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INSTRUCTIONS AND INFORMATION

1. This question paper consists of **5** questions and **14** pages.
2. Answer **ALL** the questions.
3. Number the answers according to the numbering system used in the question paper.
4. Start each question on a new page.
5. An approved non-programmable and non-graphical calculator may be used.
6. Show **ALL** calculations clearly.
7. Round **ALL** final answers off according to the context, unless stated otherwise.
8. Indicate **ALL** units where applicable. Units **MUST** be shown in final answers.
9. Maps and diagrams are **NOT** necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly, in **BLUE** ink only.



QUESTION 1

- 1.1 Pokémon Day is celebrated annually on 27 February, marking the global impact of Pokémon, from the games and TV series to the trading cards.



The first set of trading cards, featuring 102 cards, was released on 20 October 1996. Pokémon card tournaments began, and today there is even a world championship tournament.

Over 30 billion Pokémon cards have been printed, with rare cards sometimes selling for hundreds of thousands of pounds.

The most expensive Pokémon card ever sold at an auction was a first edition holographic shadow-less Charizard card, which fetched £262 000 in 2020.

[Source adapted from: <https://www.bbc.co.uk/newsround/56167405#:~:text=The%20first%20set%20of%20cards,the%20rest%20of%20the%20world.>]

Use the above information to answer the questions that follow:

- 1.1.1 Determine how old the first set of trading cards are this year. (2)
- 1.1.2 State whether the following is TRUE or FALSE. The first Pokémon World Championship tournament started on 20 October 1996. (2)
- 1.1.3 Write out the value of 30 billion using numerals only. (2)
- 1.1.4 Choose the correct word, in brackets, that would make the following statement true:
The likelihood of drawing a sports card from a pack of Pokémon cards is **(certain or impossible)**. (2)



- 1.2 Crown Zenith booster packs are renowned for their exceptional pull rates.

Analysis of over 1 900 opened booster packs reveals that each pack has approximately a 49% chance of containing an amazing card such as an Ultra Rare, Secret Rare, or Galarian Gallery card.

This high pull rate makes Crown Zenith a particularly rewarding set for collectors seeking rare and valuable cards. The table below shows the pull-rate of these rare cards.



Amazing card name	Pull-Rate
Elesa's Sparkle Full Art (Ultra Rare)	$\frac{1}{613}$
Pikachu (Secret Rare)	$\frac{1}{133}$
Charizard VSTAR (Galarian Gallery)	$\frac{1}{273}$

[Source adapted from: <https://www.pokemoncoders.com/pokemon-sets-with-best-pull-rates/>]

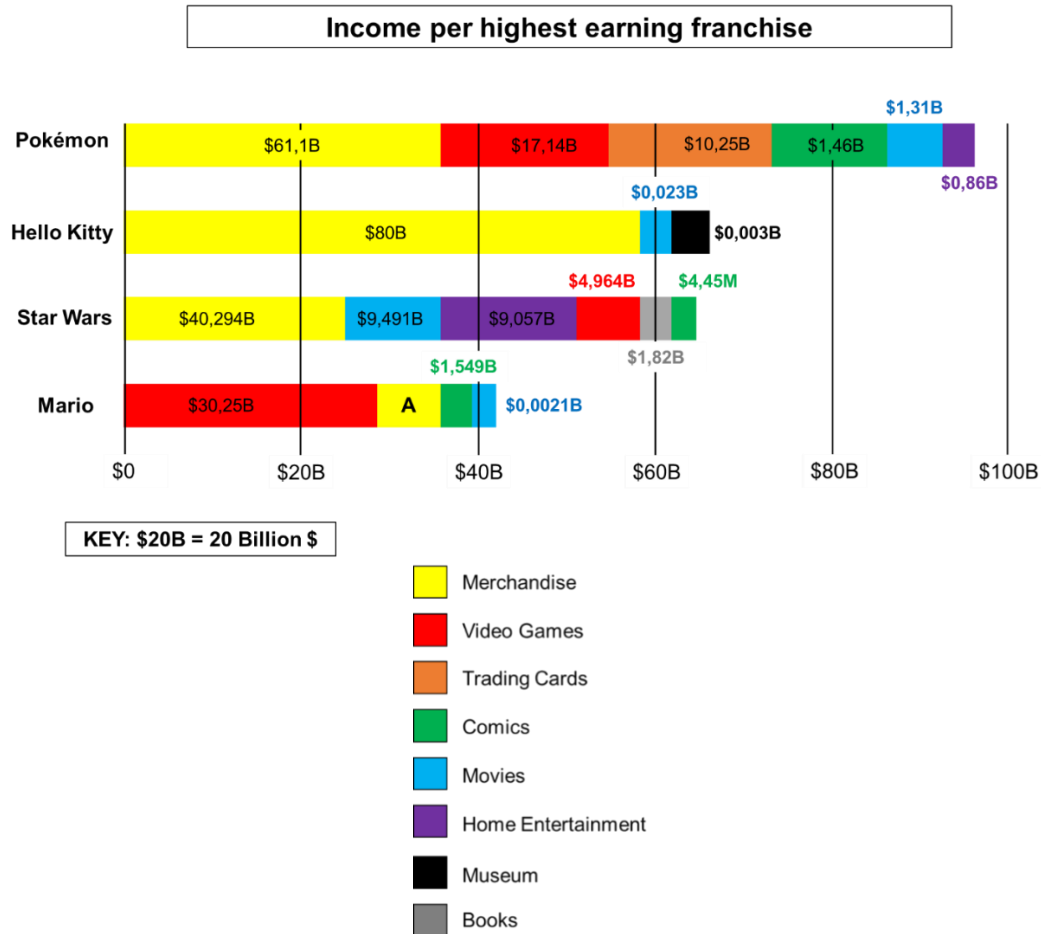
Use the above information to answer the questions that follow:

