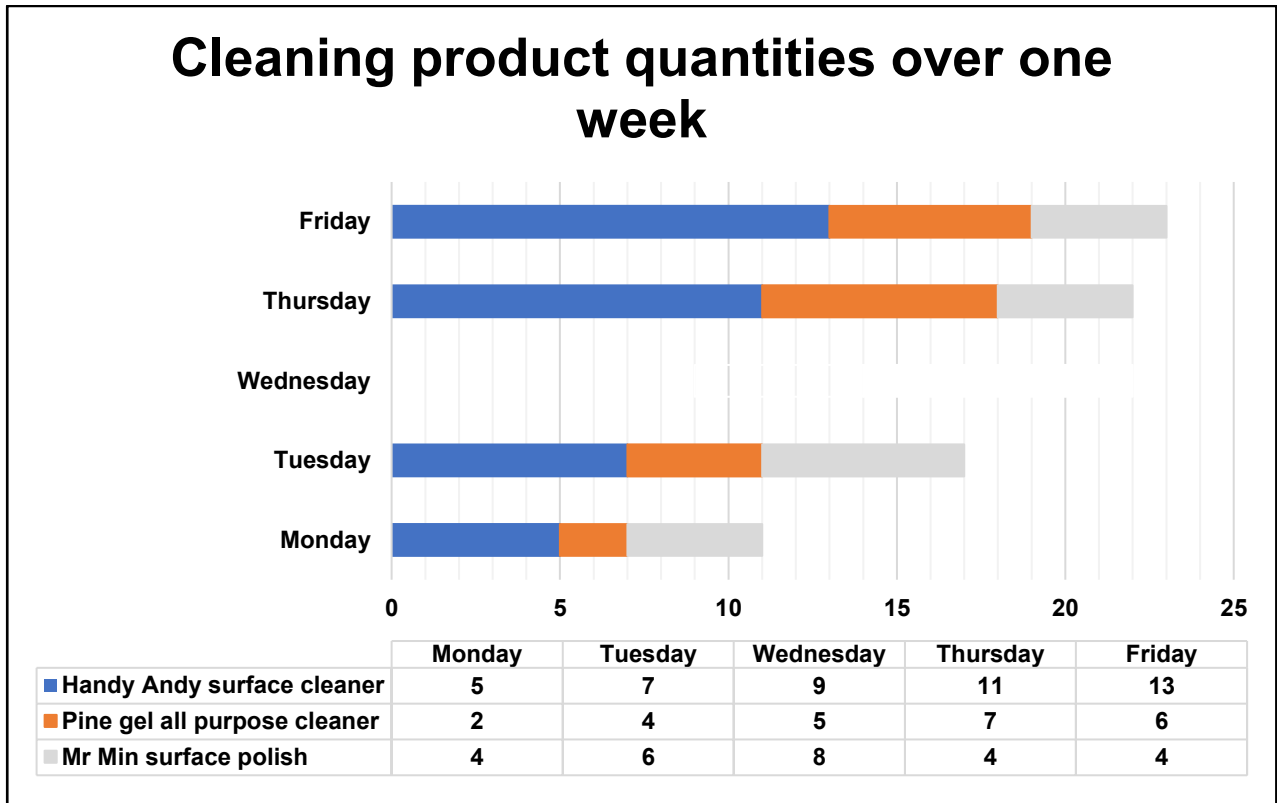
(3)

4.1.5

(2)

ANSWER SHEET 2 (ATTACH TO ANSWER BOOK)

QUESTION 4.4.3: SkitterBlink Cleaning Products



(3)