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Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P2

FEBRUARY/MARCH 2018

MARKS: 150

TIME: 3 hours

**This question paper consists of 10 pages, an addendum with 4 annexures
and 1 answer sheet.**

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. 2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions:
 - ANNEXURE A for QUESTION 1.2
 - ANNEXURE B for QUESTION 2.1
 - ANNEXURE C for QUESTION 3.3
 - ANNEXURE D for QUESTION 4.3
- 2.2 Answer QUESTION 4.1.3 on the ANSWER SHEET attached.
- 2.3 Write your centre number and examination number in the spaces on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start EACH question on a NEW page.
5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
6. Show ALL calculations clearly.
7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Maps and diagrams are NOT drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

1.1

The Rand Show is an annual event held in Gauteng. The Abrahams family, consisting of two adults aged 45 and 48, two children aged 6 and 14 and a grandmother aged 73, planned to visit the Rand Show.

TABLE 1 below shows the duration and ticket prices of the 2017 Rand Show.

TABLE 1: DURATION AND TICKET PRICES OF THE 2017 RAND SHOW

DURATION	TICKET PRICING	
	VISITORS AGE CATEGORY	PRICES INCLUSIVE OF 14% VAT
Friday 14 April to Sunday 23 April 09:00–19:00 daily	Adults (aged 17 to 64)	R150
	Pensioners (65 years and older)	R50
	Teens (aged 13 to 16)	R50
	Children (aged 6 to 12)	R20
	Children (under 6)	Free
18 April to 20 April	Adults and pensioners receive a 50% discount	

[Adapted from www.therandshow2017.co.za]

Use the information above to answer the questions that follow.

1.1.1 Calculate the total number of hours the Rand Show will be open to visitors for the full duration of the show. (3)

1.1.2 Calculate the amount of VAT payable on a teen's ticket. (3)

1.1.3 Determine the probability (in simplified form) of randomly selecting a Friday visit to the Rand Show. (3)

1.1.4 The family visited the Rand Show on 23 April 2017.

Mrs Abrahams stated that if the family had visited the Rand Show on 20 April instead of 23 April, they would have saved more than 35% on the total cost of the tickets.

Verify, showing ALL calculations, whether her statement is valid. (9)

1.2

The South African government offers social support to its citizens by providing social grants to qualifying citizens.

The bar graph and table on ANNEXURE A shows the number of citizens who receive social grants and the number of citizens employed per province.

Use the information on ANNEXURE A to answer the questions that follow.

- 1.2.1 Identify the province with the second highest number of citizens receiving social grants. (2)
- 1.2.2 Give ONE reason why governments usually provide grants to some of their citizens. (2)
- 1.2.3 State, giving a reason, whether the data in ANNEXURE A could also easily be represented using a single pie chart. (3)
- 1.2.4 Calculate the percentage of citizens receiving social grants in Limpopo. (6)
- 1.2.5 Gauteng and the Western Cape are the only TWO provinces with more employed citizens than the number of citizens receiving social grants. (6)
- Determine, using unit ratios, which ONE of these two provinces have more employed citizens than citizens receiving social grants. (6)
- [37]**

QUESTION 2

2.1 ANNEXURE B shows the credit card statement of Mr Son.

Use the information in ANNEXURE B to answer the questions that follow.

2.1.1 Determine the number of days covered by this credit card statement. (2)

2.1.2 Use the transaction details and show, with calculations, how the closing balance was determined. (5)

2.1.3 Explain why the bank omitted some digits from the account number on the statement. (2)

2.1.4 The bank offers an insurance option on the outstanding balance of the credit card account by charging a rate of R3,50 per R1 000 (or part thereof) on the outstanding balance.

Calculate how much Mr Son would have paid for insurance on the outstanding balance of this statement if he had chosen this option. (5)

2.1.5 Interpret the amount for balance brought forward for this statement. (2)

2.1.6 Give ONE possible reason why Mr Son might purchase goods using his credit card instead of paying cash for the goods. (2)

2.2 Mr Son travelled from his home directly to a bank 34 km away. He travelled at an average speed of 85 km per hour and arrived at the bank at 12:10.

