

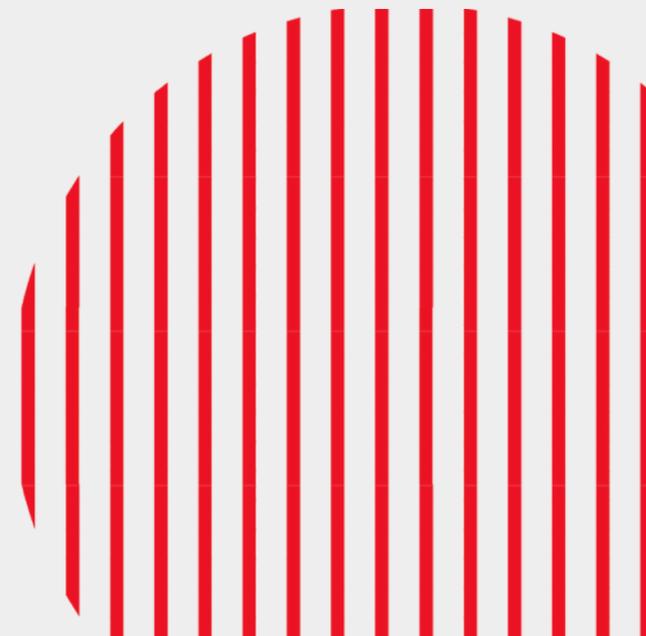
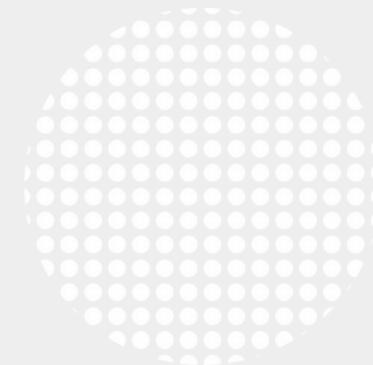
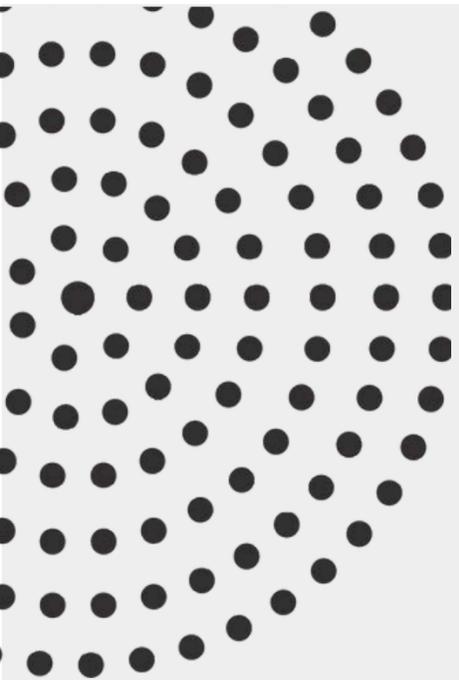
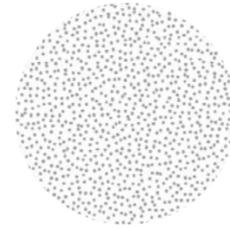
**COLLECTIVE
RESPONSE**

2025 MATHS LITERACY NSC EXAM PAPER REVIEW



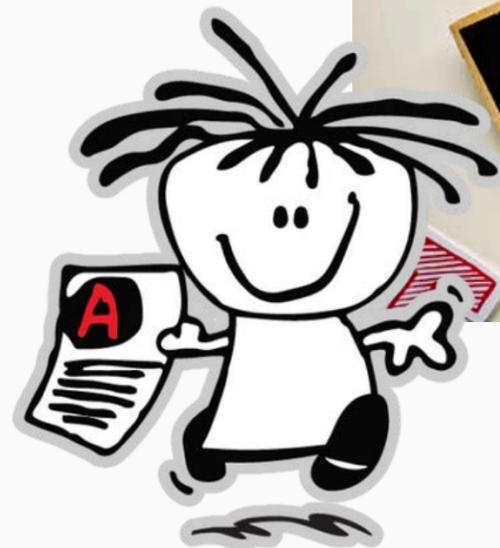
Paper 1 & 2

THE **ANSWER** SERIES



2025 NSC
Maths Literacy
PAPER 1 REVIEW

Challenging Questions

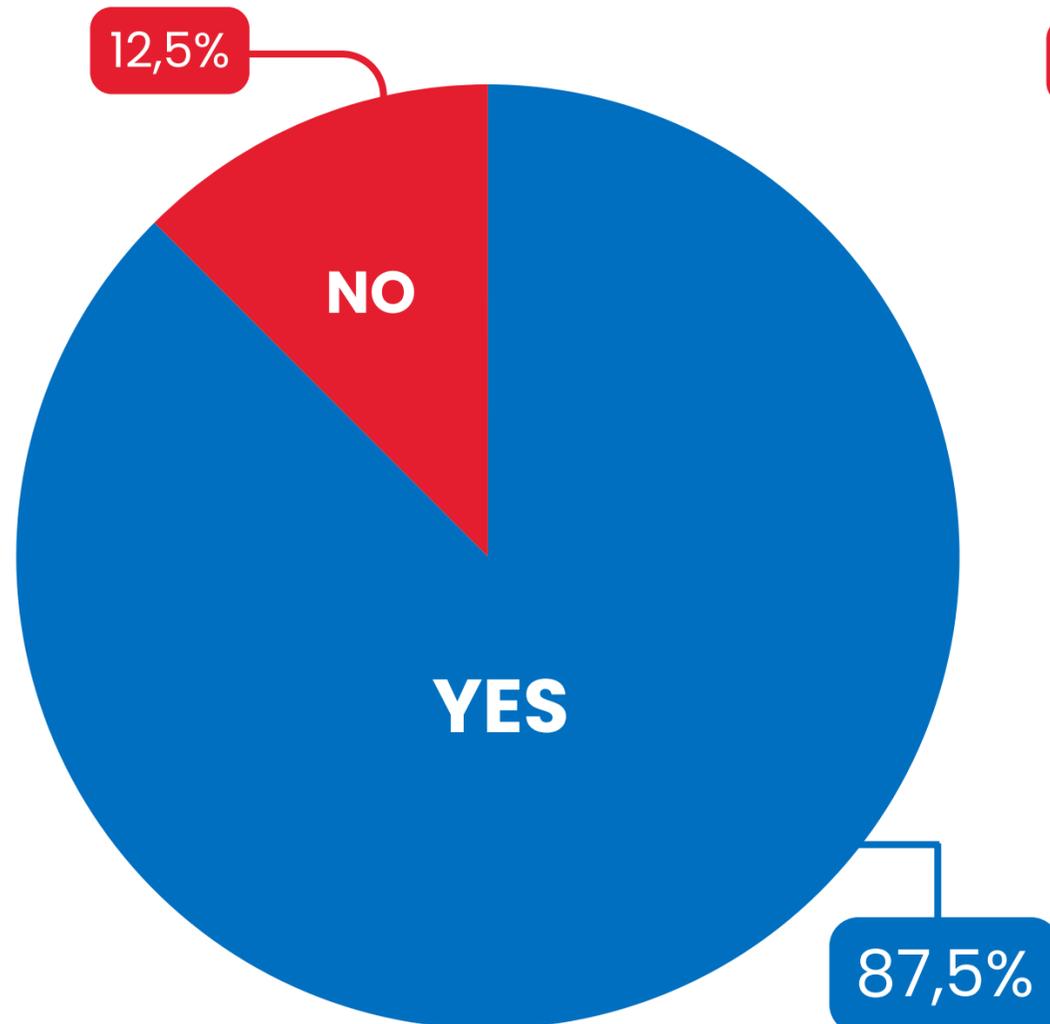


THE **ANSWER** SERIES

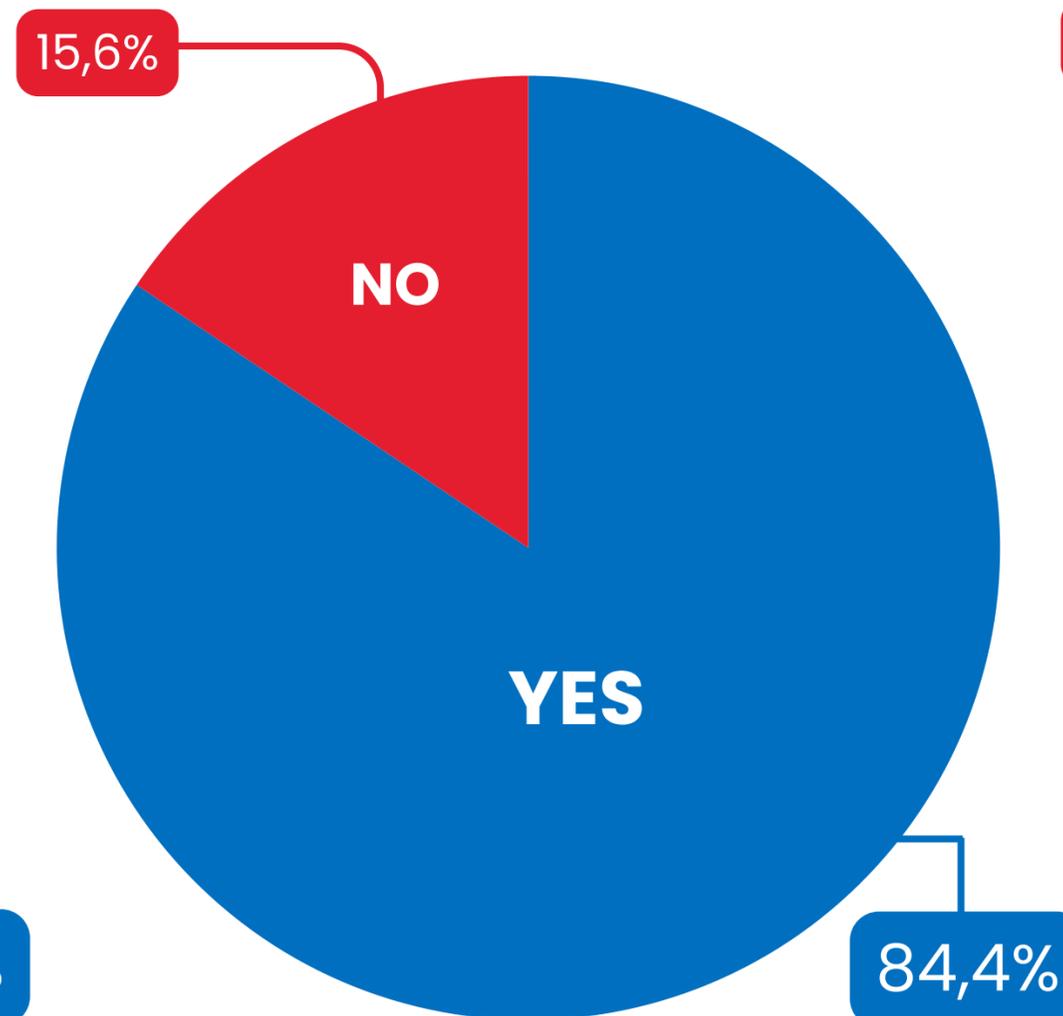


GENERAL OVERVIEW OF PAPER 1

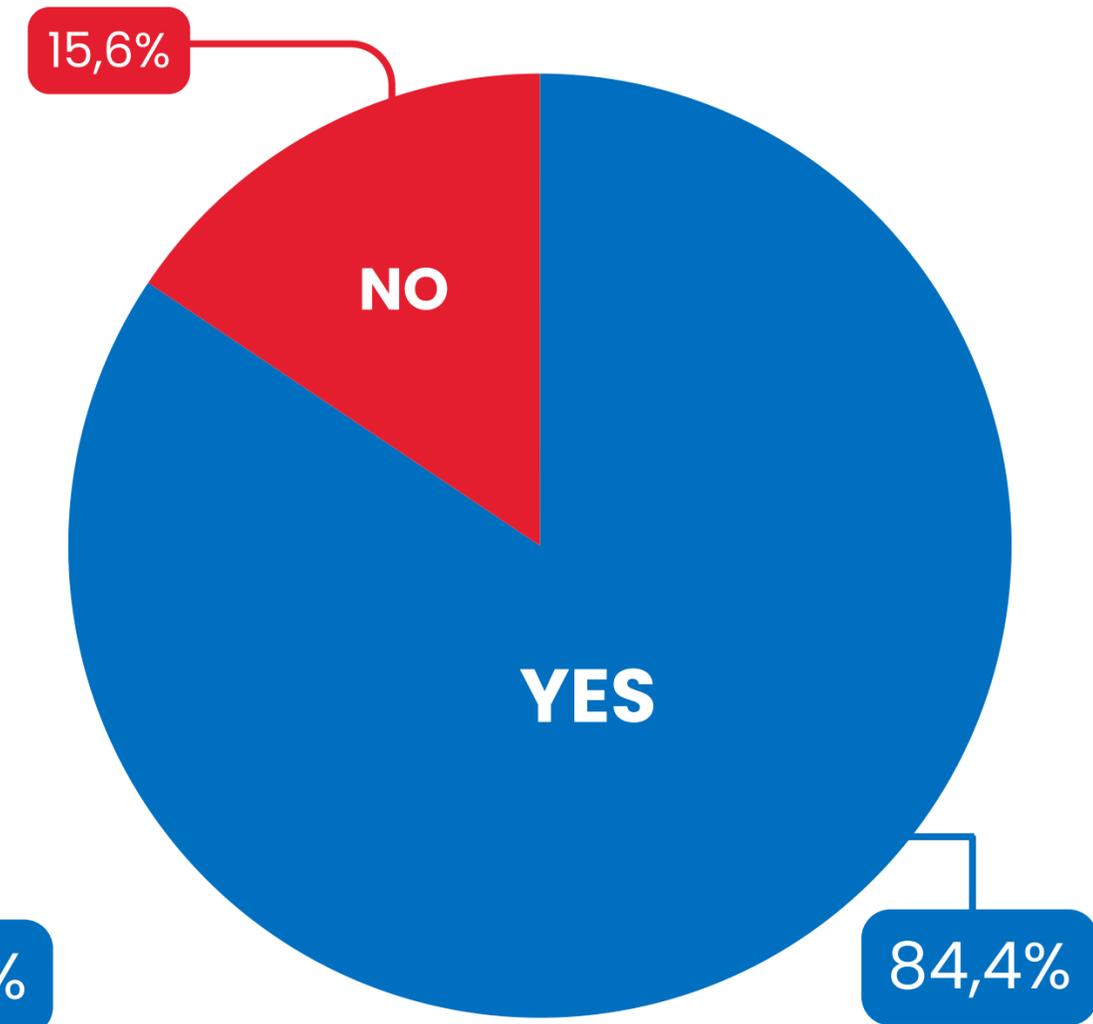
Do you think the **language** in P1 was clear, easy-to-follow and accessible to the learner?



Do you think the **diagrams, tables** and **images** in P1 were clear, easy-to-read and accessible to the learner?



Do you think P1 was fair and gave learners an opportunity to showcase their learning?



QUESTION 1.1.3



TABLE 1 below shows the prices of some food items in three cities of South Africa, namely Johannesburg, Durban and Cape Town.

TABLE 1: PRICES OF SOME FOOD ITEMS IN THREE SOUTH AFRICAN CITIES

FOOD ITEMS	QUANTITY	JOHANNESBURG	DURBAN	CAPE TOWN
Salt	1 kg	R18,07	R17,16	R10,24
Onions #	10 kg	R111,59	R100,58	R104,10
Carrots #	5 kg	R41,41	R39,63	R35,08
Butternuts #	10 kg	R105,24	R90,04	R96,91
Curry powder	200 g	R41,91	R34,24	R39,82
White sugar	10 kg	R223,23	R197,07	R229,49
Apples	3 kg	R52,38	R54,73	R46,31
Oranges	7 kg	R104,96	R78,80	R86,64
Eggs #	60 eggs	R163,31	R169,62	R165,52
Canned beans	410 g × 6	R101,94	R84,46	R81,94
TOTAL		...		

[Adapted from www.businessstech.co.za]

NOTE: # indicates zero-rated VAT items.

Use TABLE 1 above to answer the questions that follow.

1.1.1 Name the city where the cost of white sugar is the highest.

(2)

1.1.2 Calculate the cost of carrots, per kilogram, in Johannesburg.

(2)

1.1.3 Determine, as a unit ratio rounded to THREE decimal places, the price of eggs in Cape Town compared to the price of eggs in Durban in the form 1 : ...

(3)

PROPOSED MEMO

Cape Town Eggs : Durban Eggs

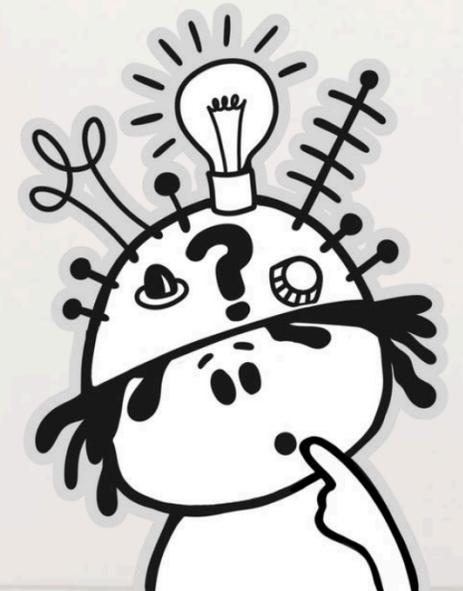
R165,52 : R169,62

1 : 1,02477042 ...

1 : 1,025

CHALLENGES

- Order of ratios
- Unit form
- Rounding to 3 d.p.



QUESTION 1.2

TABLE 2 below gives definitions of terminology used in Mathematical Literacy.

