



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2012

MARKS: 150

TIME: 3 hours

DEAF LEARNERS

**This question paper has 17 pages.
This question paper has 3 annexures.**



INSTRUCTIONS AND INFORMATION

1. This question paper has SIX questions. You must answer ALL the questions.
2.
 - There are THREE ANNEXURES at the end of this exam question paper: You must write your centre number in the blocks at the top of the page.
 - You must write your exam number in the blocks at the top of the page.
 - You must answer QUESTION 3.3.2 on ANNEXURE A.
 - You must answer QUESTION 4.1.3 on ANNEXURE B.
 - You must answer QUESTION 4.3.1 on ANNEXURE C.
 - You must hand in the ANNEXURES with your answers when you have finished your exam.
3. Your answers must have the same numbers as the questions.
4. You must start EACH question on a NEW page.
5. You can use an approved scientific calculator (it must be non-programmable and non-graphical). The question will tell you if you must not use a calculator.
6. Show ALL calculations that you used in finding the answers.
7. You must round off your answers to TWO decimal places. The question will tell you if it must be different.
8. You must show the units of measurement. The question will tell you if you must show the units of measurement.
9. Write neatly.

QUESTION 1

- 1.1 1.1.1 **Simplify:** $\frac{3}{4}$ of $\sqrt{9\,673} - 0,5 (5,9352 + 2,16937)$ (2)
- 1.1.2 **Calculate:** 22,25 % of R136,00. (2)
- 1.1.3 **Convert** 450 metres to kilometres. (1)
- 1.1.4 Write 5,34 million as an ordinary number. (1)
- 1.1.5 Calculate the price per egg if half a dozen eggs cost R7,92. (2)
- 1.1.6 In which month of the year 2011 will the 200th day fall? (2)
- 1.2
- A local supermarket pays their casual packers R18,00 per hour.
 Mike is a casual packer.
 He works a daily shift of $2\frac{1}{2}$ hours.
 Mike starts at 16:30.
- 1.2.1 **At what time** does Mike's daily shift end? (2)
- 1.2.2 Mike works 12 shifts per month.
 Determine Mike's **wage (pay) per month**.
 You must use the formula:
Wage = R18,00 × number of shifts × number of hours per shift (2)
- 1.3
- Jakoba and Sihle have a business.
 The business made a profit of R135 400 during 2010.
 The total expenses in the same year were R235 656.
- 1.3.1 You must calculate the **total income** of the business during 2010.
 You must use the formula: **Total income = profit + total expenses** (2)
- 1.3.2 Jakoba and Sihle shared their profit.
 Jakoba received R54 160.
 You must determine the **ratio** of Jakoba's profit to Sihle's profit.
 Write your answer in simplified form. (3)
- 1.3.3 They predict (guess) that the business's profit in 2011 will be 8% greater than the profit made in 2010.
 How much profit will the business make in 2011? You must calculate. (3)

1.4

Mark Botha is a cricket player.
Look at his runs.
He scored the runs in his last nine innings.