- 1.2.1 Calculate the number of amazing cards that can possibly be found in a pack of 1 900 booster cards. (2)
- 1.2.2 State whether the following statement is TRUE or FALSE.
The probability of pulling a Pikachu secret rare card is 1 out of 613 cards. (2)
- 1.2.3 Which pull-rate card mentioned in the table is the least likely to happen? (2)



1.3

The following graph compares four of the highest earning revenue franchises, namely Pokémon, Hello Kitty, Star Wars, and Mario, highlighting their respective revenues earned from different sales.



[Source adapted from: <https://public.com/learn/holographic-charizard-pokemon-card-deep-dive?wpsrc=Organic+Search&wpsn=www.google.com>]

Use the above information to answer the questions that follow:

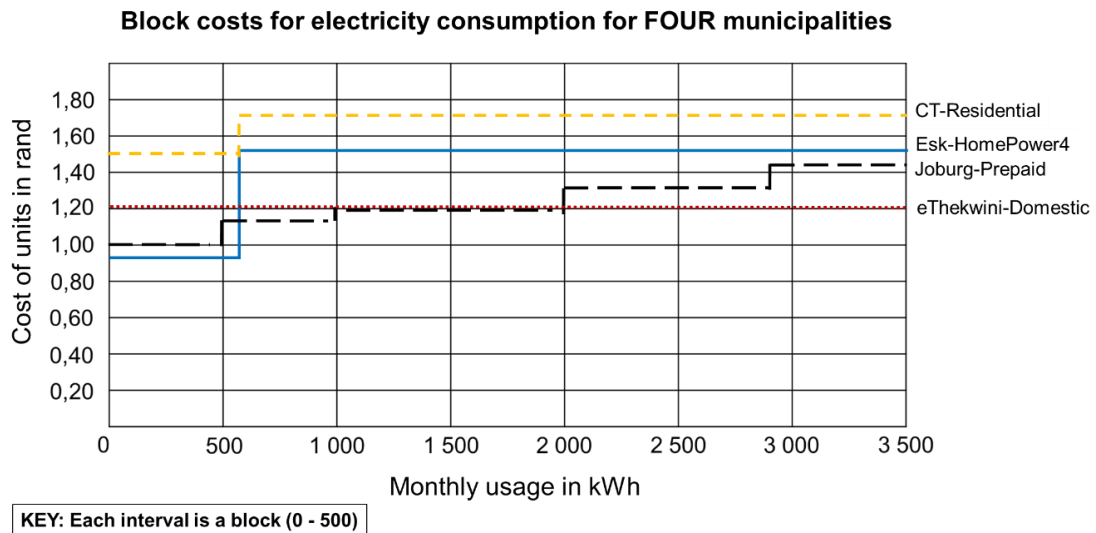
- 1.3.1 Name the type of graph shown above. (2)
- 1.3.2 Identify the unit of currency used in the above graph. (2)
- 1.3.3 Calculate the total revenue earned by the Hello Kitty franchise. (2)
- 1.3.4 Identify the only franchise that has a museum exhibition. (2)
- 1.3.5 Name the franchise that includes books. (2)
- 1.3.6 Write down the total earnings from the Star Wars Comics. (2)
- 1.3.7 If the total earnings for the Mario franchise is \$36,143 billion, show that the missing value A is equal to \$4,3419 billion. (2)
- 1.3.8 Name the franchise with the biggest video game gross earnings. (2)