TABLE 2: DEFINITIONS OF TERMINOLOGY USED IN MATHEMATICAL LITERACY

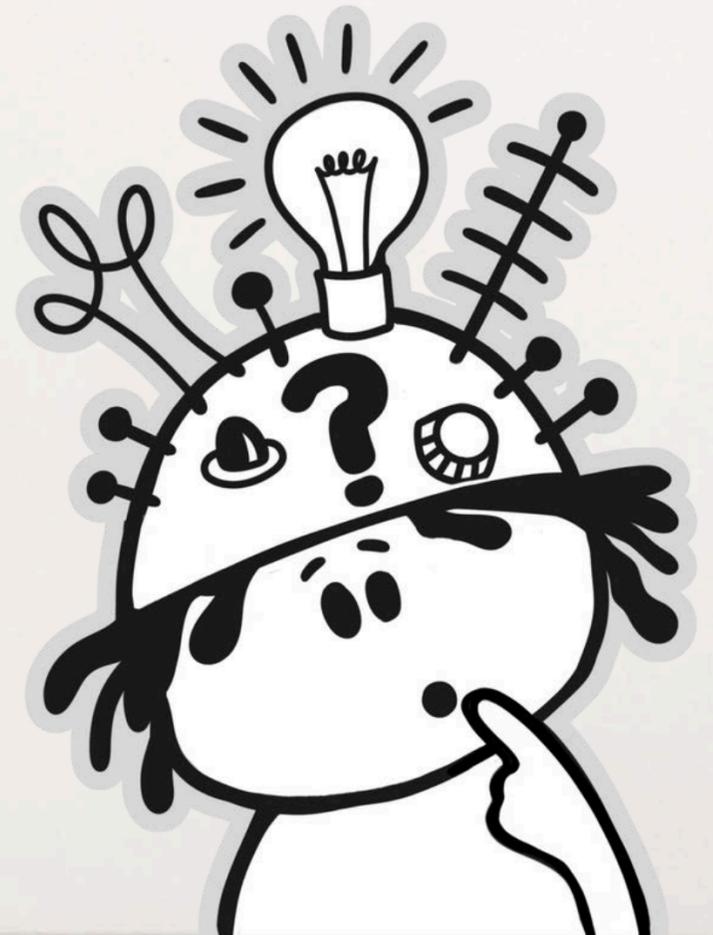
LETTER	DEFINITION
A	Identification of the type of data
B	Sum of money that is loaned by a bank or moneylender
C	Goods and products, such as furniture, that can be purchased using a longer-term lease or agreement
D	Interest charged on an amount due, inclusive of interest charges to date
E	A bank product that allows you to buy goods and partially pay for them at the end of the month
F	An arrangement whereby you give permission to a third party to withdraw money from your bank account on a regular basis
G	Complete a frequency table using raw data
H	Interest charged on the principal amount, resulting in the same interest amount every time

Use TABLE 2 above and match the definitions with the terminology below. Write only the letter (A–H) next to the question numbers (1.2.1 to 1.2.4), e.g. 1.2.5 I.

- 1.2.1 Compound interest (2)
1.2.2 Hire-purchase (2)
1.2.3 Debit order (2)
1.2.4 Organising data (2)

CHALLENGES

- Unusual definitions used
- Potential language barrier with wording



QUESTION 2.1.3

Determine the employer contribution towards the medical aid if the employer contributes one third of the total contribution. (2)

EMPLOYEE DEDUCTIONS:		EMPLOYER CONTRIBUTIONS:	
UIF	R177,12	UIF	R177,12
PAYE TAX	A	MEDICAL AID	...
MEDICAL AID	R2 531,54		
NET SALARY	B		

COMMENTS

- Appears straight-forward
- Requires careful reading!



PROPOSED MEMO

Employee medical aid contribution:

R2 531,54 which represents $\frac{2}{3}$

∴ Employer medical aid contribution

= R2 531,54 ÷ 2

= R1 265,77

Common incorrect answer

Employer medical aid contribution:

= $\frac{1}{3}$ x R2 531,54

= R843,85

QUESTION 2.1.4 (c)



(c) Muriel stated that she overpaid tax in the 2024/2025 tax year.

Verify, showing ALL calculations, whether her statement is VALID. (8)

INTERNATIONAL COMPUTER SPECIALISTS PTY LTD		EMPLOYEE DETAILS:	
		EMPLOYEE NAME: M DAVIDS	
		AGE: 42 YEARS	
PAYMENTS:			
GROSS SALARY	R35 000		
EMPLOYEE DEDUCTIONS:		EMPLOYER CONTRIBUTIONS:	
UIF	R177,12	UIF	R177,12
PAYE TAX	A	MEDICAL AID	...
MEDICAL AID	R2 531,54		
NET SALARY	B		

Muriel does not contribute to a pension fund; hence her gross salary is her taxable income. She pays the medical aid for herself only and receives no bonus.

OPTION 1

Monthly tax due

$$= R71\ 104 \div 12$$

$$= R5\ 925,33$$

•• Muriel's statement is VALID

(PAYE @ R6 298 vs Tax due @ R5 925,33)

Answer Q 2.1.4(a)

Read from 'Monthly PAYE Deduction Table'

PROPOSED MEMO

$$\text{Annual gross salary} = R35\ 000 \times 12 = R420\ 000$$

[Tax bracket 3: R370 501 – R512 800]

$$\text{Rate of tax} = R77\ 362 + 31\% \text{ of income above } R370\ 500$$

$$= R77\ 362 + 31\% (R420\ 000 - R370\ 500)$$

$$= R77\ 362 + \frac{31}{100} \times R49\ 500$$

$$= R77\ 362 + R15\ 345$$

$$= R92\ 707$$

$$\text{Total rebates} = \text{'Below age 65' primary rebate'}$$

+ Annual 'Taxpayer' medical tax credits

$$= R17\ 235 + (R364 \times 12)$$

$$= R17\ 235 + R4\ 368$$

$$= R21\ 603$$

$$\text{Total tax due} = \text{Rate of tax} - \text{total rebates}$$

$$= R92\ 707 - R21\ 603$$

$$= R71\ 104$$

QUESTION 2.1.4 (c)



(c) Muriel stated that she overpaid tax in the 2024/2025 tax year.

Verify, showing ALL calculations, whether her statement is VALID. (8)

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EMPLOYEE DEDUCTIONS:		EMPLOYER CONTRIBUTIONS:	
UIF	R177,12	UIF	R177,12
PAYE TAX	A	MEDICAL AID	...
MEDICAL AID	R2 531,54		
NET SALARY	B		

Muriel does not contribute to a pension fund; hence her gross salary is her taxable income. She pays the medical aid for herself only and receives no bonus.

OPTION 2

Total PAYE per annum

$$= R6\ 298 \times 12$$

$$= R75\ 576$$

→ Answer Q 2.1.4(a)

Read from 'Monthly PAYE

Deduction Table'

•• Muriel's statement is VALID

(PAYE @ R75 676 vs Tax due @ R71 104)

PROPOSED MEMO

$$\text{Annual gross salary} = R35\ 000 \times 12 = R420\ 000$$

[Tax bracket 3: R370 501 – R512 800]

$$\text{Rate of tax} = R77\ 362 + 31\% \text{ of income above } R370\ 500$$

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$$= R71\ 104$$

QUESTION 2.1.4 (c)



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INTERNATIONAL COMPUTER SPECIALISTS PTY LTD		EMPLOYEE DETAILS:	
PAYMENTS:		EMPLOYEE NAME:	M DAVIDS
GROSS SALARY	R35 000	AGE:	42 YEARS
EMPLOYEE DEDUCTIONS:		EMPLOYER CONTRIBUTIONS:	
UIF	R177,12	UIF	R177,12
PAYE TAX	A	MEDICAL AID	...
MEDICAL AID	R2 531,54		
NET SALARY	B		

Muriel does not contribute to a pension fund; hence her gross salary is her taxable income. She pays the medical aid for herself only and receives no bonus.

COMMENTS

- Understand concept of PAYE vs end-of-year tax calculation
- Monthly vs annual calculations (gross salary & medical aid tax credits)
- Rebates with tax thresholds could be confusing
- Final comparison needed with statement



PROPOSED MEMO

$$\begin{aligned} \text{Annual gross salary} &= R35\,000 \times 12 = R420\,000 \\ &[\text{Tax bracket 3: } R370\,501 - R512\,800] \end{aligned}$$

$$\begin{aligned} \text{Rate of tax} &= R77\,362 + 31\% \text{ of income above } R370\,500 \\ &= R77\,362 + 31\% (R420\,000 - R370\,500) \\ &= R77\,362 + \frac{31}{100} \times R49\,500 \\ &= R77\,362 + R15\,345 \\ &= R92\,707 \end{aligned}$$

$$\begin{aligned} \text{Total rebates} &= \text{'Below age 65' primary rebate} \\ &\quad + \text{Annual 'Taxpayer' medical tax credits} \\ &= R17\,235 + (R364 \times 12) \\ &= R17\,235 + R4\,368 \\ &= R21\,603 \end{aligned}$$

$$\begin{aligned} \text{Total tax due} &= \text{Rate of tax} - \text{total rebates} \\ &= R92\,707 - R21\,603 \\ &= R71\,104 \end{aligned}$$

QUESTION 2.2.2

Determine the amount Muriel will save per trip if she buys the monthly package instead of the daily trip package. (5)

TABLE 4: INFORMATION ON THE METROBUS SERVICE

		PASSENGER CATEGORY		
		Adults (15–59 years)	Children (3–14 years)	Pensioners (60+ years)
Trip Package	Duration	Trip Fare	Trip Fare	Trip Fare
1 trip	Daily	R14,20	R10,30	R4,20
10 trips	Weekly	R106,00	R76,40	-
12 trips	Weekly	R127,10	-	-
44 trips	Monthly	R465,60	R336,30	-

[Adapted from www.mbus.joburg.org.za]

COMMENTS

- Term 'monthly' makes you think of 30/31/28 days
- Could use 21,67 working days per month
- Could work out 4 weeks x 5 days on average
- Concept of 'return fares' could have come into play
- Many would miss the 44 trips!



Use of wording important!

PROPOSED MEMO

Monthly package → R465,40 → 44 trips

OPTION 1

Cost per trip on 'Monthly' package
= $R465,60 \div 44$
= R10,58

Daily package cost per trip = R14,20

•• Saving per trip = $R14,20 - R10,58$
= R3,62

OPTION 2

Cost of buying a 'Daily' ticket for a month
= $R14,20 \times 44$
= R624,80

Monthly package cost = R465,60

•• Monthly saving = $R624,80 - R465,60 = R159,20$

•• Savings per trip = $R159,20 \div 44 \text{ trips} = R3,62$

QUESTION 2.2.4

Johannesburg Metrobus introduced a compulsory card payment system. All passengers will be required to purchase the Metrobus card for R35 to activate the card. They will then have to upload trip fares according to the different available trip packages.

Muriel purchased a Metrobus card together with an uploaded trip package to the total value of R416,30.

Calculate the maximum number of weekly trips Muriel can take using this card. (4)

TABLE 4: INFORMATION ON THE METROBUS SERVICE

		PASSENGER CATEGORY		
		Adults (15–59 years)	Children (3–14 years)	Pensioners (60+ years)
Trip Package	Duration	Trip Fare	Trip Fare	Trip Fare
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12 trips	Weekly	R127,10	-	-
44 trips	Monthly	R465,60	R336,30	-

[Adapted from www.mbus.joburg.org.za]

PROPOSED MEMO

Funds available for trip packages = R416,30 – R35 = R381,30

OPTION 1

Assuming '10 trips' Weekly package
 = R381,30 ÷ R106,00
 = 3,597...
 ≈ 3 'Weekly' packages

OPTION 2

Assuming '12 trips' Weekly package
 = R381,30 ÷ R127,10
 = 3 'Weekly' packages

COMMENTS

- Careful reading 'activation fee' and 'total value' on the card
- Which weekly package should be used?
- Level of difficulty per option different – marking implications?
- Wasted time if both options done for 4 marks



Clarity of Q could have saved learners valuable time!

QUESTION 2.2.4

Johannesburg Metrobus introduced a compulsory card payment system. All passengers will be required to purchase the Metrobus card for R35 to activate the card. They will then have to upload trip fares according to the different available trip packages.

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TABLE 4: INFORMATION ON THE METROBUS SERVICE

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Trip Package	Duration	Trip Fare	Trip Fare	Trip Fare
1 trip	Daily	R14,20	R10,30	R4,20
10 trips	Weekly			
12 trips	Weekly			
44 trips	Monthly			

PROPOSED MEMO

Funds available for trip packages = R416,30 – R35 = R381,30

OPTION 1

Assuming '10 trips' Weekly package
 = R381,30 ÷ R106,00
 = 3,597...
 ≈ 3 'Weekly' packages

OPTION 2

Assuming '12 trips' Weekly package
 = R381,30 ÷ R127,10
 = 3 'Weekly' packages

COMMENTS (cont.)

*additional comments in bold

- **Wording was very ambiguous with regards to 'maximum number of weekly trips':**
 - Was 'maximum' there to imply that learners needed to round off Option 1 answer of 3,597 ... = 3, in order to get the maximum number of packages? **OR**
 - Was 'maximum' there to imply that learners should have used the '12 trip' weekly package, as Muriel would have received the maximum number of trips from the weekly package i.e. 12 trips x 3 packages = 36 trips (vs 10 trips x 3 packages = 30 trips)?



QUESTION 3.1.3(a)



Social media platforms enable users to share information and ideas virtually through texts, photographs, videos and much more.

TABLE 5 below shows the use of popular social media platforms categorised by gender.

TABLE 5: USE OF SOCIAL MEDIA PLATFORMS CATEGORISED BY GENDER

SOCIAL MEDIA PLATFORMS	PERCENTAGE MALE USERS	MALE USERS (in millions)	PERCENTAGE FEMALE USERS	FEMALE USERS (in millions)
Facebook	57%	1 732,8	43%	1 307,2
Instagram	51%	1 020	49%	980
Snapchat	46%	***	54%	405
X/Twitter	56%	346,64	44%	272,36
TikTok	43%	645	57%	855
YouTube	54%	1 350	46%	1 150

[Adapted from www.statista.com, www.datareportal.com]

Use TABLE 5 and the information above to answer the questions that follow.

3.1.1 Calculate the median percentage for male social media users. (4)

3.1.2 Determine, as a decimal, the probability of randomly selecting a social media platform where the female users were fewer than the male users. (3)

3.1.3 Fezeka is interested in the number of male and female *Snapchat* users.

(a) Determine the total number of *Snapchat* users. (2)

(b) Fezeka stated that the difference between the number of female and male *Snapchat* users was 61 300 000.

Verify, showing ALL calculations, whether her statement is VALID. (4)

PROPOSED MEMO

$$54\% \times \text{Total SnapChat users} = \text{Female SnapChat users}$$

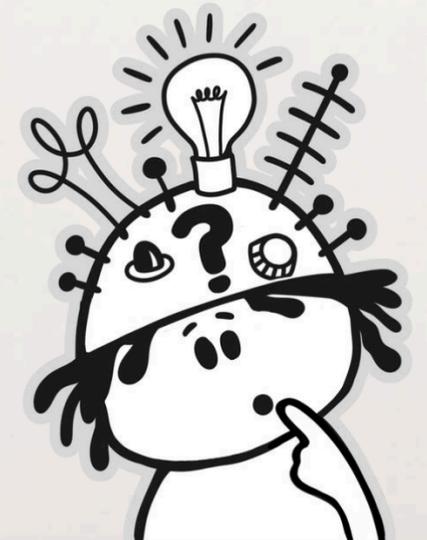
$$54\% \times \text{Total SnapChat users} = 405 \text{ million}$$

$$\therefore \text{Total SnapChat users} = \frac{405 \text{ million}}{54\%}$$

$$= 750 \text{ million}$$

CHALLENGES

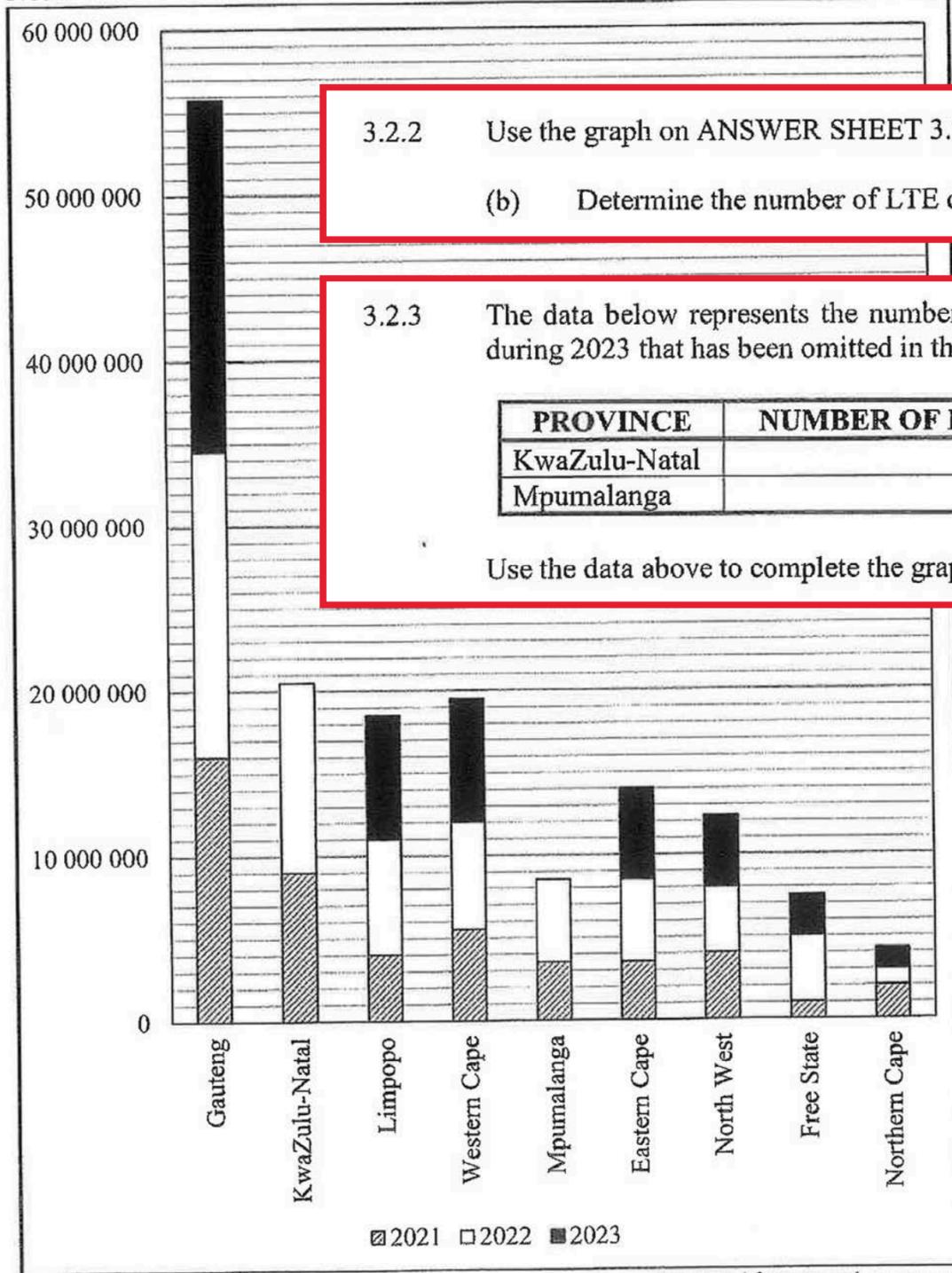
- Reverse % calculation (1st of 3!)
- Working in millions



QUESTION 3.2.2(b) & 3.2.3



NUMBER OF LTE DEVICES PER PROVINCE



3.2.2 Use the graph on ANSWER SHEET 3.2 to do the following:
(b) Determine the number of LTE devices in Limpopo during 2022. (3)

3.2.3 The data below represents the number of LTE devices for two provinces during 2023 that has been omitted in the graph.