52 86 24 38 56 42 0 50 38

1.4.1 You must arrange the runs scored in **ascending order**. (1)

1.4.2 Write down the **modal runs** scored. (1)

1.4.3 Calculate the **average (mean) number** of runs scored. (3)

1.5

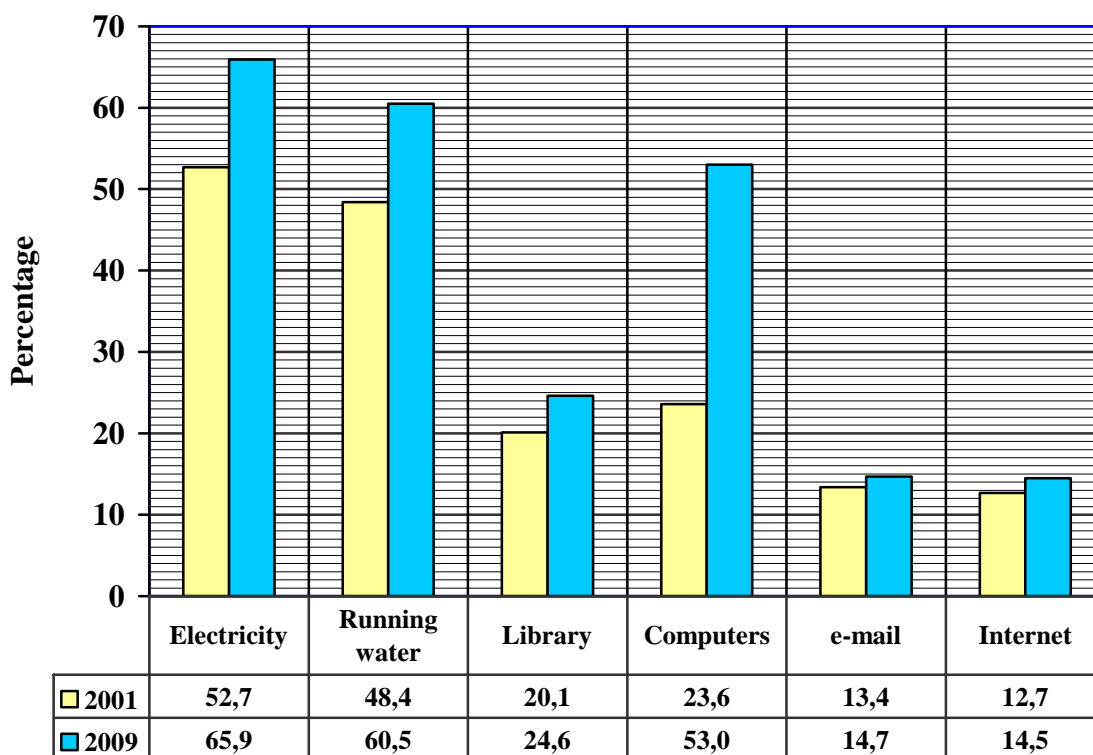
Statistics South Africa had a **Census@School** project in 2001 and 2009.
Statistics South Africa used a sample of South African schools.
The purpose (aim) of this project was to tell schools about the census.
They also want to get information about the schools.
The schools can use this information to teach data handling.

Look at the bar graph.

Statistics South Africa wanted to see the facilities and services at schools.

The bar graph gives the percentage of the schools in the 2001 and 2009 **Census@School** project with the facilities and services.

**FACILITIES AND SERVICES AT SOUTH AFRICAN SCHOOLS
DURING 2001 AND 2009**



Type of facility or service available at the school

- 1.5.1 Look at the graph on page 4.
Some facilities or services showed the **smallest percentage use** during 2001. Which facility or service? (1)
- 1.5.2 Look at the percentage of schools that had access to running water in 2001.
Look at the percentage of schools that had access to running water in 2009.
Calculate the difference. (2)
- 1.5.3 Write the name of the facility or service that had the **greatest increase** in percentage over the two years. (1)
- 1.5.4 If 2 500 schools were surveyed in 2009, calculate the number of schools with **library facilities.** (2)
- [33]

QUESTION 2

- 2.1 Mrs King inherited (received money after someone died) an amount of R150 000.
She decided to invest the money at a bank.
Mrs King wanted to go overseas for a holiday.
She wanted to go to China.
She will use some of the interest to pay for the holiday.

- 2.1.1 She chooses ABC Bank.
ABC Bank offers 6,6% compound interest per annum.
You must calculate the **value of her investment after 3 years**.

You must use the formula:

$$A = P(1 + i)^n$$

where **A** = final amount

P = amount invested

i = annual interest rate

n = investment period in years

(3)

- 2.1.2 She wants to spend R15 000 in China.
How much will **R15 000 be in Chinese yaun (CNY)?**

Use the exchange rate:

$$R1,00 \text{ (ZAR)} = \text{¥} 0,89 \text{ (CNY)}$$

(2)

- 2.2 Look at TABLE 1.

It shows the South African population during 2009 and 2010.
They give the population in thousands.
They give the population according to race and gender.

TABLE 1: The South African population (in thousands) during 2009 and 2010 according to race and gender

RACE	MALES		FEMALES		TOTAL	
	2009	2010	2009	2010	2009	2010
Black	18 901,0	19 314,5	20 235,2	20 368,1	39 136,2	39 682,6
Coloured	2 137,3	A	2 295,8	2 299,2	4 433,1	4 424,1
Asian	635,7	646,6	643,4	653,3	B	1 299,9
White	2 194,7	2 243,0	2 277,4	2 341,7	4 472,1	4 584,7
TOTAL	23 868,7	24 329,0	25 451,8	25 662,3	49 320,5	C

[SA YEAR BOOK 2009/2010, 2010/2011]

- 2.2.1 (a) Write down the population of the **coloureds** in **2010**. (2)

- (b) Write down the population of the **white females** in **2009**. (2)

- 2.2.2 Look at **A**, **B** and **C**.