Verify, showing ALL calculations, whether Mr Son left his home at exactly 11:40.

The following formula may be used:

Distance = average speed × time (5)

2.3

TABLE 2 below shows the publishing data (some data omitted) in terms of the revenue and the market value of the book titles published in 15 countries during 2013.

TABLE 2: REVENUE AND MARKET VALUE OF BOOK TITLES PUBLISHED IN 15 COUNTRIES DURING 2013

COUNTRY	REVENUE		MARKET VALUE		NUMBER OF BOOK TITLES PUBLISHED
	(m€)	(mLC)	(m€)	(mLC)	
USA	24 210	26 750	28 265	37 829	304 912
China	9 173	77 080	15 342	128 928	444 000
Germany	5 567	5 567	9 536	9 536	93 600
UK	4 551	3 898	3 875	3 240	184 000
Japan			5 409	785 100	77 910
Korea	2 949	4 212 623	4 879	6 969 316	43 146
France	2 687	2 687	4 401	4 401	95 483
Spain	2 060	2 060	2 708	2 708	76 434
Brazil	1 645	5 359	2 239	7 294	...
Italy	1 645	1 645	1 838	1 838	64 117
Turkey	1 183	1 583	1 729	2 314	47 352
Netherlands	1 108	1 108	1 497	1 497	24 177
Norway	311	2 627	743	4 167	6 373
Finland	254	254	338	338	8 870
Belgium	240	240	252	252	4 612

[Source: IPA, Annual Report, October 2014]

Brazil published the maximum number of book titles.

NOTE:

- m€ – millions of euros
- mLC – millions of local currency

Use TABLE 2 above to answer the questions that follow.

- 2.3.1 Give ONE possible reason why there is no recorded revenue data for Japan. (2)
- 2.3.2 Calculate the number of book titles published for Brazil if the range of the number of book titles published is 463 223. (3)
- 2.3.3 Calculate the median number of book titles published. (4)
- 2.3.4 Determine the modal market value in euros (€). (2)
- 2.3.5 Determine the number of countries where the euro (€) is the local currency. (3)
- 2.3.6 Calculate, as a percentage, the probability of randomly selecting a country whose market value of the published book titles is more than 1 billion euro. (3)

[40]

QUESTION 3

3.1

An organiser of a science fair has to produce rectangular display boards. The external dimensions of each board are 48 inches by 36 inches. The front surfaces of the boards must be spray-painted with one layer of non-reflective white paint.

NOTE:

1 mℓ of the paint covers a surface area of 50 cm²

1 inch = 25 mm

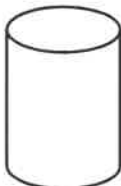

Determine, showing ALL calculations, whether 5 litres of the paint would be enough to spray paint 25 display boards.

The following formula may be used: **Area = length × width**

(10)

3.2

The organiser of the science fair has a choice of two cylindrical containers (as shown below) for display purposes. A decorative label with a 1 cm overlap will be placed right around the container completely covering the curved surface only.

CYLINDER A	CYLINDER B
 <p data-bbox="331 1234 571 1305">Diameter = 30 cm Height = 30 cm</p>	 <p data-bbox="866 1234 1106 1305">Diameter = 40 cm Height = 20 cm</p>

Verify, showing ALL calculations, whether cylinder **B** would require less material to make the decorative labels.

The following formula may be used:

Curved surface area of cylinder = $\pi \times \text{diameter} \times \text{height}$, where $\pi = 3,142$

(7)

3.3 ANNEXURE C shows the floor plan of the layout of the exhibition stands allocated to countries for the International Higher Education Fair.

Use ANNEXURE C to answer the questions that follow.