PROVINCE	NUMBER OF LTE DEVICES DURING 2023
KwaZulu-Natal	11 000 000
Mpumalanga	5 500 000

Use the data above to complete the graph on ANSWER SHEET 3.2. (4)

[Adapted from www.icasa.org.za]

CHALLENGES

- Calculating the difference between 2022 and 2021 'stacked bars'
- Working with 500 000 (half a million) when reading off the graph and when drawing the 'stacked bars'



QUESTION 4.1.3(a)



Monwabisi operates a trailer rental business. His rental costs for hiring a trailer are listed below.

- R1 000 refundable deposit per trailer if there is no damage to the trailer
- R350 per day per small trailer
- R500 per day per large trailer

TABLE 6 below shows the rental costs of trailers, including the deposit.

TABLE 6: RENTAL COSTS OF TRAILERS, WITH THE DEPOSIT INCLUDED

Number of days (n)	1	3	5	7	10	15
Cost for small trailer	R1 350	R2 050	B	R3 450	R4 500	R6 250
Cost for large trailer	R1 500	R2 500	R3 500	R4 500	R6 000	R8 500

[Adapted from www.getawaytrailers.co.za]

Use TABLE 6 and the information above to answer the questions that follow.

4.1.1 Write down a formula to calculate the rental cost, including the deposit, of a large trailer in the form:

Cost = ...

(2)

4.1.2 Calculate the missing value **B**.

(3)

4.1.3 On 12 December 2024, Monwabisi rented out TWO small trailers and SIX large trailers to different customers for a day.

One of the trailers was returned with a damaged rear light.

(a) Monwabisi stated that his total income, after refunding the deposit, amounted to R4 550.

Verify, showing ALL calculations, whether his statement is VALID. (6)

- New rear light: R242
- Labour at R480 per hour or part thereof
- Time required to complete the repair and replacement is 1 hour 30 minutes

Verify, showing ALL calculations, whether the deposit amount will be sufficient to cover the total cost of the entire repair and replacement.

(4)

PROPOSED MEMO

Trailer income excl. deposits

$$= (R350 \times 2) + (R500 \times 6)$$

$$= R700 + R3\,000$$

$$= R3\,700$$

Total income + 1 retained deposit

$$= R3\,700 + R1\,000$$

$$= R4\,700$$

∴ Monwabisi's statement is INVALID

Trailer income incl. deposits

$$= [(R350 + R1\,000) \times 2] +$$

$$[(R500 + R1\,000) \times 6]$$

$$= (R1\,350 \times 2) + (R1\,500 \times 6)$$

$$= R2\,700 + R9\,000$$

$$= R11\,700$$

Total income – refundable deposits

$$= R11\,700 - (7 \times R1\,000)$$

$$= R11\,700 - R7\,000$$

$$= R4\,700$$

∴ Monwabisi's statement is INVALID

CHALLENGES

- Cost for customer (e.g. cost of hiring trailers) VS Income for Monwabisi (e.g. total income incl. deposits)
- Working with refundable deposits & damages



QUESTION 4.2.1



TABLE 7 below shows the VAT payments made to SARS by vendors in certain economic sectors.

TABLE 7: VAT PAYMENTS BY ECONOMIC SECTOR VENDORS FOR 2023/2024

ECONOMIC SECTORS	NUMBER OF VENDORS	VAT PAYMENTS (R million)	AVERAGE PAYMENT PER VENDOR (R million)
Financial	197 178	221 322	1,12245
Manufacturing	46 901	73 893	1,57548
Wholesale and retail trade	86 610	76 826	0,88703
Construction	39 279	25 593	V
Transport	15 258	29 418	1,92804
Community and social	33 825	32 458	0,95959
Utilities	2 658	22 141	8,32995

[Adapted from www.statssa.gov.za]

NOTE: A vendor is a person or company offering goods or services for sale.

Use TABLE 7 above to answer the questions that follow.

4.2.1 Determine, rounded to the nearest thousand, the missing value V. (3)

4.2.3 Calculate (in R million) the mean VAT payment amount per economic sector. (3)

4.2.4 (a) Arrange the number of vendors in ascending order. (2)

(b) The value of quartile 3 (Q3) for the number of vendors is 86 610.

Calculate the interquartile range (IQR) for the number of vendors.

You may use the following formula:

Interquartile range (IQR) = Q3 – Q1 (3)
[28]

PROPOSED MEMO

Average payment per vendor (V)

$$= \frac{\text{VAT payments}}{\text{No. of vendors}}$$

$$= \frac{\text{R25 593 million}}{39 279}$$

$$= \text{R0,651 569 541 million}$$

$$\approx \text{R0,652 million}$$

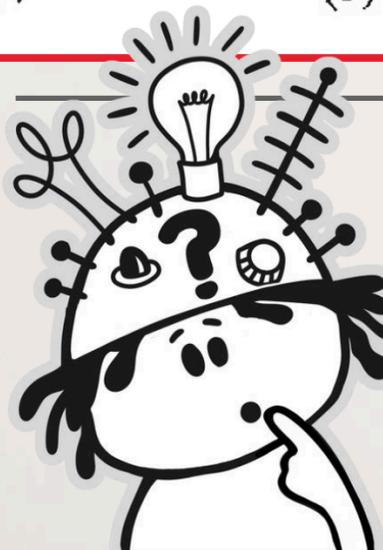
Average payment per vendor (V)

$$= \frac{\text{VAT payments}}{\text{No. of vendors}}$$

$$= \frac{\text{R25 593 000 000}}{39 279}$$

$$= \text{R651 569,54}$$

$$\approx \text{R652 000}$$



CHALLENGES

- Working with 'millions' in words vs expanded notation
- Rounding off thousands (vs hundreds of thousands)

QUESTION 5.1.2 (b)

Candice chooses **OPTION A**.

- (b) Calculate the total amount, including VAT, that she would have paid at the end of the payment period. (7)

TABLE 8: INFORMATION ON THE CAR PURCHASE OPTIONS

PICTURE OF A DOLPHIN HATCHBACK CAR		
		
DETAILS	OPTION A	OPTION B
Payment period	48 months	48 months
Deposit and first-month instalment	£1 173,66	£1 640,61
Additional months' instalment	£195,61	£182,29
Compulsory monthly maintenance cover	£25,36	£24,00

[Adapted from www.leasecar.uk/car-leasing/byd/dolphin-hatchback]

NOTE: All amounts exclude 20% VAT.

PROPOSED MEMO

Deposit and first-month instalment = £1 173,66

Total monthly instalments = £195,61 x **47** months
= £9 193,67

Total monthly maintenance cover = £25,36 x **48** months
= £1 217,28

Total payments (excl. VAT) = £1 173,66 + £9 193,67 + £1 217,28
= £11 584,61

VAT (**20%**) = $\frac{20}{100} \times £11 584,61 = £2 316,92$

Total paid = £11 584,61 + £2 316,92 = £13 901,53

COMMENTS

- Unfamiliar context (working in pounds)
- Read carefully ... 'Deposit and first-month instalment'
- VAT @ 20% may cause confusion
- Multistep question



QUESTION 5.1.3

Candice's aunt in Switzerland offers to pay the deposit and first-month instalment.

TABLE 9 below shows the currency conversion factors.

TABLE 9: CURRENCY CONVERSION FACTORS

CURRENCY	ZAR PER UNIT	UNITS PER ZAR
Swiss franc (CHF)	20,48	0,049
Pound sterling (£)	23,20	0,043

[Adapted from www.xe.com/currencyconverter]

Calculate, in Swiss franc (CHF), the deposit and first-month instalment for **OPTION A**.

(5)

COMMENTS

*additional comments in bold

- Exchange rate table difficult to interpret
- 'Stepping-stone' exchange rates a challenge
- Different answers depending on which rates you use and when
- **The question did not state whether VAT was included or not. It could have lead to learners doing additional, unnecessary calculations.**



PROPOSED MEMO

Deposit and first-month instalment for Option A = £1 173,66

$$\begin{aligned} \text{£1} &: \text{R23,20} \\ \text{£1 173,66} &: ? \end{aligned}$$

$$\begin{aligned} \therefore \text{£1 173,66} &= 23,20 \times \text{£1 173,66} \\ &= \text{R27 228,912} \end{aligned}$$

$$\begin{aligned} \text{CHF 1} &: \text{R20,48} \\ ? &: \text{R27 228,912} \end{aligned}$$

$$\begin{aligned} \therefore \text{R27 228,912} &= \frac{\text{R27 228,912}}{20,48} \\ &= \text{CHF 1 329,54} \end{aligned}$$

OPTION 1

$$\begin{aligned} \text{£0,043} &: \text{R1} \\ \text{£1 173,66} &: ? \end{aligned}$$

$$\begin{aligned} \therefore \text{£1 173,66} &= \frac{\text{£1 173,66}}{0,043} \\ &= \text{R27 294,4186} \end{aligned}$$

$$\begin{aligned} \text{R1} &: \text{CHF 0,049} \\ \text{R27 294,4186} &: ? \end{aligned}$$

$$\begin{aligned} \therefore \text{R27 294,4186} &= 0,049 \times \text{R27 294,4186} \\ &= \text{CHF 1 337,43} \end{aligned}$$

OPTION 2

QUESTION 5.2.1

The average inflation rate over the four-month period during 2024 was 2,1%.

Calculate the missing value **C**.

(3)

TABLE 10: MONTHLY INFLATION RATES FOR THE PERIOD JUL. 2024 TO OCT. 2024

MONTH	INFLATION RATE (in %)
Jul. 2024	2,2
Aug. 2024	2,2
Sep. 2024	C
Oct. 2024	2,3

PROPOSED MEMO

$$\text{Average inflation rate} = \frac{\text{sum of inflation rates}}{\text{no. of months}}$$

$$2,1\% = \frac{2,2\% + 2,2\% + \mathbf{C} + 2,3\%}{4}$$

$$8,4\% = 6,7\% + \mathbf{C}$$

$$\therefore \mathbf{C} = 8,4\% - 6,7\%$$

$$\mathbf{C} = 1,7\%$$

COMMENTS

*additional comments in bold

- Reverse average calculation a challenge (2nd reverse question)
- **There seems to be a move towards more 'reverse calculations'. Is this something that the curriculum advisors and DBE think educators should focus on and spend more time on in class? If so, how does that impact our weaker learners?**
- **No formula was given for the average. Are learners expected to know the average formula off-by-heart? In the past, all formulae were given - but not in this paper. To be fair to learners - they need to know which formulae need to be memorised.**



QUESTION 5.2.2



Candice stated that the difference in the cost of a full tank of petrol from Jul. 2024 to Aug. 2024, was £1,5.

Verify, showing ALL calculations, whether her statement is VALID. (5)

Candice's husband has a car with a 40 ℓ petrol tank capacity. The price of petrol may change from month to month.

PROPOSED MEMO

OPTION 1

Full tank petrol Jul 2024 = $40\ell \times \text{£}1,45/\ell = \text{£}58$

Full tank petrol Aug 2024 = $40\ell \times \text{£}1,43/\ell = \text{£}57,20$

Difference = $\text{£}58 - \text{£}57,20 = \text{£}0,80$

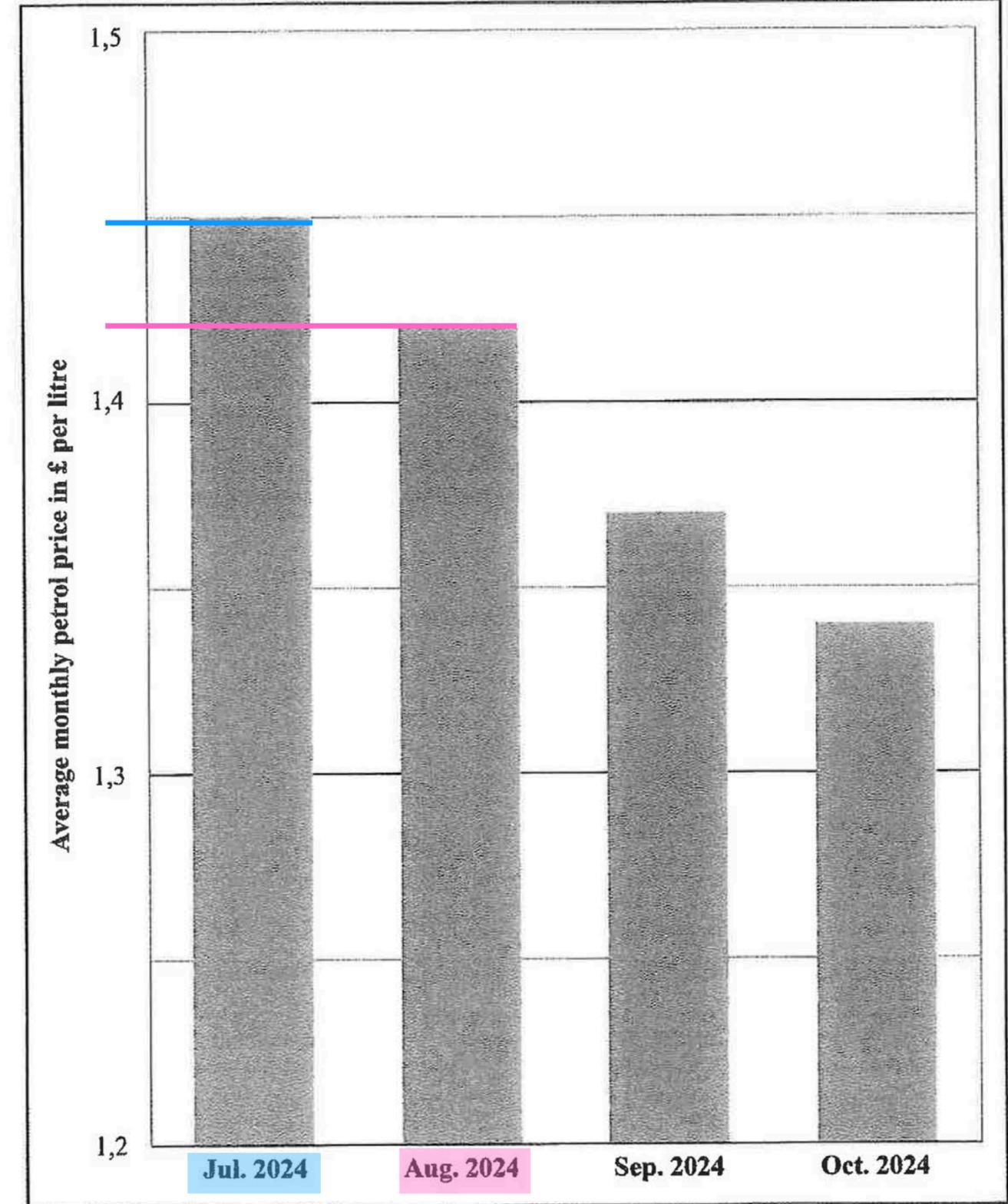
∴ Statement is INVALID

COMMENTS

- Scale of graph not clear – missing minor axes
- Estimation difficult – marking variation accepted?



AVERAGE PETROL PRICE PER MONTH FOR A FOUR-MONTH PERIOD



[Adapted from www.tradingeconomics.com and www.assets.publishing.service.gov.uk]

QUESTION 5.2.2

Candice stated that the difference in the cost of a full tank of petrol from Jul. 2024 to Aug. 2024, was £1,5.

Verify, showing ALL calculations, whether her statement is VALID. (5)

Candice's husband has a car with a 40 ℓ petrol tank capacity. The price of petrol may change from month to month.