Determine the missing values **A**, **B** and **C**. (6)



- 2.2.3 Look at the number of black males in 2009.
Look at the number of black males in 2010.

Calculate the difference. (2)
- 2.2.4 Find the number of Asian females in 2010.

Calculate the number of Asian females as a percentage of the total number of females in 2010. (2)
- 2.2.5 Look at all the genders.

Which gender had a higher increase between 2009 and 2010?

You must show ALL your calculations. (3)

2.3

Mrs King stays in Pietermaritzburg.

She works in Durban.

Every day Mrs King uses the N3 toll road. She travels from her home in Pietermaritzburg to Durban.

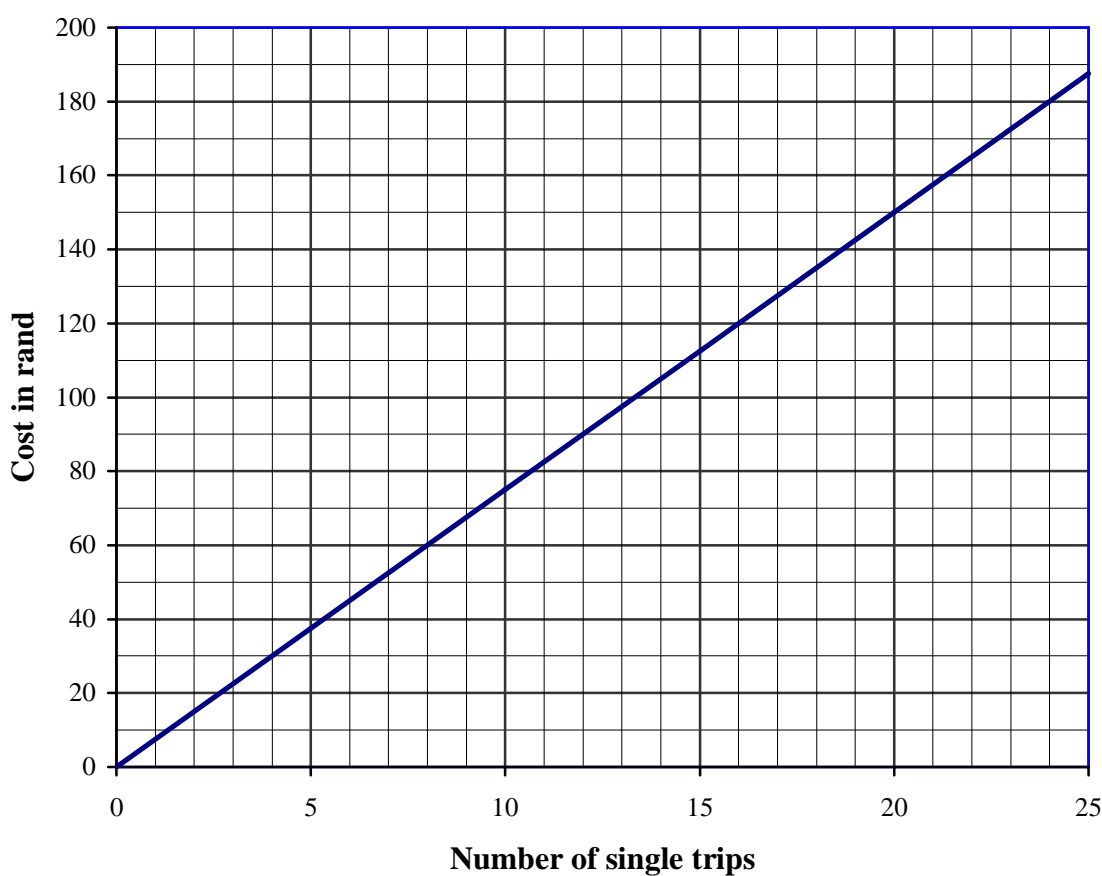
In the afternoons she travels from Durban back to her home in Pietermaritzburg.

She pays a toll fee (an amount paid for using the road) twice daily.

Look at the graph.

The graph below shows the toll fees for **single trips**.

Toll fees between Durban and Pietermaritzburg in rand



Look at the graph. Answer the questions.