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QUESTION 2

- 2.1 Most homes in South Africa are billed using a stepped block tariff system for electricity. Looking across the larger municipalities it seems there aren't any national rules as to when the blocks start and end or how many blocks there can be, as shown in the following graph.



[Source adapted from: <https://homebug.com/2013/08/13/electricity-tariffs/>]

Use the above graph to answer the questions that follow:

- 2.1.1 Define the term *tariff*. (2)
- 2.1.2 Identify which municipality does not use block electricity tariffs. (2)
- 2.1.3 Write down the fixed rate charged by Joburg-Prepaid in block 1. (2)
- 2.1.4 State which municipality is the cheapest in block 1. (2)
- 2.1.5 Determine which municipality is the cheapest for 3 000 kWh. (2)
- 2.1.6 Choose the municipality that will be most economical for a household that consumes an average of 1 000 kWh a month. (2)



- 2.2 Different electricity suppliers have different stepped tariff block levels and rates as summarised in the table below. The table shows the block levels and the rate per unit in each block.

Residential	Block 1	Block 2	Block 3	Block 4	Block 5
Joburg City Power	0-500 100,9	500-1 000 114,5	1 000-2 000 121,9	2 000-3 000 134,8	3 000+ 144,6
Ekurhuleni Standard	0-600 89,9	600-700 150,5	700+ 250,8		
Eskom Homepower4	0-600 93,6	600+ 150,5 + daily charge of R2,45			
Cape Town Residential	0-600 142,5	600+ 173,3			
eThekwini/Durban Domestic	Per kWh 123,10				

***Note:** Tariff rates are charged in cents/kWh and are excluding VAT.

[Source adapted from: <https://homebug.com/2013/08/13/electricity-tariffs/>]

Use the above information to answer the questions that follow:

- 2.2.1 Calculate the total cost, excluding VAT, for a household supplied by Joburg City Power, that used 3 500 kWh for the month of February. (5)
- 2.2.2 Determine the total cost, excluding VAT, for a household supplied by Eskom Homepower4, that used 3 500 kWh for the month of February. (5)
- 2.2.3 A resident in eThekweni (Durban Domestic) claimed that they were charged more for consuming 3 500 kWh of electricity in March compared to a household in Ekurhuleni consuming the same amount of electricity. Verify with calculations whether this claim is valid. (7)
- 2.2.4 Determine the cost, including 15% VAT for a household supplied by eThekweni/Durban Domestic, if 600 kWh of electricity was consumed. (4)

- 2.3 A typical household in the Johannesburg metropolitan area with a pre-paid meter previously paid R2,41 per kWh. Following a rate increase, the new rate is R2,72 per kWh.

[Source adapted from: <https://www.dailymaverick.co.za/article/2024-06-13-johannesburgs-indigent-households/>]

Determine, rounded to the nearest kWh, how much less electricity the household can consume with a R500 monthly electricity budget under the new rate, compared to the previous rate. (5)

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QUESTION 3

- 3.1 A survey conducted on 10 June 2024, among American adults, examined the usage of major social media platforms, highlighting variations based on age, gender, and education level. The following table presents the findings related to gender differences in platform usage.