PROPOSED MEMO

OPTION 2

Difference in average price of petrol Jul – Aug = £1,45 – £1,43
= £0,02

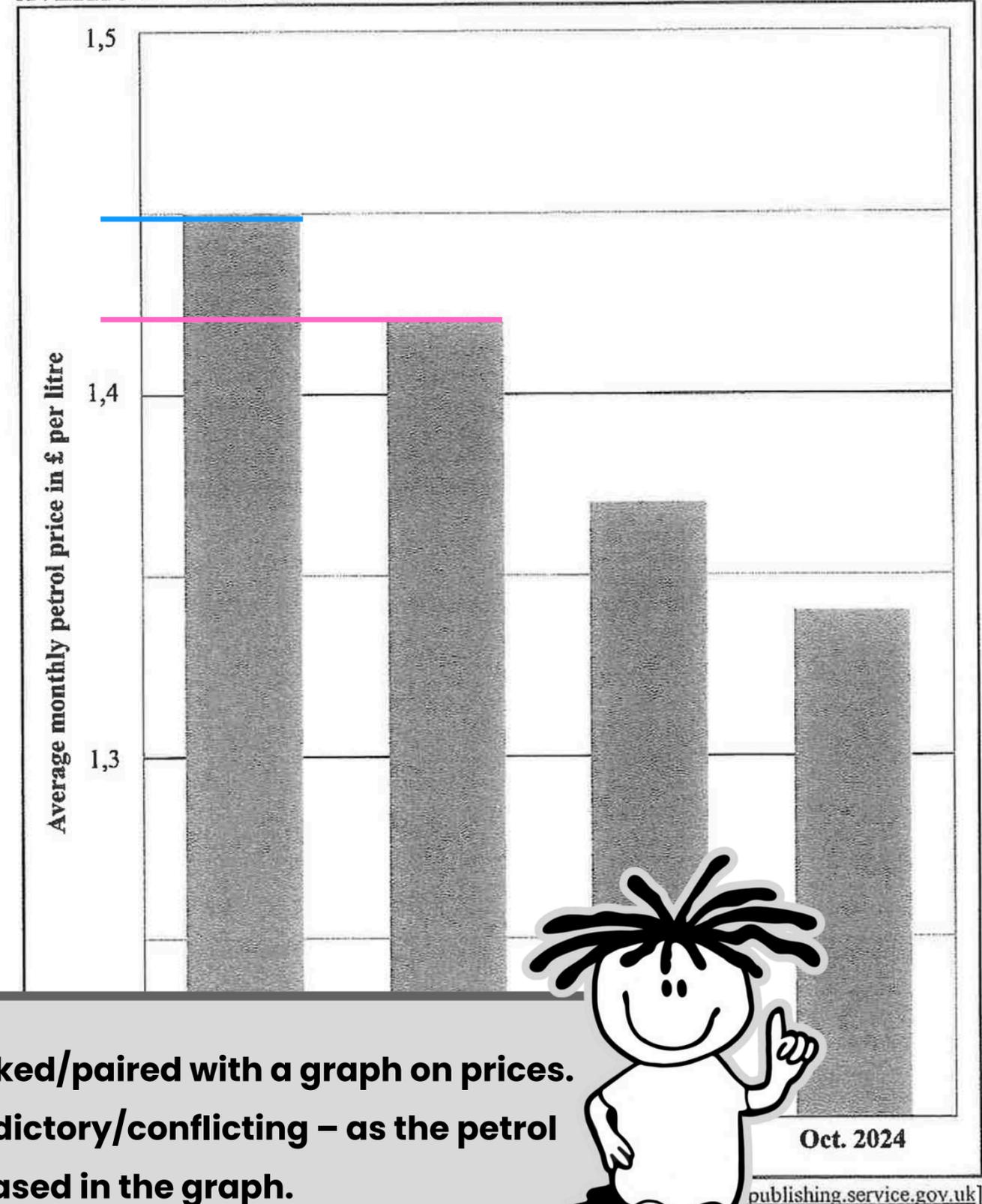
∴ Difference in price on a full tank of petrol
= 40 ℓ x £0,02
= £0,80

∴ Statement is INVALID.

COMMENTS (cont.)

It did not sit well with many educators that the concept of inflation was linked/paired with a graph on prices. Some learners might have thought that the information given was contradictory/conflicting – as the petrol price inflation numbers increased, while the average price of petrol decreased in the graph.

AVERAGE PETROL PRICE PER MONTH FOR A FOUR-MONTH PERIOD



QUESTION 5.2.2



Candice stated that the difference in the cost of a full tank of petrol from Jul. 2024 to Aug. 2024, was £1,5.

Verify, showing ALL calculations, whether her statement is VALID. (5)

Candice's husband has a car with a 40 ℓ petrol tank capacity. The price of petrol may change from month to month.

PROPOSED MEMO

OPTION 3

Average price increase Aug = $2,1\% \times \text{£}1,45 = \text{£}0,03045$

Average price Aug = $\text{£}1,45 + \text{£}0,03045 = \text{£}1,48$

Full tank petrol Jul = $40\ell \times \text{£}1,45 = \text{£}58$

Full tank petrol Aug = $40\ell \times \text{£}1,48 = \text{£}59,20$

∴ Difference = $\text{£}59,20 - \text{£}58 = \text{£}1,20$

∴ Statement is INVALID.

2,1% average inflation rate from Q5.2.1

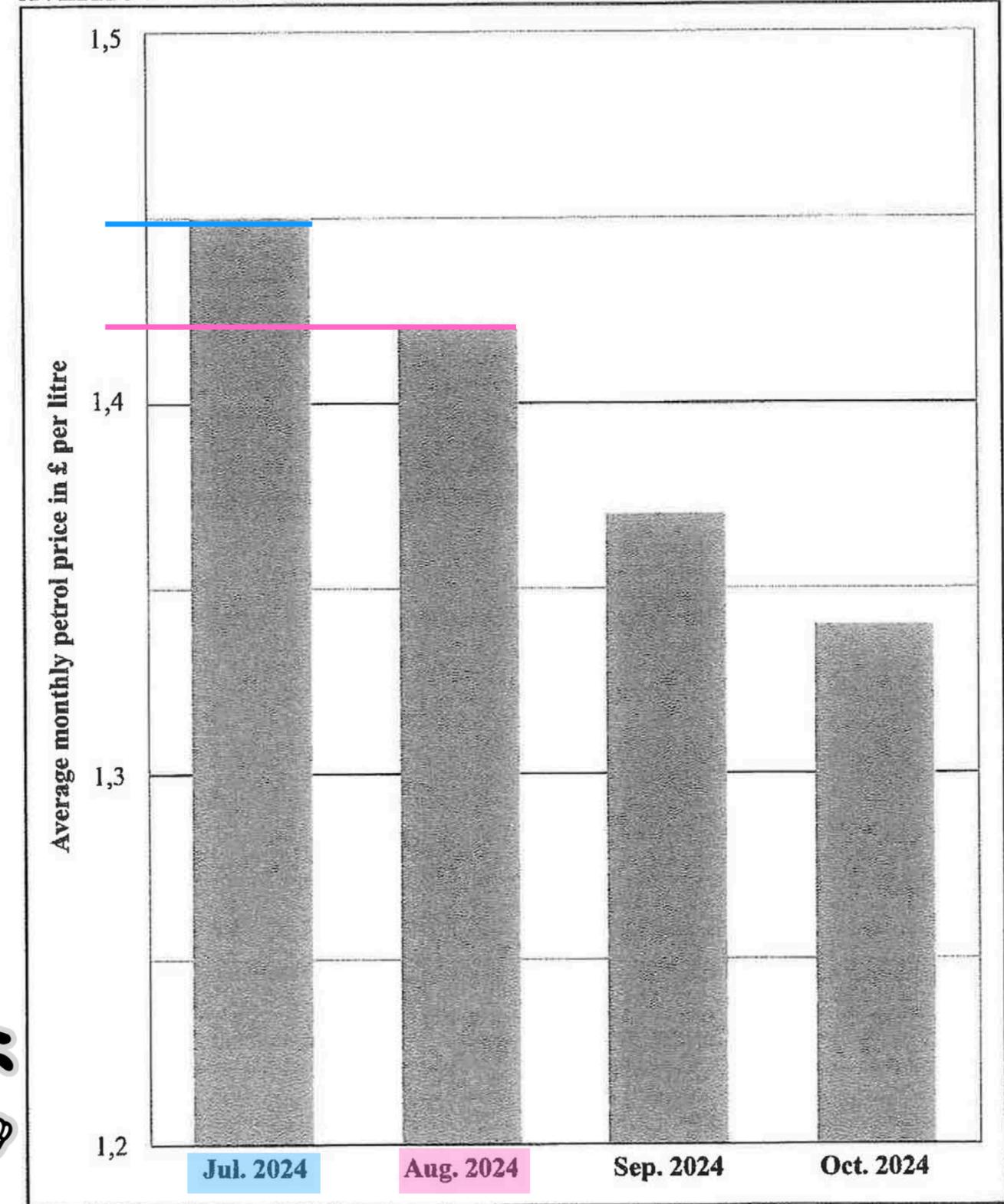
COMMENTS

*additional comments in bold

Would they have accepted this method ... using 2,1% from Q5.2.1?



AVERAGE PETROL PRICE PER MONTH FOR A FOUR-MONTH PERIOD



[Adapted from www.tradingeconomics.com and www.assets.publishing.service.gov.uk]

QUESTION 5.2.3



Calculate, in £ per litre, the cost of petrol during Jun. 2024, if the petrol price from Jun. 2024 to Jul. 2024 changed in line with inflation. (3)

TABLE 10: MONTHLY INFLATION RATES FOR THE PERIOD JUL. 2024 TO OCT. 2024

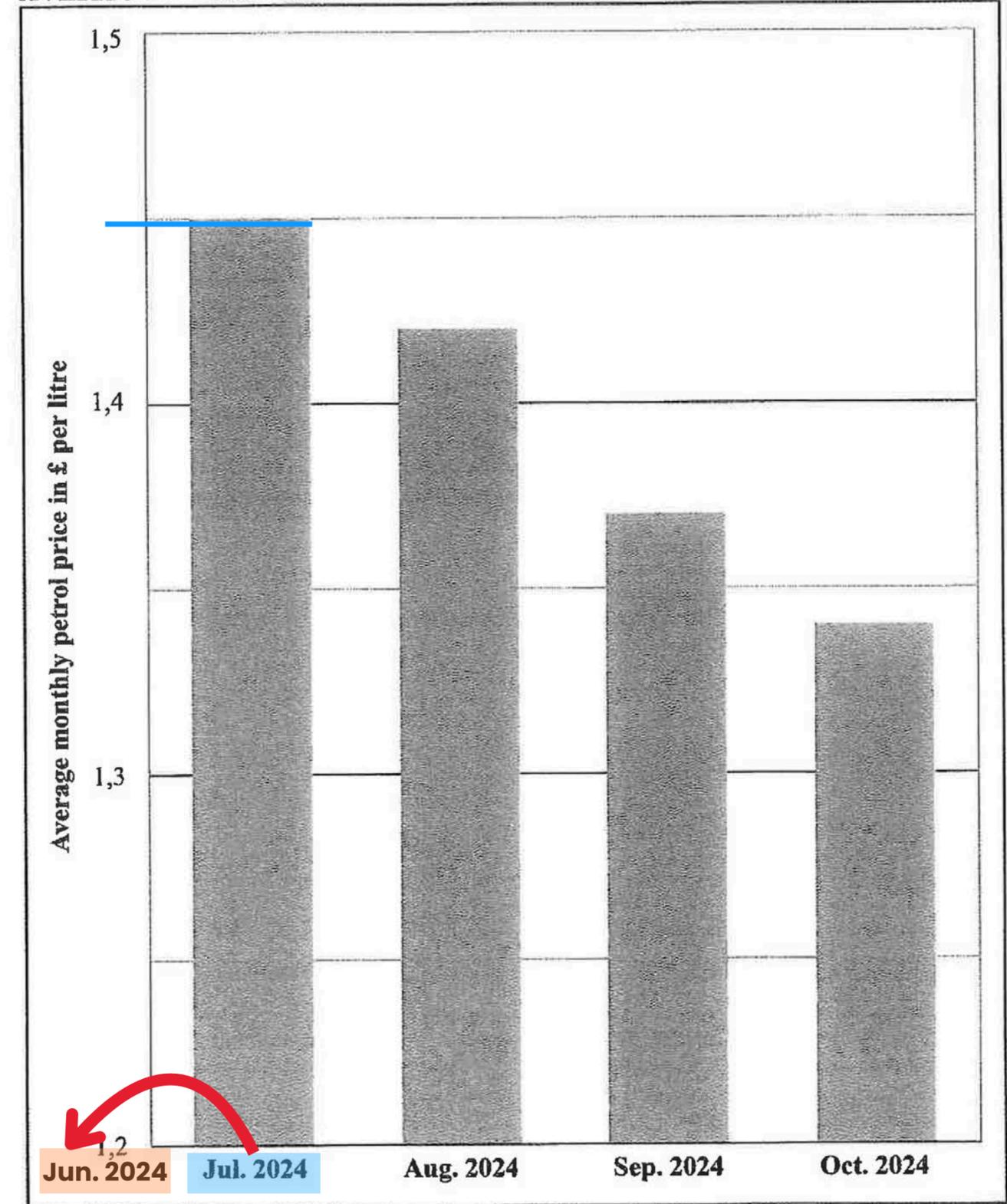
MONTH	INFLATION RATE (in %)
Jul. 2024	2,2
Aug. 2024	2,2
Sep. 2024	C
Oct. 2024	2,3

PROPOSED MEMO

$$\begin{aligned}\text{Cost in July} &= \text{Cost in June} \times (100\% + \text{inflation rate}) \\ \pounds 1,45/\ell &= \text{Cost in June} \times (100\% + 2,2\%) \\ \pounds 1,45/\ell &= \text{Cost in June} \times 102,2\%\end{aligned}$$

$$\begin{aligned}\therefore \text{Cost in June} &= \frac{\pounds 1,45/\ell}{102,2\%} \\ &= \pounds 1,41878\dots/\ell \\ &= \pounds 1,42/\ell\end{aligned}$$

AVERAGE PETROL PRICE PER MONTH FOR A FOUR-MONTH PERIOD



[Adapted from www.tradingeconomics.com and www.assets.publishing.service.gov.uk]

QUESTION 5.2.3



Calculate, in £ per litre, the cost of petrol during Jun. 2024, if the petrol price from Jun. 2024 to Jul. 2024 changed in line with inflation. (3)

TABLE 10: MONTHLY INFLATION RATES FOR THE PERIOD JUL. 2024 TO OCT. 2024

MONTH	INFLATION RATE (in %)
Jul. 2024	2,2
Aug. 2024	2,2
Sep. 2024	C
Oct. 2024	2,3

PROPOSED MEMO

$$\begin{aligned} \text{Cost in July} &= \text{Cost in June} \times (100\% + \text{inflation rate}) \\ \text{£1,45/ℓ} &= \text{Cost in June} \times (100\% + 2,2\%) \\ \text{£1,45/ℓ} &= \text{Cost in June} \times 102,2\% \end{aligned}$$

$$\begin{aligned} \therefore \text{Cost in June} &= \frac{\text{£1,45/ℓ}}{102,2\%} \\ &= \text{£1,41878.../ℓ} \\ &= \text{£1,42/ℓ} \end{aligned}$$



COMMENTS

- Reverse inflation question very difficult (3rd reverse calculation!)
- Similar question to NSC 2024 Paper 1 – Q5.3.2 ... is it necessary?

QUESTION 5.3.2



A house in Chennai, India, is valued at 5 000 000 rupees at the end of 2024.

TABLE 7 shows the inflation rates in India for house prices for the last five years.

TABLE 7: INFLATION RATES IN INDIA FOR THE LAST FIVE YEARS

YEAR	INFLATION RATE
2024	8%
2023	7,5%
2022	7%
2021	6,5%
2020	6%

[Adapted from [hewire.in/economy/the-truth-about-inflation-in-india-and-around-the-world](https://www.hewire.in/economy/the-truth-about-inflation-in-india-and-around-the-world)]

5.2.3 Calculate how much the house was worth at the end of 2022. (6)

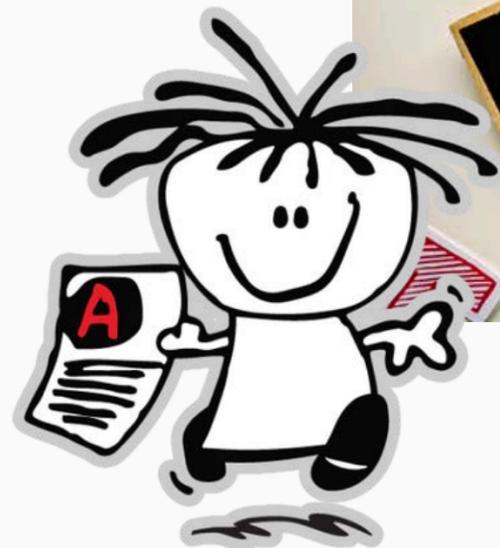
PROPOSED MEMO

$$\begin{aligned} \text{Price incl. inflation} &= \text{Price excl. inflation} \times (100\% + \text{inflation}) \\ \therefore \text{Price excl. inflation} &= \text{Price incl. inflation} \div (100\% + \text{inflation}) \end{aligned}$$

$$\begin{aligned} \text{House price in 2023} &= \text{House price in 2024} \div (100\% + 8\%) \\ &= \text{House price in 2024} \div \frac{108}{100} \\ &= 5\,000\,000 \text{ rupees} \div 1,08 \end{aligned}$$