2.3.1 Mrs King must pay toll fees for TEN single trips.
Approximately **how much** will Mrs King pay? (2)

2.3.2 Mrs King has R180,00.
How many single trips can Mrs King make? (2)

- 2.3.3 Mrs King wants to make THREE return trips.
Calculate the approximate cost. (3)
- 2.3.4 Mrs King wants to budget for the toll fees per month.
Mrs King works for an average of 22 days per month.
Calculate the approximate amount she has to budget for toll fees. (3)
[32]

QUESTION 3

3.1

Wandile Zwane is a cook.
He must buy fresh vegetables for cooking.
He makes a salad.
He then uses three cabbages and five carrots.

3.1.1 **How much** will he pay for the cabbages and carrots?

Calculate the cost. You must use the formula:

$$\text{Cost} = \text{number of cabbages} \times \text{R5,75} + \text{number of carrots} \times \text{R1,25} \quad (2)$$

3.1.2 Wandile paid a total amount of R31,75 for the cabbages and the carrots.
He bought 4 cabbages.
Calculate how many carrots he bought.

The following formula may be used:

$$\text{Number of carrots} = \frac{\text{cost} - (\text{number of cabbages} \times \text{R5,75})}{\text{R1,25}} \quad (2)$$

3.2

Wandile wants to grow his own vegetables.
He makes a rectangular vegetable garden.
The length of the garden is = 2,5 m.
The breadth of the garden is = 1,5 m.



He puts shade-netting over the vegetable garden.

3.2.1 Wandile wants to put shade-netting over the vegetable garden.

Calculate the **area** that the shade-netting will cover.

You must use the formula:

$$\text{Area of a rectangle} = \text{length} \times \text{breadth} \quad (2)$$

- 3.2.2 Wandile adds a 7,5 cm layer of compost to his vegetable garden. Calculate the **volume of the compost** added.

You must use the formula:

$$\text{Volume of a rectangular prism} = \text{length} \times \text{breadth} \times \text{height} \quad (3)$$

3.3

Wandile buys packets of seeds from a shop.
The shop keeps record of the most popular vegetable seeds sold per year.

TABLE 2: Packets of seeds sold per year

COOL SEASON		WARM SEASON	
SEEDS	PERCENTAGE SOLD	SEEDS	PERCENTAGE SOLD
Cabbage	48,0	Pumpkin	50,0
Onions	10,6	Beans	30,0
Radish	2,7	Tomatoes	10,0
Carrots	31,5	Cucumbers	10,0
Lettuce	A		

- 3.3.1 (a) Look at the graph.

What **percentage** of the seeds sold was lettuce seeds? (2)

- (b) The shop sold 525 packets of cool season seeds.

How many of these packets were cabbage seeds? (2)

- 3.3.2 You must do the question on ANNEXURE A.

Draw a **pie chart**.

You must show the most popular warm-season seeds sold per year.

Clearly label the sectors showing the name of the seed.

Clearly show the percentage sold.

(5)
[18]

QUESTION 4

4.1

AA High School wants to rent a photocopier.
They asked Company A and Company B for quotations:

Look at the two quotations.

Company A:

Rental of R800,00 per month.

This amount includes 3 000 free copies per month.

Thereafter they must pay 5 cents per copy.

Company B:

Rental of R600,00 per month.

This amount includes 2 500 free copies per month.

Thereafter they must pay 10 cents per copy.

TABLE 3: Monthly cost (in rand) of renting a photocopier

Number of copies made	0	2 000	2 500	3 000	4 000	6 000	7 000	8 000
Company A	800	800	800	800	Q	950	1 000	1 050
Company B	600	600	P	650	750	950	1 050	1 150

4.1.1 Look at **P** and **Q**.

Determine the missing values **P** and **Q**.

(4)

4.1.2 The school wants to rent a photocopier from Company B.

You want to calculate the total cost per month of renting a photocopier.

Write down a **formula** that you can use.

(3)

4.1.3 Look at ANNEXURE B.

There is a line graph that shows the total rental cost for Company B.

You must use the same system of axes.

Draw a **line graph** to show the total rental cost for Company A.