- 3.3.1 Give ONE practical reason why the information centre is situated in the middle. (2)
- 3.3.2 Determine the maximum number of higher education institutions from the USA that can exhibit at this fair. (3)
- 3.3.3 The organisers of the fair identified the most outstanding exhibition stand.
Determine the probability that this outstanding exhibition stand will NOT be a stand from China. (3)
- 3.3.4 An electrician was called to attend to a technical issue at one of the exhibition stands. He followed the route listed below.
- He entered through one of the delivery entrances.
 - He proceeded straight ahead passing the information centre on his left-hand side.
 - He turned right between the last two rows of stands.
 - He then continued straight ahead towards the last stand on his left-hand side to attend to the technical issue.
- Identify the delivery entrance used by the electrician and the stand number with the technical issue. (4)
- 3.3.5 Identify which Chinese stand is closest to the information centre. (2)
- 3.3.6 Calculate, using measurement, the scale of the floor plan of the layout of the exhibition stands if the actual length of the rectangular information centre is 24,5 m. (5)

[36]

QUESTION 4

4.1

Ms Bobby decided to open a business that sells sportsware sets with printed school logos.

Her start-up cost to purchase the machinery and supplies for the business was R10 000. She buys the T-shirts at R50,00 each and the shorts at R35,00 each. It costs a further R10,00 per item to print a school logo on each item.

She sells the T-shirt and shorts as one set of sportsware for R125,00

[Adapted from www.bidorbuy.co.za]

Use the information above to answer the questions that follow.

4.1.1 The formula to calculate her total cost is as follows:

$$\text{Total cost} = \text{R10 000} + \text{R105} \times (\text{number of sportsware sets})$$

(a) Show how the R105 in the formula above was determined. (3)

(b) Calculate her total cost for 500 sets of sportsware. (2)

4.1.2 TABLE 3 below shows the relationship between the number of sets of sportsware sold and her total income for the sets.

TABLE 3: NUMBER OF SPORTSWARE SETS SOLD AND THE TOTAL INCOME (in thousand rand)

NUMBER OF SPORTSWARE SETS SOLD	0	200	400	500	A	800	1 000
TOTAL INCOME (in thousand rand)	0	25	50	62,5	87,5	B	125

Determine the missing values A and B. (6)

4.1.3 Use TABLE 3 and the equation in QUESTION 4.1.1 above to draw TWO straight-line graphs representing the total cost and total income for up to 1 000 sets of sportswear.

Draw clearly labelled graphs on the grid provided on the ANSWER SHEET. (7)

4.1.4 (a) Write down the number of sportsware sets that must be sold to break even and give the income at the break-even point. (2)

(b) Determine exactly how many sets of sportsware must be sold to make a profit of R6 000. (3)

4.2

The photograph of a set of sportswear (T-shirt and shorts) must be placed together on an A4 page, as shown below. The actual measurements of the A4 page, T-shirt and shorts are given below.

The diagram illustrates the dimensions of an A4 page and a set of sportswear. The A4 page is a rectangle with a height of 296 mm and a width of 209 mm. Inside the page, a set of sportswear (a white T-shirt and black shorts) is shown. The T-shirt has a height of 71 cm and a width of 57 cm. The shorts have a height of 34 cm and a width of 23 cm. The entire set of sportswear is contained within the A4 page dimensions.

Determine, showing ALL calculations, which ONE of the two scales (1 : 3 or 1 : 4) should be used so that the set of sportswear fits on the A4 page. (6)

4.3

Ms Bobby is interested in selling her sets of sportswear over the Internet.

The line graphs in ANNEXURE D show preferred goods purchased over the Internet and in-store.

Use ANNEXURE D to answer the questions that follow.

- 4.3.1 Give ONE possible reason why some people prefer to buy goods over the Internet rather than in-store. (2)
- 4.3.2 Determine, with calculations, which goods have the same percentage difference between Internet and in-store purchases. (3)
- 4.3.3 Determine, with a reason, which ONE of the goods would rather be purchased in-store than over the Internet. (3)

TOTAL: [37] 150

ANSWER SHEET 1

QUESTION 4.1.3

CENTRE NUMBER

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EXAMINATION NUMBER

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INCOME AND COST GRAPHS