2025 NSC
Maths Literacy
PAPER 2 REVIEW

Challenging Questions

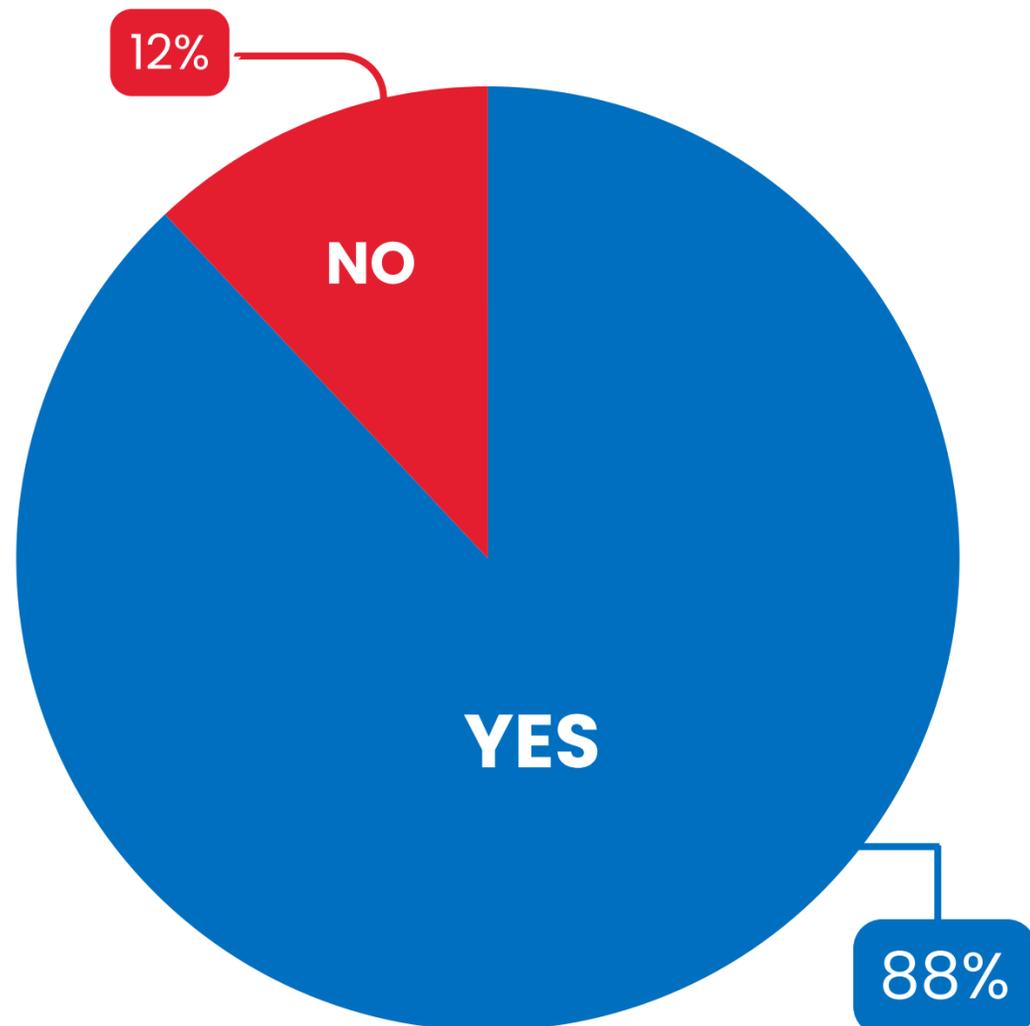


THE **ANSWER** SERIES

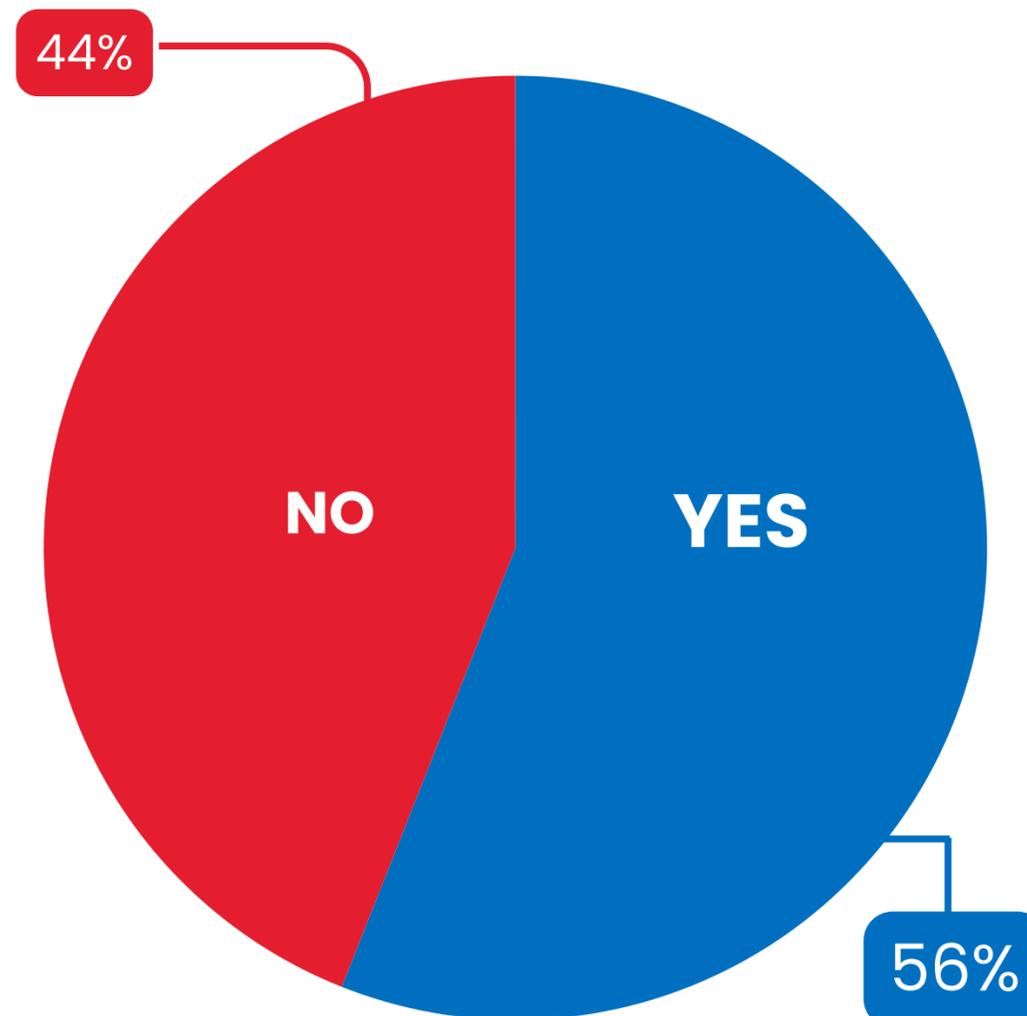


GENERAL OVERVIEW OF PAPER 2

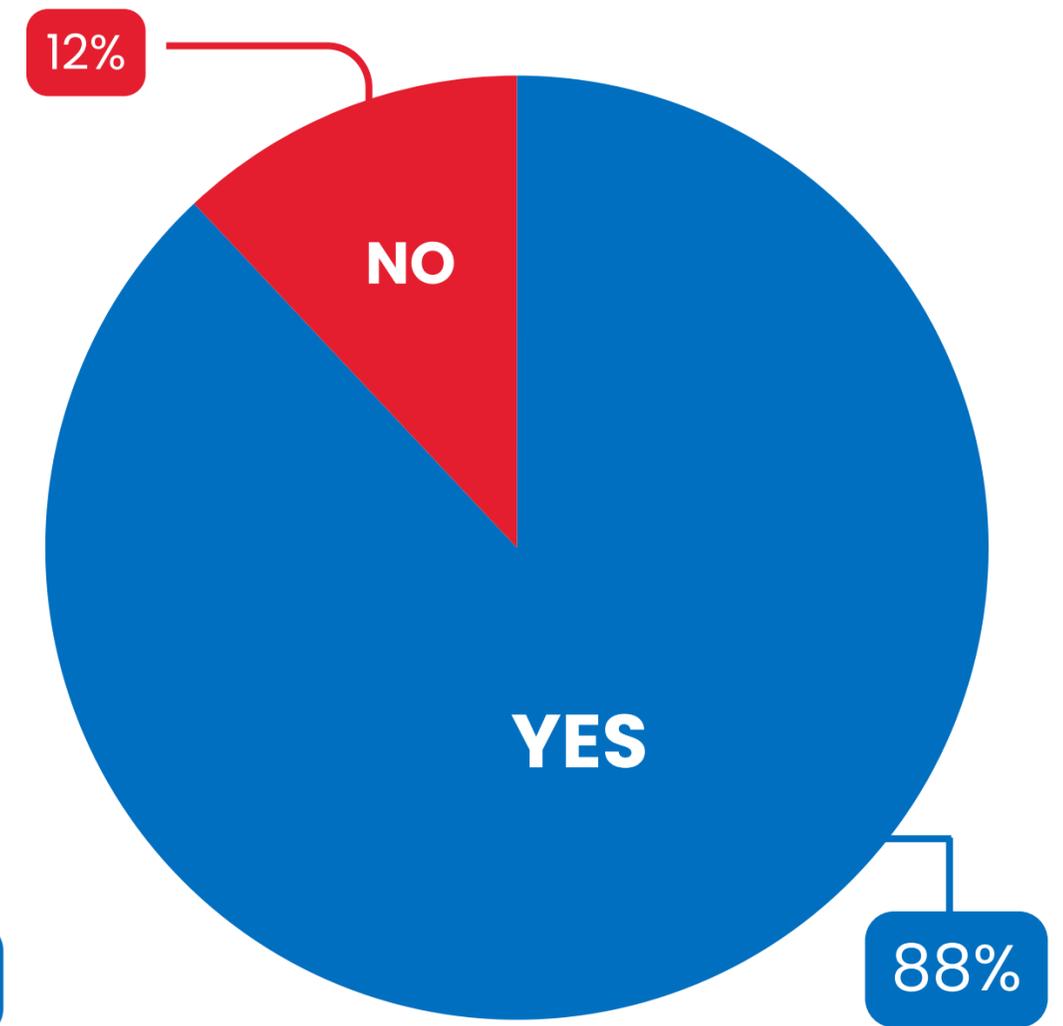
Do you think the **language** in P2 was clear, easy-to-follow and accessible to the learner?



Do you think the **diagrams, tables** and **images** in P2 were clear, easy-to-read and accessible to the learner?



Do you think P2 was fair and gave learners an opportunity to showcase their learning?



QUESTION 1.1.4

Use TABLE 1 above and match an explanation or a definition with EACH of the concepts below. Write only the letter (A–J) next to the question numbers (1.1.1 to 1.1.5), e.g. 1.1.6 K.

1.1.4 **Distance**

E	The result of speed, in km/h, multiplied by the time, in hours
F	Distance around the outside of a shape
G	Scale where one unit on the map represents 50 000 units in reality
H	Shows the design and dimensions of the inside of a building, viewed from the top
I	The area of all the faces of an object added together
J	The result of speed, in km/h, divided by the time, in hours

QUESTION 1.2.3

 South African Airways Wednesday 8 January 2025		
Distance 1 278 km	Aircraft Boeing 737-800	Codeshare NZ 3120
Flight number: SA332		
Maximum number of passengers: 189		
Departure 12:15 Cape Town	Arrival 14:15 Johannesburg	

1.2.3 Write down which ONE of the methods below is the CORRECT method to calculate the speed in km/h of the aircraft.

Write only the letter (A–C) next to the question number (1.2.3).

A $\frac{1\ 278}{14:15}$

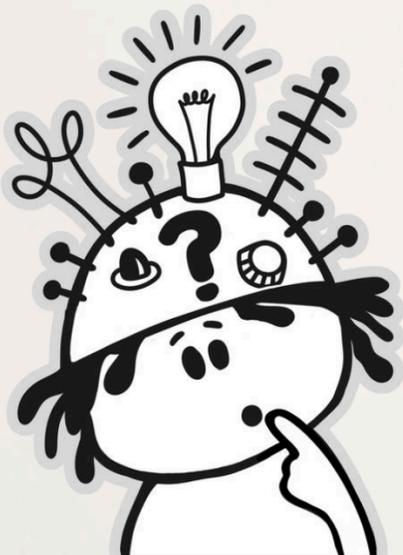
B $\frac{1\ 278}{2}$

C $\frac{2}{1\ 278}$

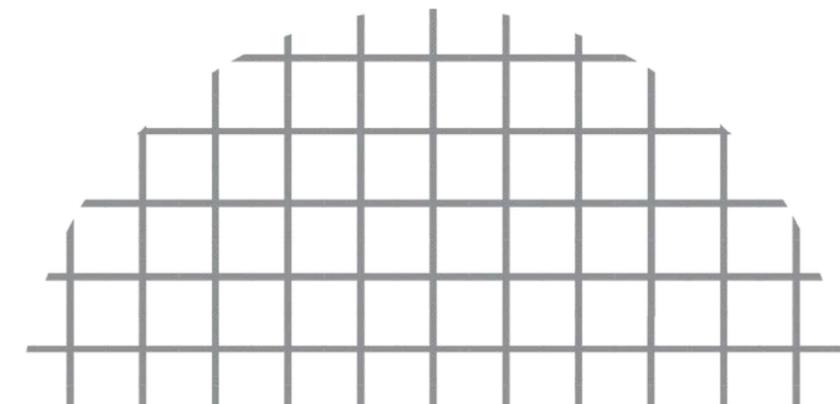
(2)

*additional comments in bold

CHALLENGES



- Testing speed, distance & time concept three times in P2! (twice in Q1 and third in Q4)!
- Formula should be supplied??
- **A definitive list should be given as to which formulae learners need to memorise and which will be given.**



QUESTION 1.2.4



State which day of the week was 26 December 2024.

(2)



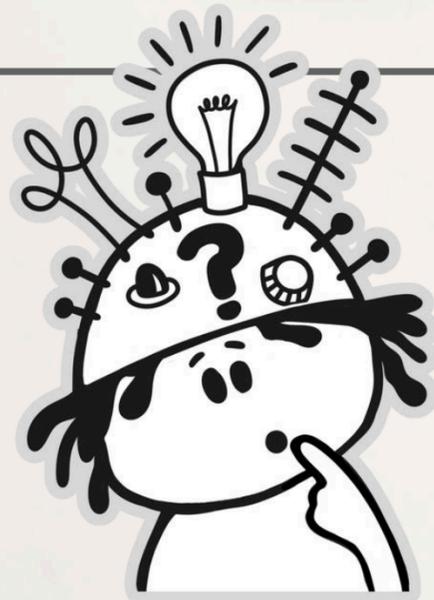
South African Airways

Wednesday 8 January 2025

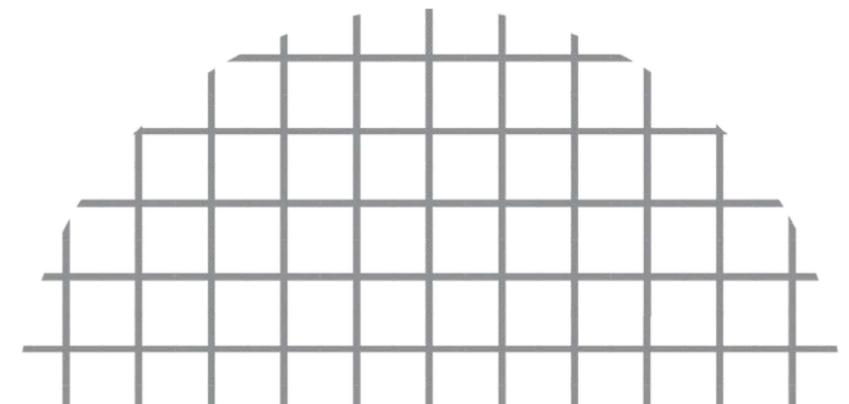
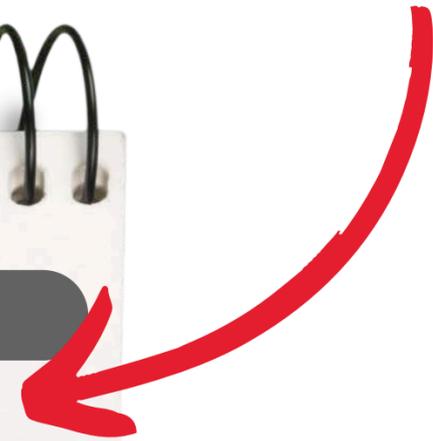
Mon	Tues	Wed	Thurs	Fri	Sat	Sun
			26 Dec	27 Dec	28 Dec	29 Dec
30 Dec	31 Dec	1 Jan	2 Jan	3 Jan	4 Jan	5 Jan
6 Jan	7 Jan	8 Jan				



CHALLENGES



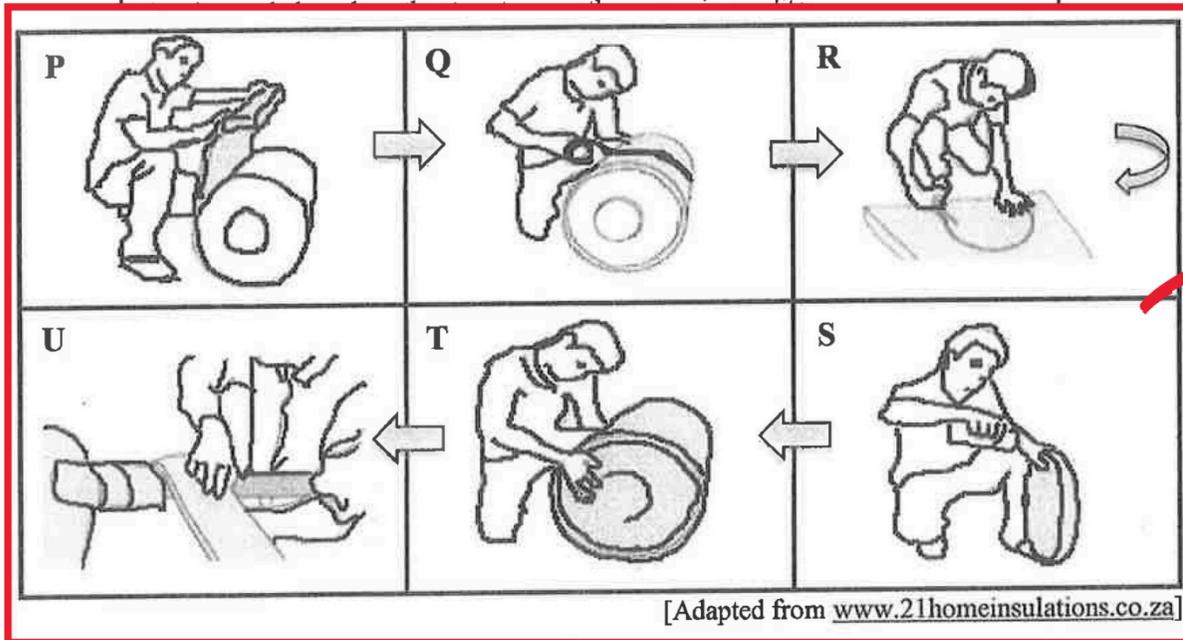
- Working backwards with time
- No calendar given ... Level 1 Q?



QUESTION 1.3



One way to save money during winter is to wrap the geyser and waterpipes with a geyser blanket. A geyser blanket is made of aerolite which can easily be cut.



[Adapted from www.21homeinsulations.co.za]

1.3.1 Write down the letter (P–U) of the picture that matches EACH of the following statements:

- (a) Cut out circles of the aerolite to be placed on both ends of the geyser.
- (b) Apply glue to the circular pieces of the aerolite.
- (c) The strips of aerolite are wrapped around the pipes.

(d) Roll the aerolite around the lateral surface of the geyser.

(e) Use duct tape to secure the aerolite around the lateral surface.

1.3.2 Choose ONE of the following formulae that can be used to calculate how much aerolite is needed for the total surface area of the geyser only.

Write only the letter (A–D) next to the question number (1.3.2).