(4)

4.1.4 Determine the number of photocopies made if the total rental cost for both companies is the same.

(2)

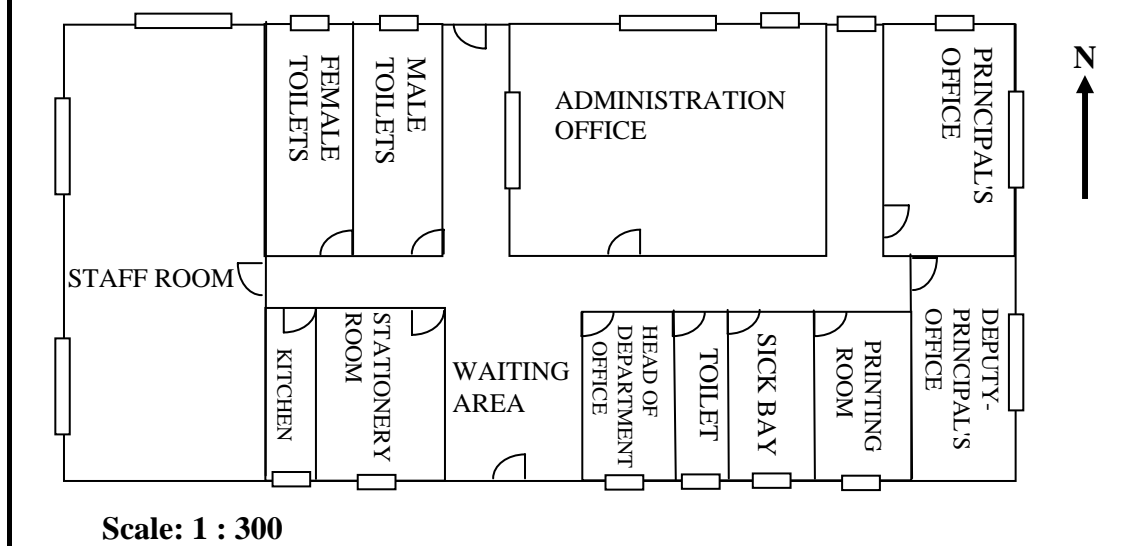
4.1.5 AA High School makes an average of 7 000 photocopies per month.

How much will the school **save** if they take the cheaper rental option?
Show your calculations.

Write the **name of the company** with the **lower total rental cost**. (3)

4.2

This is a scale diagram of AA High School's administration building:



4.2.1 Write the name of the **room(s) south west of the administration office**. (2)

4.2.2 The width of the printing room on the scale diagram is 1,33 cm.

Use the given scale.

Calculate the actual width of the printing room.

Give your answer in metres. (3)

4.3

The school secretary keeps a record for every week of the number of copies they make every day.

TABLE 4: Record showing the number of copies made daily

	Monday	Tuesday	Wednesday	Thursday	Friday
NUMBER OF COPIES	350	575	280	315	300

4.3.1 You must do the question on ANNEXURE C.

You must draw a **bar graph**.

You must show the number of copies made daily for a week. (6)

4.3.2 Look at the number of copies every day.

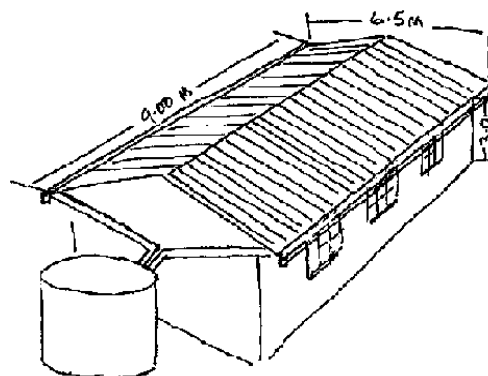
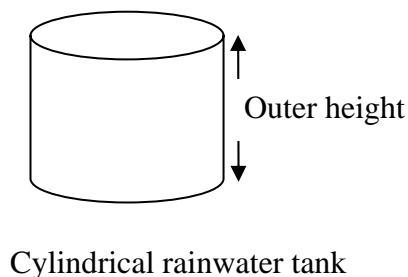
Write the **name of the day** when they make the least number of copies

(1)
[28]

QUESTION 5

5.1

Jabu Ndou wants to collect rainwater from his roof.
He needs a cylindrical water tank.
He will use the water for the plants in his garden.



- 5.1.1 Jabu wants to know **how much rainwater the tank can hold**.
The inner radius of the tank is 0,998 m.
The inner height of the tank is 2,498 m.

- (a) Calculate the **total volume of the water tank**.
You must round off your answer to THREE decimal places.