Social Media Platforms	Male	Female
Facebook	61	78
Instagram	44	55
LinkedIn	35	30
X (formerly Twitter)	25	17
Pinterest	19	51
Snapchat	23	31
YouTube	87	83
WhatsApp	28	32
Reddit	28	20
TikTok	26	39
BeReal	2	3
(817) TOTAL:	378	439

***NOTE:** Respondents who did not give an answer are not shown.

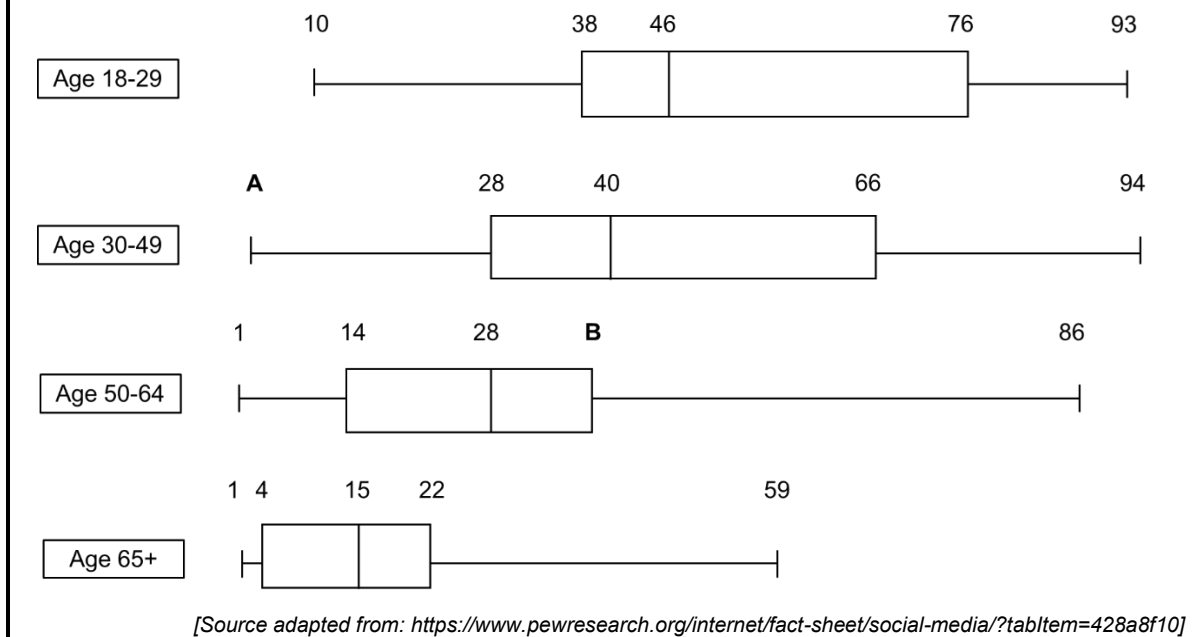
[Source adapted from: <https://www.pewresearch.org/internet/fact-sheet/social-media/?tabItem=428a8f10-3b74-4b36-ad2d-183a4ba27180>]

Use the above information to answer the questions that follow:

- 3.1.1 State the number of social media platforms used in this survey. (2)
- 3.1.2 Arrange, in ascending order, the data set for males. (2)
- 3.1.3 Determine the mode for the male data set. (2)
- 3.1.4 Calculate the mean for the female data set. (3)
- 3.1.5 Choose the correct word, from within brackets, that would make the following statement TRUE:
The type of data represented is **(categorical/numerical)**. (2)
- 3.1.6 In your opinion, do you think the survey results shown are valid and reliable? Give a suitable reason for your answer. (4)
- 3.1.7 State which statistical graph would be more suitable to show the gender results for the survey. (2)



3.2 The following graphs illustrate the survey findings according to the different age groupings.



Use the above graphs to answer the questions that follow:

- 3.2.1 Identify the type of graphs illustrated above. (2)
- 3.2.2 State the median for the (18-29) age group. (2)
- 3.2.3 Determine which age group has the biggest outlier. (2)
- 3.2.4 The range for the (30-49) age group is 92. Determine the missing value **A**. (3)
- 3.2.5 The Inter Quartile Range for the (50-64) age group is 22. Determine the missing value **B**. (3)
- 3.2.6 The Inter Quartile Range represents what percentage of the data? (2)

[31]



QUESTION 4

4.1 In South Africa, a significant portion of the money spent on purchasing a vehicle is allocated to taxes.

Calculations from the National Association of Automobile Manufacturers of South Africa (NAAMSA) indicate that the tax payable on a new vehicle in South Africa varies based on the vehicle's classification:

- Entry-Level Vehicles: Approximately 18% of the vehicle's price.
- Premium Vehicles: Approximately 42% of the vehicle's price.

The recommended retail price for a new Toyota Hilux Xtra Cab is R537 100 including VAT.