- A $\pi \times \text{radius}^2 \times \text{height} + 2 \times \pi \times \text{radius}$
- B $\pi \times \text{radius} \times \text{height} + \text{length} \times \text{width}$
- C $2 \times \pi \times \text{radius} \times \text{height} + 2 \times \pi \times \text{radius}^2$
- D $\frac{1}{2} \text{base} \times \text{height}$

(2)

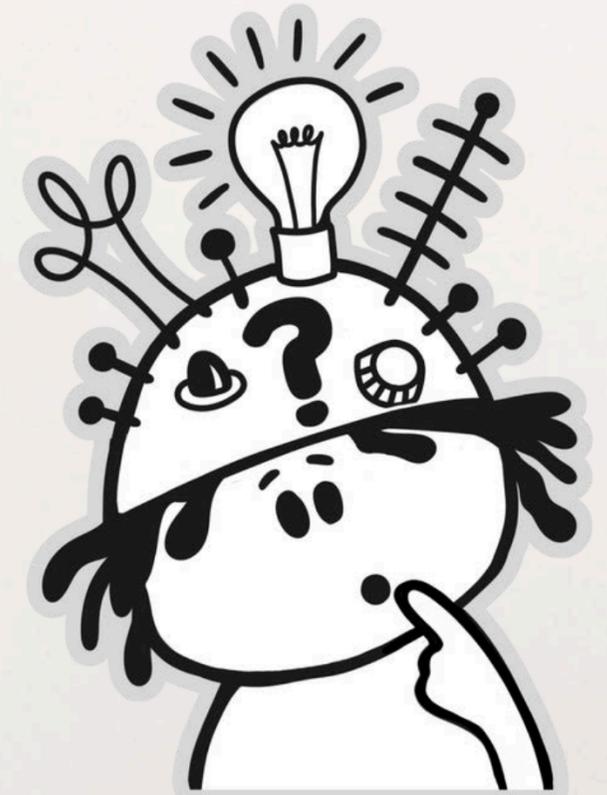
1.3.3 The length of the geyser is 1,2 m. Convert this measurement to mm.

(2)

[28]

CHALLENGES

- Image could be clearer & more realistic
- 'Lateral surface' wording could be an obstacle

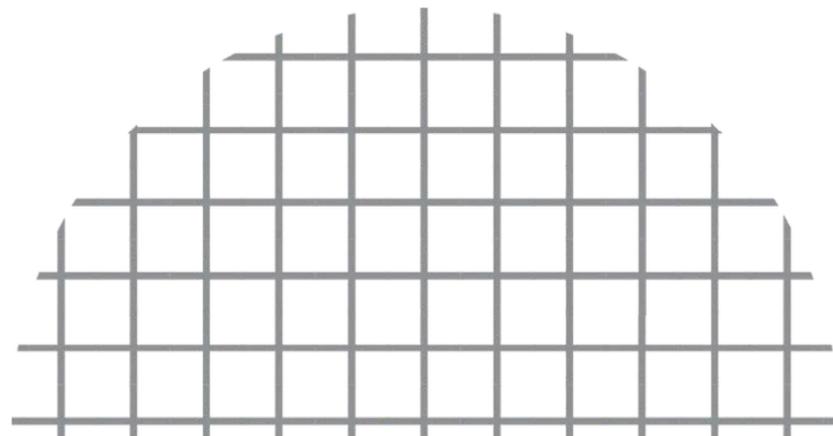
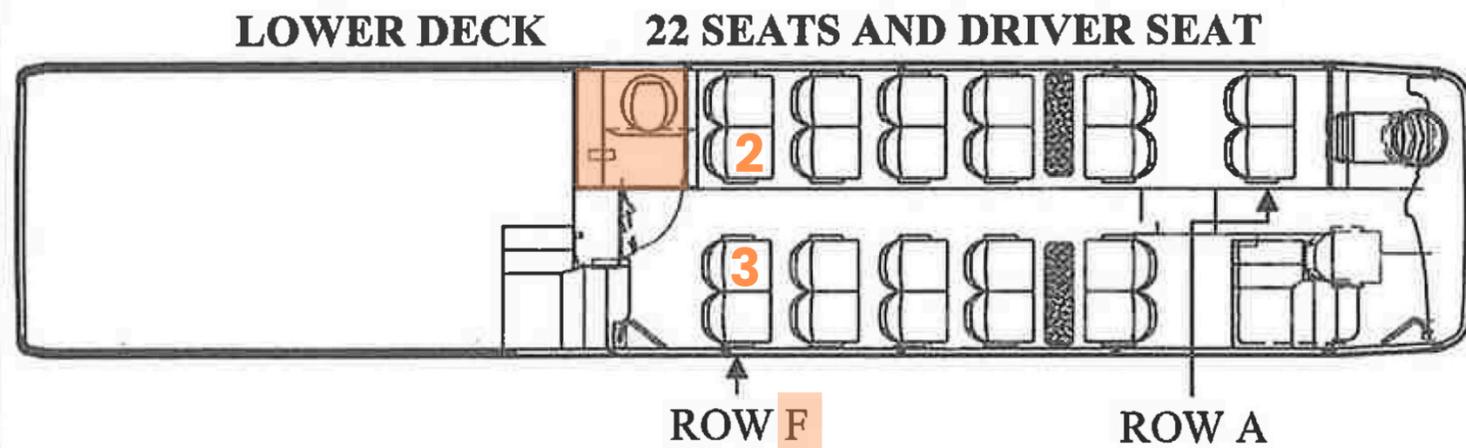


QUESTION 2.1.2

The seats are numbered according to the following numbering system:

- A to F is for the lower deck.
- G to V is for the upper deck.
- The seats are numbered 1 to 4 from right to left if you are facing the back of the bus.

Write down the seat number which has the easiest access to the toilet.



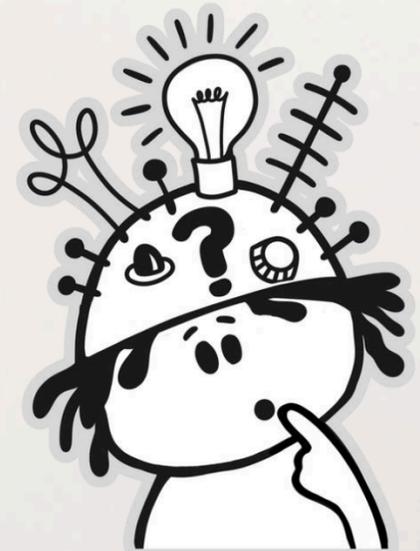
(2)

PROPOSED MEMO

F2 or F3

CHALLENGES

- Wording ... 'easiest access to the toilet' is a bit ambiguous
- F2 is 'around the corner' from the toilet VS F3 which is diagonally opposite the toilet – which is 'easier access' is open to interpretation?
- Educators proposed that any aisle seat would also be 'easy access' because you don't have to climb over anyone's seat?



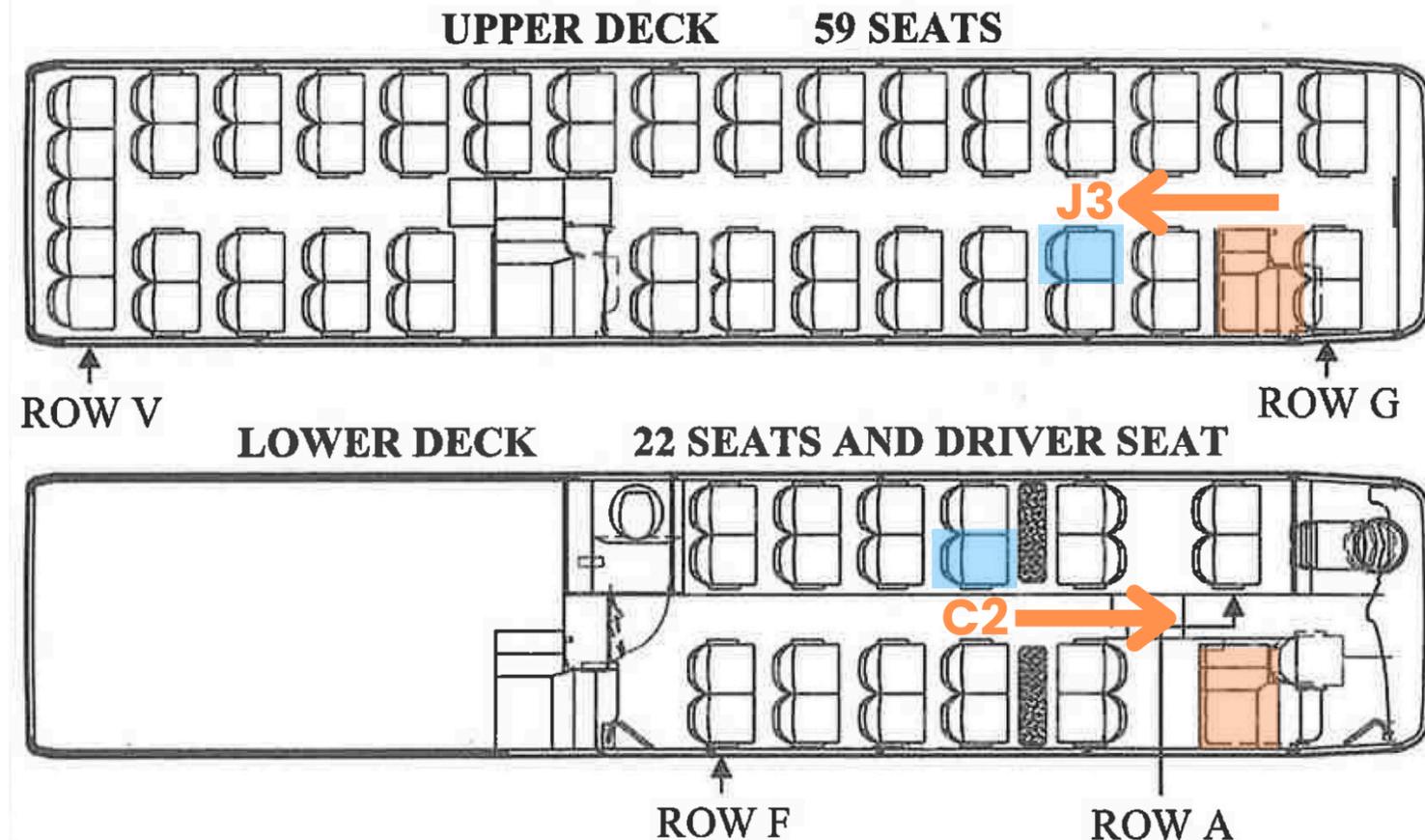
QUESTION 2.1.3

Complete the following paragraph with the directions to move from seat C2 to seat J3 by using the words provided in the list below. Write only the word next to the question numbers (2.1.3(a) to 2.1.3(d)).

aisle; second; left; right; first

Move forward towards the front set of stairs on your (a) ... Use this set of stairs to get to the upper deck. Once on the upper deck, turn (b) ... and you will find your seat on the (c) ... in the (d) ... row from the stairs. (4)

The seating plan for a tourist bus that travels around Cape Town is shown below.



PROPOSED MEMO

OPTION 1

- a) right
- b) left
- c) left**
- d) second**

OPTION 2

- a) right
- b) left
- c) aisle**
- d) third**

COMMENTS

*additional comments in bold

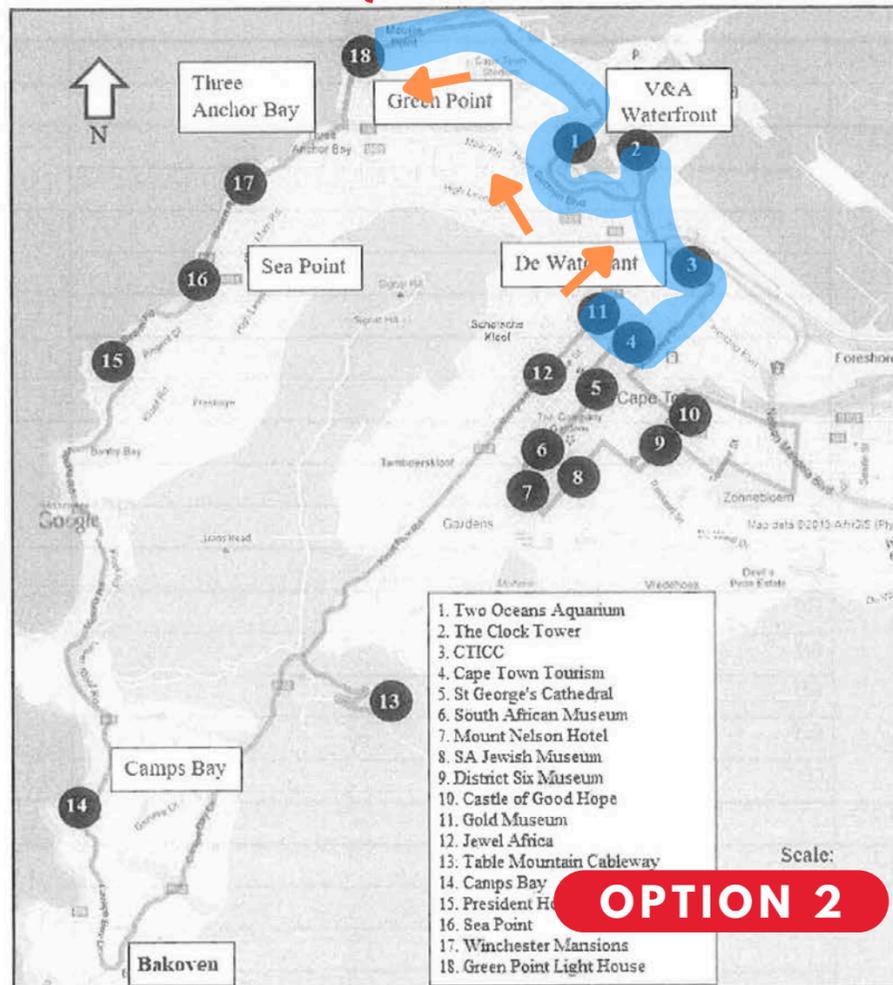
- Need to understand numbering system from Q2.1.2
- Must use the correct set of stairs ... 'front set'
- Can you use a word twice? ... (c) ... left or aisle
- Clarity in wording? ... (d) ... row 'from stairs'
- **The key could have been clearer as to the symbols used for the stairs and forward-facing seats**



QUESTION 2.2.3



[Adapted from www.africanamericangolfersdigest.com/cape-tow]



[Adapted from www.africanamericangolfersdigest.com/cape-town-hop-on-hop-off-red-line-bus-route]

PROPOSED MEMO

OPTION 1

Driving in **sequence**
'from stop 11 to stop 18'
i.e. 11, 12, 13 ... 18

∴ Driving in a **clockwise**
direction

OPTION 2

Driving **directly**
'from stop 11 to stop 18'
i.e. 11 → 18

∴ Driving in an
anti-clockwise
direction

CHALLENGES

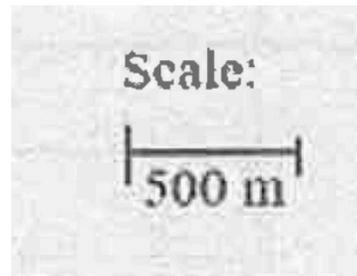
- Wording could be interpreted in two different ways – sequentially or directly – with opposite answers
- The concept of driving in a clockwise or anticlockwise direction is odd



QUESTION 2.2.4

The distance of a round trip is 19,2 km.

Use the given scale on the map to determine the map distance.



(5)

COMMENTS

- Map diagram unclear – even in replacement map
- Scale maps difficult – now x3 different measurement units!
- No indication of most appropriate unit to work in



PROPOSED MEMO

$$\begin{aligned} \text{Map} &: \text{Reality} \\ 12 \text{ mm} &: 500 \text{ m} \\ 12 \text{ mm} &: 500\,000 \text{ mm} \\ 12 &: 500\,000 \end{aligned}$$

$$19,2 \text{ km} = 19\,200\,000 \text{ mm}$$

$$\begin{aligned} \text{Map} &: \text{Reality} \\ 12 &: 500\,000 \\ ? &: 19\,200\,000 \text{ mm} \end{aligned} \quad \times 38,4$$

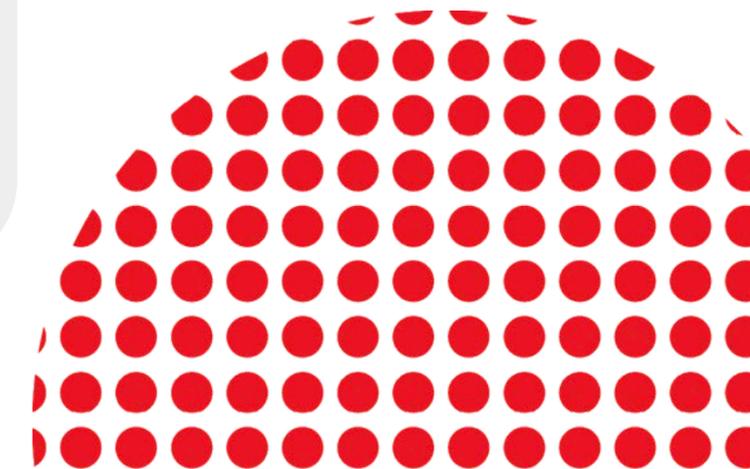
$$\therefore 19\,200\,000 \text{ mm} \div 500\,000 = 38,4$$

$$\therefore \text{Map distance} = 12 \times 38,4 \text{ mm} = 460,8 \text{ mm}$$

Alternative scale measurement:

$$\begin{aligned} \text{Map} &: \text{Reality} \\ 13 \text{ mm} &: 500 \text{ m} \end{aligned}$$

$$\therefore \text{Map distance} = 13 \times 38,4 \text{ mm} = 499,2 \text{ mm}$$



QUESTION 3.2.3

Amanda decides to make 48 pairs of earrings using flower-patterned synthetic leather for the large circles. Both sides of the large circle are covered using synthetic leather, while the small circle is painted black.

The radius of one large circle is 1,4 cm.

The synthetic leather is sold in rolls with a width of 1,37 m. Amanda buys 30 cm of the synthetic leather.

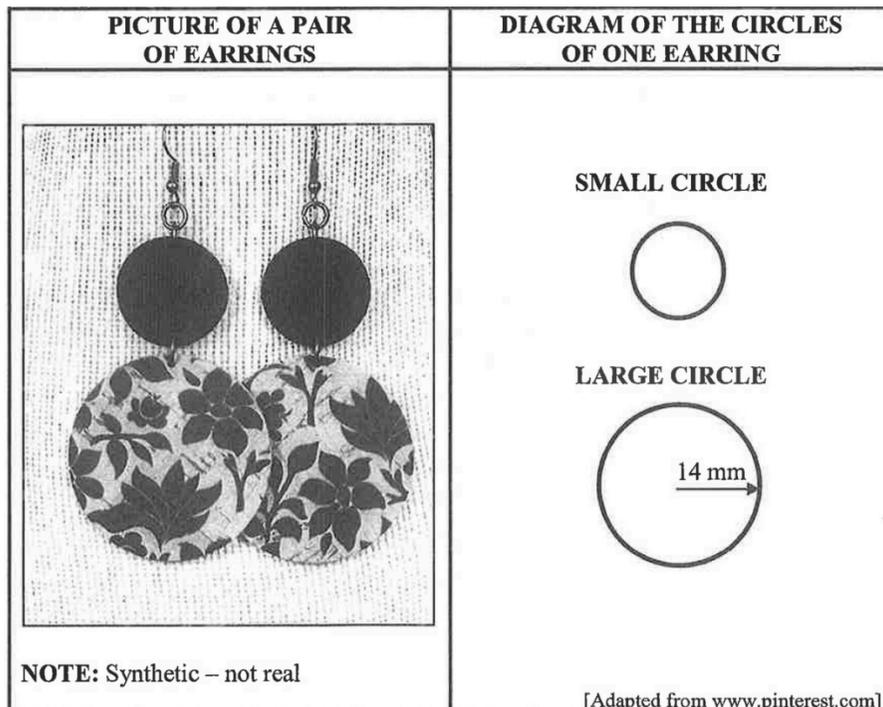
She states that after cutting the leather for ALL the large circles, the remaining synthetic leather will have an area of less than 3 000 cm².

Verify her statement, showing ALL calculations.

You may use the following formulae:

Area of rectangle = length × width

Area of circle = $3,142 \times \text{radius}^2$



(9)
[32]

PROPOSED MEMO

Assuming 'ALL the large circles' are the circles needed for 48 pairs of earrings

48 pairs of earrings

∴ $48 \times 2 = 96$ single earrings

No. large circles of leather (front & back)
 $= 96 \times 2 = 192$

Area of 1 large circle = $3,142 \times (1,4 \text{ cm})^2$
 $= 6,15832 \text{ cm}^2$

∴ Area of 192 circles = $6,15832 \text{ cm}^2 \times 192$
 $= 1\,182,39744 \text{ cm}^2$

Width of leather = 1,37 m = 137 cm

Area of leather = $137 \text{ cm} \times 30 \text{ cm}$
 $= 4\,110 \text{ cm}^2$

∴ Area of remaining leather
 $= 4\,110 \text{ cm}^2 - 1\,182,39744 \text{ cm}^2$
 $= 2\,927,60 \text{ cm}^2$

∴ Amanda's statement is VALID. There is less than 3 000 cm² of remaining leather.

OPTION 1

Difference in areas

QUESTION 3.2.3

Amanda decides to make 48 pairs of earrings using flower-patterned synthetic leather for the large circles. Both sides of the large circle are covered using synthetic leather, while the small circle is painted black.

The radius of one large circle is 1,4 cm.

The synthetic leather is sold in rolls with a width of 1,37 m. Amanda buys 30 cm of the synthetic leather.

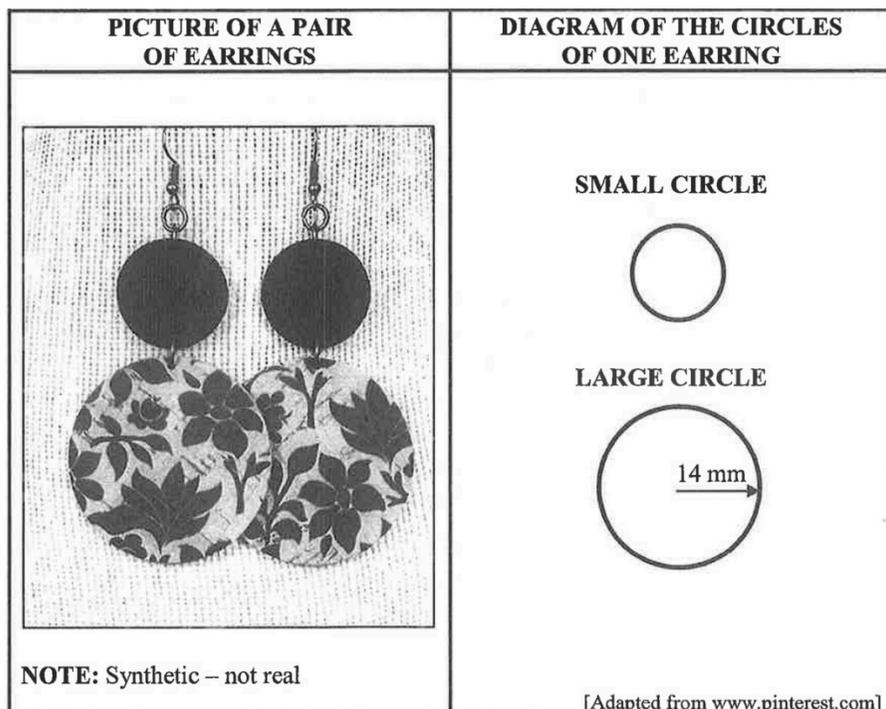
She states that after cutting the leather for ALL the large circles, the remaining synthetic leather will have an area of less than 3 000 cm².

Verify her statement, showing ALL calculations.

You may use the following formulae:

Area of rectangle = length × width

Area of circle = 3,142 × radius²



(9)
[32]

PROPOSED MEMO

Assuming 'ALL the large circles' are the circles that can be cut from the bought synthetic leather area

OPTION 2

Packaging problem

Width of leather = 1,37 m = 137 cm

Diameter of large circle = 1,4 cm × 2 = 2,8 cm

No. of large circles across width
= 137 cm ÷ 2,8 cm = 48,928 ... ≈ 48

No. of large circles down length
= 30 cm ÷ 2,8 cm = 10,714 ... ≈ 10

∴ Total number of large circles = 48 × 10 = 480

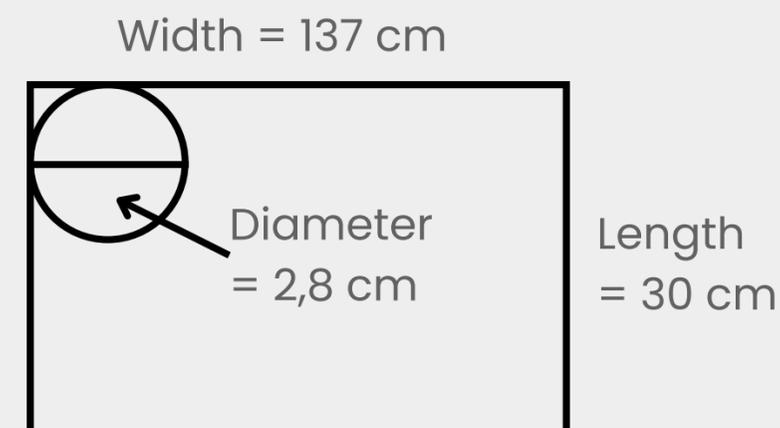
Area of 1 large circle = 3,142 × (1,4 cm)² = 6,15832 cm²

∴ Area of 480 circles = 6,15832 cm² × 480
= 2 955,9936 cm²

Area of leather = 137 cm × 30 cm
= 4 110 cm²

∴ Area of remaining leather
= 4 110 cm² – 2 955,9936 cm²
= 1 154,01 cm²

∴ Amanda's statement is VALID. There is less than 3 000 cm² of remaining leather.



QUESTION 3.2.3



Amanda decides to make 48 pairs of earrings using flower-patterned synthetic leather for the large circles. Both sides of the large circle are covered using synthetic leather, while the small circle is painted black.

The radius of one large circle is 1,4 cm.

The synthetic leather is sold in rolls with a width of 1,37 m. Amanda buys 30 cm of the synthetic leather.

She states that after cutting the leather for ALL the large circles, the remaining synthetic leather will have an area of less than 3 000 cm².

Verify her statement, showing ALL calculations.

You may use the following formulae:

Area of rectangle = length × width

Area of circle = 3,142 × radius²

(9)
[32]

COMMENTS

- Careful reading needed! 'Pairs of earrings' and 'Both sides ... covered'
- Different interpretations of 'ALL the large circles'
- Two options with a different level of difficulty ... marking implications?

Clarity of wording needed!



Assuming 'ALL the large circles' are the circles that can be cut from the bought synthetic leather area

$$\text{Width of leather} = 1,37 \text{ m} = 137 \text{ cm}$$

$$\text{Diameter of large circle} = 1,4 \text{ cm} \times 2 = 2,8 \text{ cm}$$

$$\begin{aligned} \text{No. of large circles across width} \\ &= 137 \text{ cm} \div 2,8 \text{ cm} = 48,928 \dots \approx 48 \end{aligned}$$

$$\begin{aligned} \text{No. of large circles down length} \\ &= 30 \text{ cm} \div 2,8 \text{ cm} = 10,714 \dots \approx 10 \end{aligned}$$

$$\therefore \text{Total number of large circles} = 48 \times 10 = 480$$

$$\text{Area of 1 large circle} = 3,142 \times (1,4 \text{ cm})^2 = 6,15832 \text{ cm}^2$$

$$\begin{aligned} \therefore \text{Area of 480 circles} &= 6,15832 \text{ cm}^2 \times 480 \\ &= 2\,955,9936 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of leather} &= 137 \text{ cm} \times 30 \text{ cm} \\ &= 4\,110 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \therefore \text{Area of remaining leather} \\ &= 4\,110 \text{ cm}^2 - 2\,955,9936 \text{ cm}^2 \\ &= \mathbf{1\,154,01 \text{ cm}^2} \end{aligned}$$

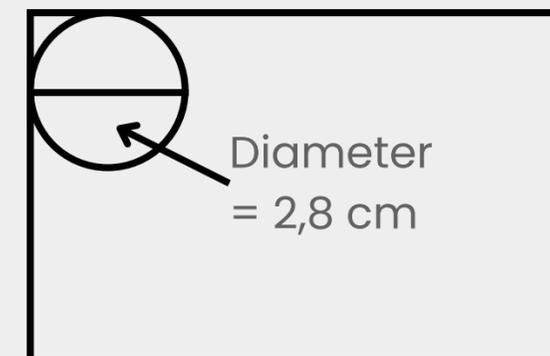
∴ Amanda's statement is VALID. There is less than 3 000 cm² of remaining leather.

PROPOSED MEMO

OPTION 2

Packaging problem

Width = 137 cm



Length = 30 cm

QUESTION 3.2.3



Amanda decides to make 48 pairs of earrings using flower-patterned synthetic leather for the large circles. Both sides of the large circle are covered using synthetic leather, while the small circle is painted black.

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Verify her statement, showing ALL calculations.

You may use the following formulae:

Area of rectangle = length × width

Area of circle = 3,142 × radius²

(9)
[32]

*additional comments in bold

COMMENTS (cont.)

- Perhaps the '48 pairs of earrings' was meant to direct learners to the 'area calculations'?
- Learners to please not be penalised too heavily if they opted for the 'packaging' approach
- This was a 9-mark question which may have scared off the weaker learners to even attempt. Must educators be focusing on 'bigger mark' questions in class – is this a new trend?



PROPOSED MEMO

Assuming 'ALL the large circles' are the circles that can be cut from the bought synthetic leather area

Width of leather = 1,37 m = 137 cm

Diameter of large circle = 1,4 cm x 2 = 2,8 cm

No. of large circles across width
= 137 cm ÷ 2,8 cm = 48,928 ... ≈ 48

No. of large circles down length
= 30 cm ÷ 2,8 cm = 10,714 ... ≈ 10

∴ Total number of large circles = 48 x 10 = 480

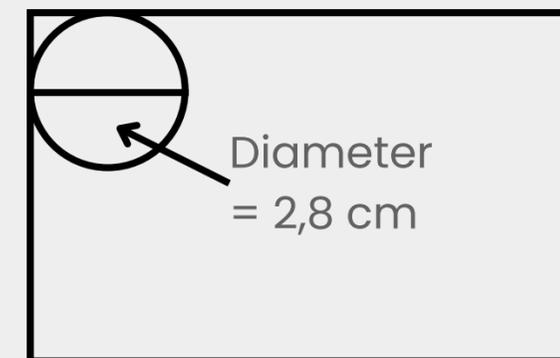
Area of 1 large circle = 3,142 x (1,4 cm)² = 6,15832 cm²

6,15832 cm² x 480
= 2965,9968 cm²

OPTION 2

Packaging problem

Width = 137 cm



Length = 30 cm

∴ There is less than 3 000 cm² of

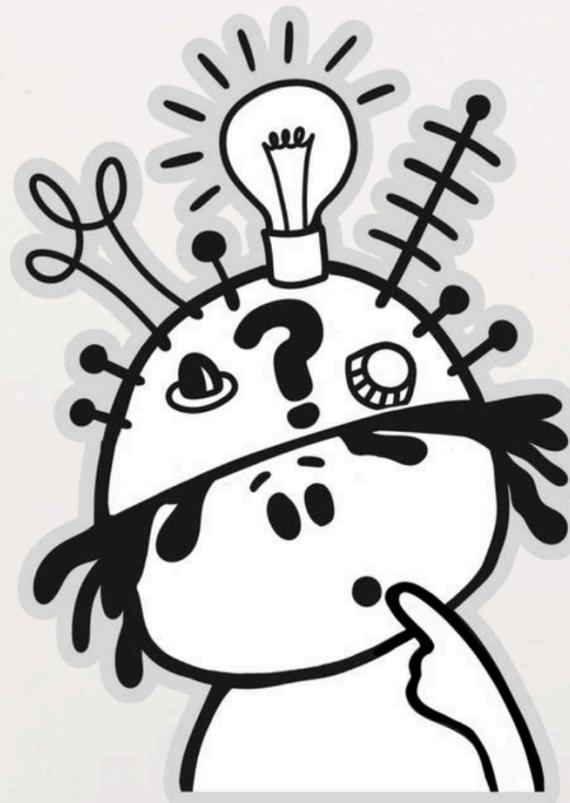
QUESTION 4.1.2 (b)

(b) Name the towns found on the N12. (3)

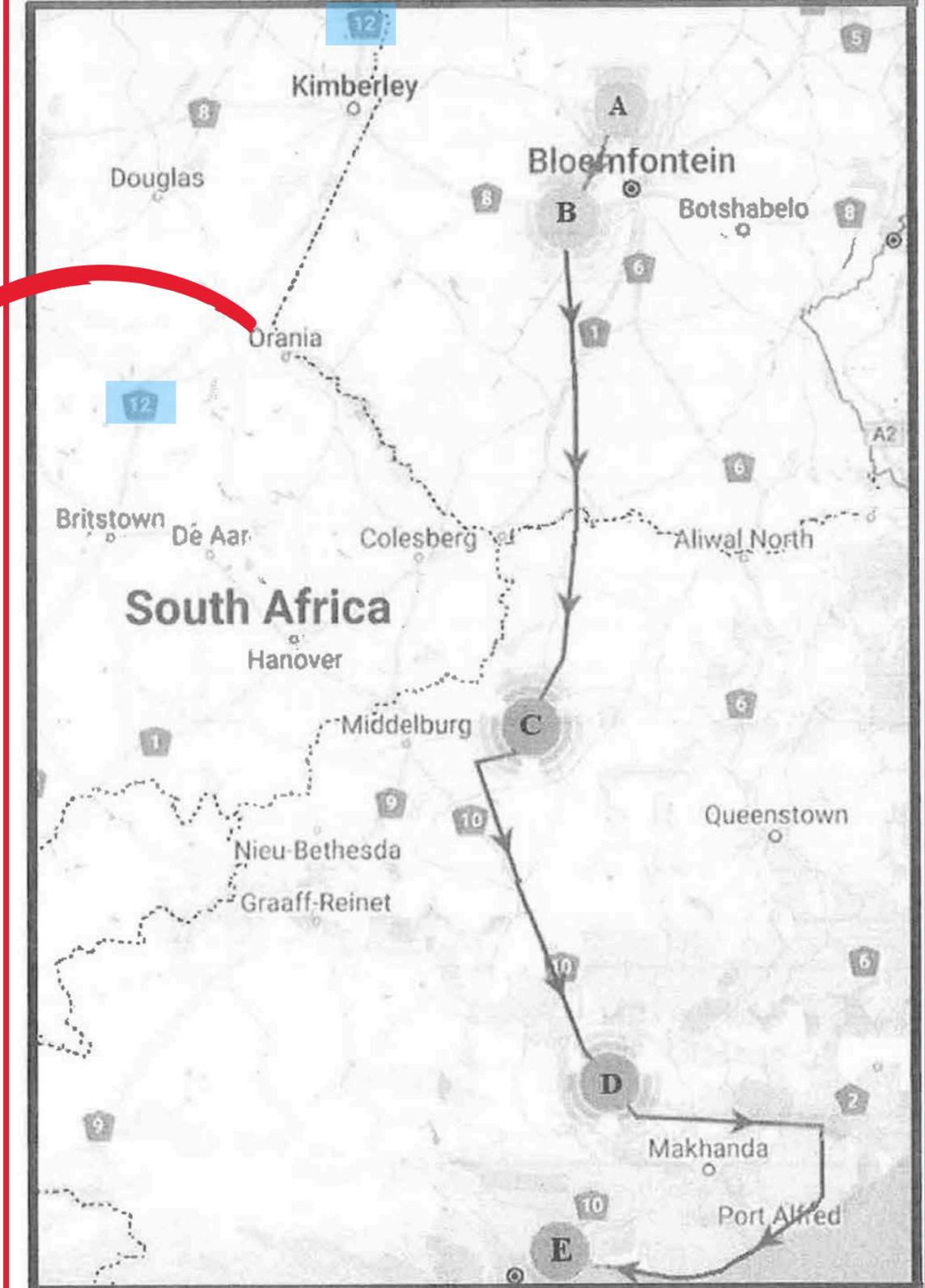
CHALLENGES

- Map very unclear – even replacement map
- 2 Towns for 3 marks??

Kimberley
Britstown



MAP WITH THE TRACKED FLIGHT OF THE FLAMINGO



[Adapted from www.news24.com/news24/community-newspaper/noordkaapbulletin]

QUESTION 4.2.4

The flight from area B to area E is 770 km.

Calculate (in km/h) the average speed of the bird as it flew from area B to area E.

You may use this formula: **Distance = speed × time** (4)

On 13 January 2022, the flamingo was in area A on the map.
On 13 June 2023, it started moving southwards from area A, the starting point of tracking the bird, and followed the following path:

- On 14 June, the flamingo spent the night at a small pan at area B.
- On 15 June at 19:00, it flew non-stop for 14 hours and 25 minutes to arrive at area E, the end point.