The following taxes are **included** in the recommended retail price of the vehicle:

- VAT: 15%
- Ad valorem tax: **A** (calculated on a per-vehicle basis)
- CO₂ tax: **B**
- Import duty on vehicles: 25%

Ad valorem tax, is a luxury excise tax that increases with the price of the vehicle, and is calculated using the following formula:

$$\text{Ad valorem tax \%} = \{(0,00003 \times y) - 0,75\}$$

[Source adapted from: <https://naamsa.net/sa-economy-tax-revenue2021/#:~:text=naamsa%20%7C%20SA%20Economy%20Tax%20Revenue%202021&text=There%20is>]

Use the above information to answer the questions that follow:

4.1.1 Write down the recommended retail price for the Toyota Hilux Xtra Cab. (2)

4.1.2 A customer calculated the price excluding VAT for this vehicle to be R467 043,48. Verify with calculations whether or not the customer is correct. (4)

4.1.3 In the Ad valorem tax formula, the value of y can be calculated as follows:
 $y = (\text{The recommended retail price excluding VAT}) - (20\% \times \text{retail value of the vehicle including VAT}).$

Determine the value of y used in the Ad valorem tax formula. (5)

4.1.4 The vehicle salesman stated that the Ad valorem tax for this vehicle was 10,04% rounded to two decimal digits. Use the given Ad valorem tax formula and your answer in QUESTION 4.1.3 to determine whether his statement is valid. (4)

4.1.5 The CO₂ emissions tax on the double cab is R176 per gram of CO₂ per km effective from 6 April 2022. The rate of CO₂ emissions for this vehicle is 198 g/km. Calculate the CO₂ emissions tax for this vehicle. (2)



- 4.1.6 Calculate, to the nearest percentage, the CO₂ emissions tax, as a percentage of the recommended retail price. (3)
- 4.1.7 Determine the total percentage of tax included in the recommended retail price of the vehicle. (2)
- 4.1.8 Will this Toyota Hilux Xtra Cab be described as an entry level vehicle or a premium vehicle? (2)

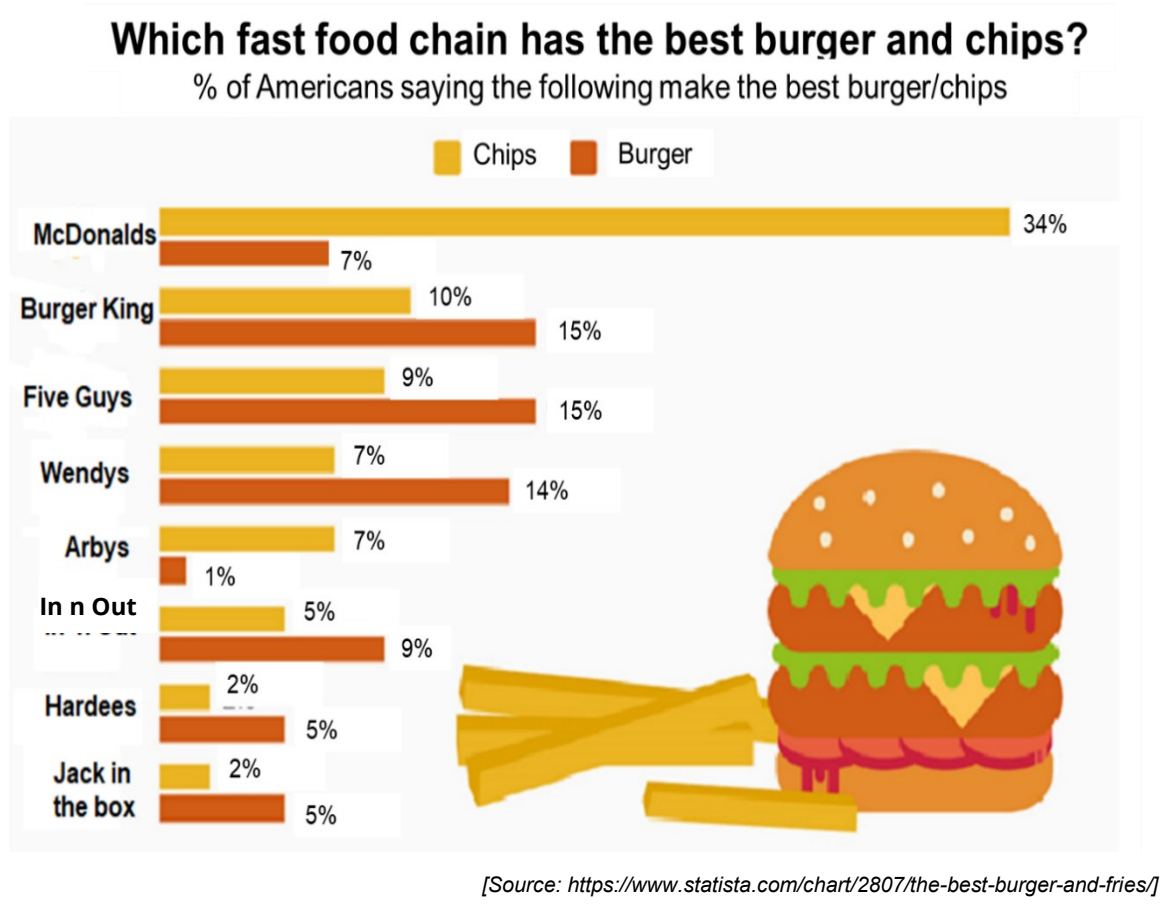
[24]