[Adapted from <https://www.news24.com/news24/community-newspaper/noordkaapbulletin>]

PROPOSED MEMO

Distance = speed × time

∴ Speed = distance ÷ time

= 770 km ÷ 14h 25 mins

= 770 km ÷ $14 \frac{25}{60}$ h

= 770 km ÷ 14,41666 ...h

= 53,41 km/h

CHALLENGES

*additional comments in bold

- 3rd Distance, speed, time concept question
- Reverse calculation
- Conversion of minutes to hours challenging
- **Some learners can use their scientific calculator to deal with the fraction of time. Educators are hoping that learners will not be penalised for this?**



QUESTION 4.2.5



The direct distance between area B and area E is 311,72 miles.

The person tracking the bird's GPS stated that the bird flew an extra distance of 268,13 km when compared to the direct distance.

1 mile = 1,60934 km

Verify, with calculations, whether this statement is VALID.

(5)

PROPOSED MEMO

1 mile : 1,60934 km

311,72 miles : ?

$$\begin{aligned}\therefore \text{Direct distance} &= 311,72 \text{ miles} \times 1,60934 \\ &= 501,66 \text{ km}\end{aligned}$$

Actual distance flown = 770 km Given in Q 4.2.4

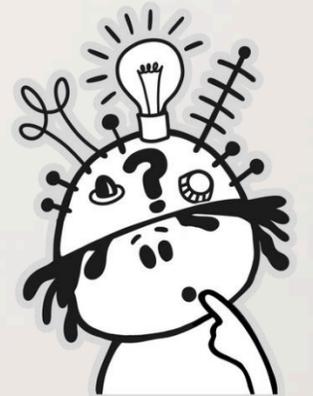
The flight from area B to area E is 770 km.

$$\begin{aligned}\therefore \text{Difference in distance} &= 770 \text{ km} - 501,66 \text{ km} \\ &= 268,34 \text{ km}\end{aligned}$$

∴ The statement is INVALID. The bird did not fly an extra distance of 268,13 km.

CHALLENGES

- No reference to information needed from Q4.2.4
- Difference is so similar – could cause doubt?
- Learners may have rounded off values – making the statement valid



QUESTION 4.2.6



The biggest flamingo is 59 inches tall, which is approximately 5 feet.

Some interesting facts about a country where flamingos are common:

- Approximately 10% of this country's women are shorter than 5 feet.
- Women make up 50% of this country's population.
- This country has a total population of 333 million people.
- 78% of this country's population are adults.

Calculate, rounded to the nearest million, the number of adult women shorter than 5 feet in this country.

(5)

COMMENTS

- Language a potential barrier
- Lots of information given & learners needed to order it
- Differentiation between women (adults) and girls (children)
- Strange comparison of flamingoes to the height of women?!?
- The context was forced.



PROPOSED MEMO

- Country's total population = 333 million → includes adults & kids
- 78% of country's population = adults
 \therefore Adults = $\frac{78}{100} \times 333$ million
= 259,74 million
- Women make up 50% of (adult) population
 \therefore Women = $\frac{50}{100} \times 259,74$ million
= 129,87 million
- 10% of country's women shorter than 5 feet
 \therefore Women shorter than 5 feet = $\frac{10}{100} \times 129,87$ million
= 12,987 million
 \approx 13 million

QUESTION 4.2.6

The biggest flamingo is 59 inches tall, which is approximately 5 feet.

Some interesting facts about a country where flamingos are common:

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- Women make up 50% of this country's population.
- This country has a total population of 333 million people.
- 78% of this country's population are adults.

Calculate, rounded to the nearest million, the number of adult women shorter than 5 feet in this country.

(5)

COMMENTS (cont.) *additional comments in bold

- Some learners may first have calculated 50% of the country's population of 333 million to determine the number of women. If they did, they would then have got a different answer – but then the comment of '78% of the country's population are adults' would have been null and void??



PROPOSED MEMO

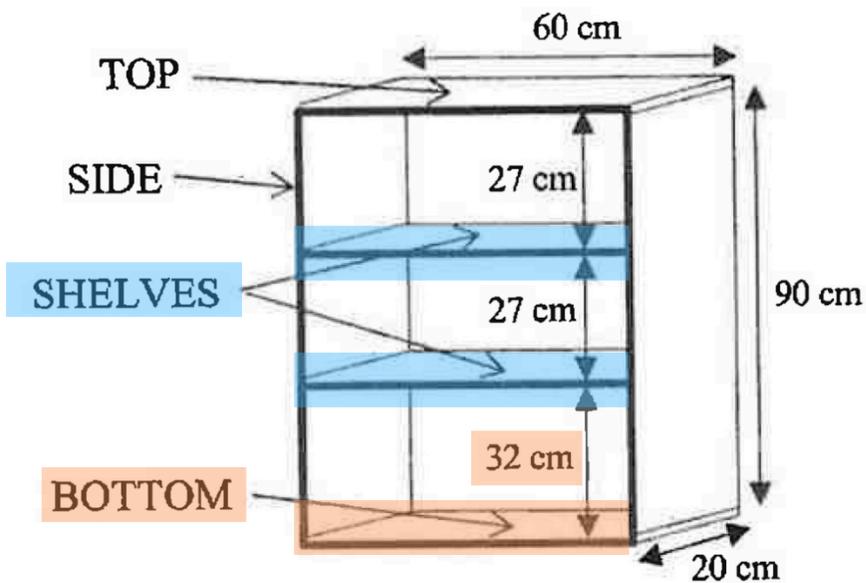
- Country's total population = 333 million → includes adults & kids
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∴ Women = $\frac{50}{100} \times 259,74 \text{ million}$
= 129,87 million
- 10% of country's women shorter than 5 feet
∴ Women shorter than 5 feet = $\frac{10}{100} \times 129,87 \text{ million}$
= 12,987 million
≈ 13 million

QUESTION 5.1.2

Write down the probability of randomly placing a book on a shelf with a height greater than 30 cm.

(2)

DIAGRAM 1: TOP, BOTTOM, SIDES AND SHELVES OF BOOKCASE AND HARDBOARD FOR THE BACK



NOTE:

- The back of this bookcase is made of a thin hardboard.
- The top and bottom pieces of wood extend right across the bookcase.
- The shelves are fitted in between the side pieces, so they are slightly shorter than the top and bottom pieces.

PROPOSED MEMO

OPTION 1

Assuming 'shelf' is only the middle two inside pieces of wood:

$$P(\text{shelf height} > 30 \text{ cm}) = \frac{0}{2}$$

OPTION 2

Assuming the 'bottom' piece of wood could be used as a shelf:

$$P(\text{shelf height} > 30 \text{ cm}) = \frac{1}{3}$$

COMMENTS

Actual labelled wording 'shelf' **VS** placing books in a bookcase in reality



QUESTION 5.1.3 (b)



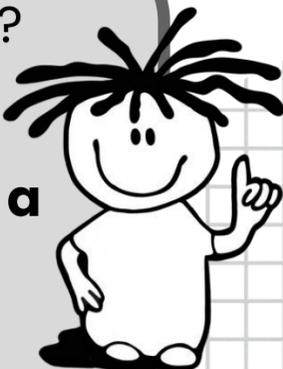
The back of the bookcase is made out of hardboard.

- (a) Explain why the dimensions of the hardboard is 60 cm by 90 cm. (2)
- (b) Draw a scaled diagram of the hardboard according to scale 1 : 20. (6)

COMMENTS

*additional comments in bold

- Interesting question! Marking nightmare?
- **This is the first time learners have been asked to draw a scaled diagram. Is this a new trend that must be practiced for exams and assessments?**



PROPOSED MEMO

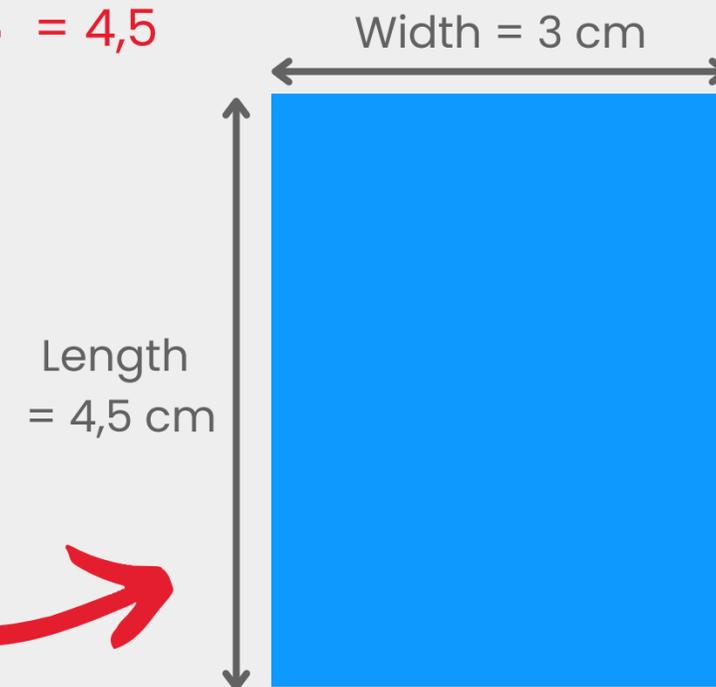
$$\begin{array}{l} \text{Map} : \text{Reality} \\ 1 : 20 \\ ? : 60 \text{ cm} \end{array} \quad \left. \begin{array}{l} \curvearrowright \\ \curvearrowleft \end{array} \right\} \times 3$$

$$\therefore \text{Width on map} = 1 \times 3 = 3 \text{ cm}$$

$$\begin{array}{l} \text{Map} : \text{Reality} \\ 1 : 20 \\ ? : 90 \text{ cm} \end{array} \quad \left. \begin{array}{l} \curvearrowright \\ \curvearrowleft \end{array} \right\} \times \frac{90}{20} = 4,5$$

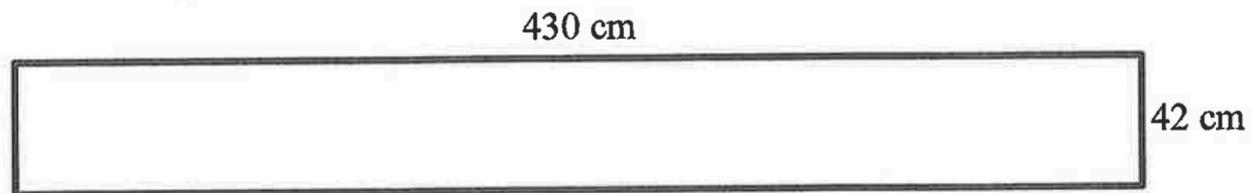
$$\therefore \text{Length/height on map} = 1 \times 4,5 = 4,5 \text{ cm}$$

\therefore Scaled diagram of hardboard



QUESTION 5.2

The wooden pieces for two identical bookcases are cut from ONE complete rectangular piece of wood which is 2 cm thick, 42 cm wide and 430 cm long.



Determine the area of the remaining part of the wood after cutting the required material.

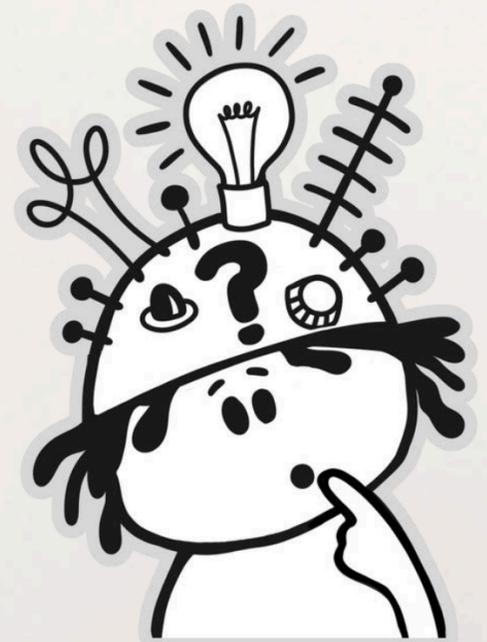
You may use the following formula:

Area of rectangle = length \times breadth

(6)

CHALLENGES

- Some educators felt that this question was misleading as it was clearly an 'area' question (due to the given formula), but in reality, it would have been a 'packaging' problem – whereby you would have laid out the pieces of wood and then seen what was left over.
- It was a lot of work to calculate all of this for only 6 marks:
 - Area of E & D wood
 - Area of F & G wood
 - Area of A & B wood
 - Total wood for 1 bookcase \times 2 identical bookcases
 - Area of original, given piece of wood
 - Remaining area of wood



QUESTION 5.3

The density of the wood is $0,75 \text{ g/cm}^3$.

A volume of approximately $0,4 \text{ m}^3$ unused wood is accumulated each month.

Simon states that it will take more than three months to accumulate one ton of unused wood.

Verify his statement, showing ALL calculations.

You may use the following formula:

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

(6)
[26]

COMMENTS

- Spot the units used in the formula!
- Conversion between m^3 and cm^3 tricky
- Reverse calculation to find the mass
- Added complexity – ‘more than 3 months to accumulate unused wood’



PROPOSED MEMO

$$\text{Volume} = 0,4 \text{ m}^3 \times (100)^3 = 400\,000 \text{ cm}^3 \text{ per month}$$

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$0,75 \text{ g/cm}^3 = \frac{\text{Mass}}{400\,000 \text{ cm}^3}$$

$$\begin{aligned} \therefore \text{Mass} &= 0,75 \text{ g/cm}^3 \times 400\,000 \text{ cm}^3 \\ &= 300\,000 \text{ g} \end{aligned}$$

$$\begin{aligned} \therefore \text{Mass of unused wood per month} \\ &= 300\,000 \text{ g} \div 1\,000 \div 1\,000 \\ &= 0,3 \text{ tons} \end{aligned}$$

$$\begin{aligned} \therefore \text{Mass of unused wood in 3 months} \\ &= 0,3 \text{ tons} \times 3 \text{ months} \\ &= 0,9 \text{ tons} \end{aligned}$$

∴ Simon's statement is **VALID**. It will take > 3 months to accumulate 1 ton of unused wood.

OPTION 1

QUESTION 5.3



The density of the wood is $0,75 \text{ g/cm}^3$.

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Verify his statement, showing ALL calculations.

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(6)
[26]

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$$0,75 \text{ g/cm}^3 = \frac{\text{Mass}}{400\,000 \text{ cm}^3}$$

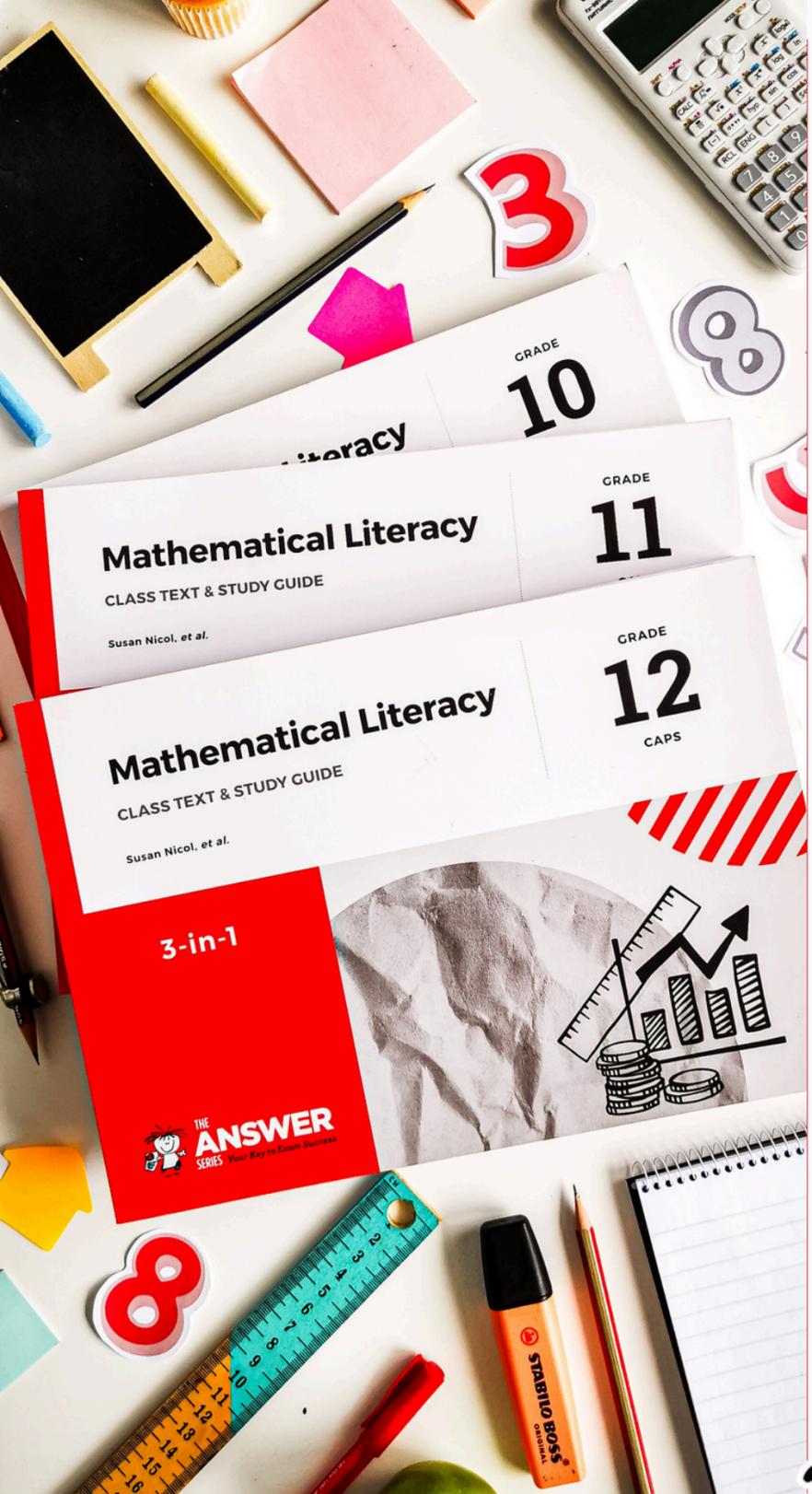
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$$\therefore \text{Mass of unused wood per month} \\ = 300\,000 \text{ g} \div 1\,000 \div 1\,000 \\ = 0,3 \text{ tons}$$

$$\therefore \text{No. of months to accumulate 1 ton of wood} \\ = \frac{1 \text{ ton}}{0,3 \text{ tons}} \\ = 3,33 \text{ months}$$

∴ Simon's statement is VALID. It will take > 3 months to accumulate 1 ton of unused wood.

OPTION 2



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