QUESTION 5

- 5.1 Which fast food chain has the best burger and chips? It's been the source of endless debate, but now, according to a "YouGov" poll, it's finally possible to reveal the answer.

The following graph illustrates the results of the poll:



Use the above graph to answer the questions that follow:

- 5.1.1 Choose the correct word, from within brackets that would make the following statement TRUE: This type of data represents (**continuous data/discrete data**). (2)
- 5.1.2 Which fast food restaurant has the best chips? (2)



- 5.2 The Big Mac is the most-ordered menu item in 31 states, according to data reported by NBC. The recipe for the famous burger hasn't changed since it was first launched.

The number of Big Macs sold every year is around 900 million, according to CNN.

Global price of a Big Mac as of July 2023	
Country	In U.S. dollars (\$)
Switzerland	7,73
Norway	6,92
Uruguay	6,86
Argentina	5,99
Euro Area	5,82
Sweden	5,74
United States of America	5,58
Mexico	5,58
Sri Lanka	5,58
Denmark	5,41
Costa Rica	5,41
Britain	5,39

[Source: <https://www.business2community.com/statistics-pages/mcdonalds-statistics>]

Study the table above and answer the questions that follow:

- 5.2.1 There are 31 536 000 seconds in a year. Determine, to the nearest whole number, the number of big Mac burgers sold per second around the world. (4)
- 5.2.2 State which country has the most expensive and which country has the cheapest Big Macs according to this table. (2)
- 5.2.3 Calculate the cost difference in rand for the most expensive and the cheapest Big Macs, if the exchange rate is R1 = \$0,058. (5)
- 5.2.4 During November 2024, the Big Mac cost R67,50 in South Africa. The same Big Mac cost R17,95 in 2009. Determine the percentage change for the Big Mac in South Africa.

$$\% \text{ Change} = \frac{\text{Difference in cost}}{\text{Original cost}} \times 100 \quad (3)$$



- 5.3 Frank aspires to own a McDonalds Franchise. He investigates the associated costs and explores various investment options.

Owning a McDonalds Franchise will have an estimated cost ranging from R4 million to R6 million, depending on the type of restaurant and other influencing factors.

Applicants are required to provide at least 35% of the purchase price in cash, while the remaining amount can be financed through a bank loan.

[Source adapted from: <https://www.mcdonalds.co.za/resources/downloads/franchise.pdf>]

Use the above information to answer the questions that follow:

- 5.3.1 Frank identified a restaurant location priced at R6 000 000. Calculate the amount he needs to provide in cash to secure the purchase. (2)

- 5.3.2 Frank only has R1 000 000 cash available and decides to invest his money into a fixed deposit account for 3 years. He received the following two investment offers:

Fedgroup offers a 11,78% p.a. simple interest.

African Bank offers a 10,75% p.a. compound interest.

[Source adapted from: <https://www.fedgroup.co.za> and <https://www.africanbank.co.za>]

Calculate the amount Frank will have available for each offer and state whether he will have sufficient funds to cover the cash requirement to buy this franchise. (7)

[27]

GRAND TOTAL: [150]