You must use the formula:

$$\text{Volume of a cylinder} = \pi \times (\text{radius})^2 \times \text{height},$$

and using $\pi = 3,14$ (3)

- (b) We tell you the tank is 80% full.
Determine the **height of the water in the tank**.
You must round off your answer to THREE decimal places. (2)

- 5.1.2 Jabu wants to paint the outside walls and roof of the rainwater tank.
The outer radius of the tank is 1 m.
The outer height of the tank is 2,5 m.
Calculate the **surface area of the tank that must be painted**.

You must use the formula:

$$\text{Surface area of the tank} = \pi \times \text{radius} \times (2 \times \text{height} + \text{radius}), \text{ and}$$

using $\pi = 3,14$ (5)

- 5.1.3 We tell you they fill the tank up at an average rate of 5 mm per minute.
The tank is empty.

Calculate **how long it took the water in the tank** to reach a height of 1 200 mm.

Write your answer in hours.

You must use the formula:

$$\text{Time (in hours)} = \frac{\text{height (in mm)}}{\text{average rate (in mm per hour)}} \quad (3)$$

5.2

Jabu Ndou wants to know how much time it takes to install a water tank.
The company says it depends on (has to do with) the number of workers.

TABLE 5: Number of workers needed to install Jabu's rainwater tank

NUMBER OF WORKERS	2	3	A	8
NUMBER OF HOURS	15	10	7,5	B

- 5.2.1 Look at **A** and **B**.

Determine the missing values **A** and **B**. (4)

- 5.2.2 Look at the data in **TABLE 5**.

State the **type of proportion**. (1)

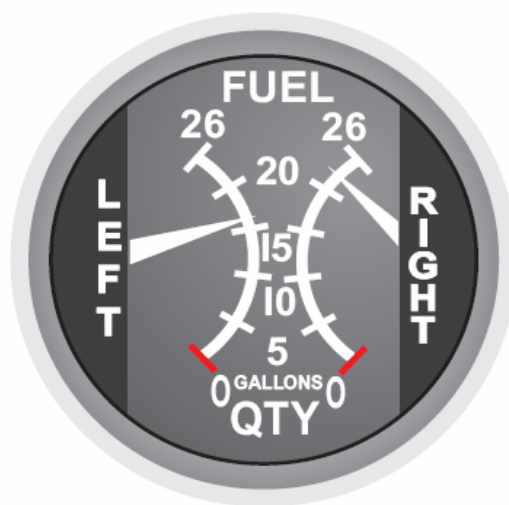
[18]

QUESTION 6

6.1

Mr Coetzee has a small aeroplane.
He transports visitors to different national parks in South Africa.

His small aeroplane has two fuel tanks.
His small aeroplane has two engines.

**FUEL GAUGE OF A TWIN-ENGINE AEROPLANE**

The left side of the gauge shows the fuel reading of the left engine.
The right side of the gauge shows the fuel reading of the right engine.

- 6.1.1 We tell you both fuel tanks are full.
Determine the **total number of gallons of fuel** that are in the TWO fuel tanks. (1)
- 6.1.2 Look at the fuel in the LEFT TANK of the aeroplane.
Estimate how many gallons of fuel **are in** the LEFT TANK. (2)
- 6.1.3 Look at the fuel in the RIGHT TANK of the aeroplane.
Estimate how many gallons of fuel will be **needed to fill** the RIGHT TANK. (2)
- 6.1.4 Convert 18 gallons to litres
where
1 gallon = 4,546 litres. (2)
- 6.1.5 Determine the **cost of 15,76 litres** of fuel if fuel costs R9,92 per litre. (2)
- 6.1.6 The fuel price was R9,92 per litre.
The fuel price decreased by 86 cents per litre.
Calculate the percentage decrease. (3)

- 6.2 Mr Coetzee wants to plan his trips between the different national parks. He uses this map of South Africa.



[Source: SA Venues.com]

Look at the map. Answer the questions.

- 6.2.1 Find the Vaalbos National Park.
Write down the **grid reference**. (2)
- 6.2.2 Write the **name of the national parks** in the Western Cape. (2)
- 6.2.3 In which **general direction** is KIMBERLEY **from** EAST LONDON? (2)
- 6.2.4 The distance between Kimberley and Bloemfontein is 153 kilometres.
It took Mr Coetzee 30 minutes to fly the distance of 153 kilometres.

Calculate the **average speed in kilometres per hour**.

You must use the formula: $\text{Average speed} = \frac{\text{distance travelled}}{\text{time taken}}$ (3)
[21]

TOTAL: 150

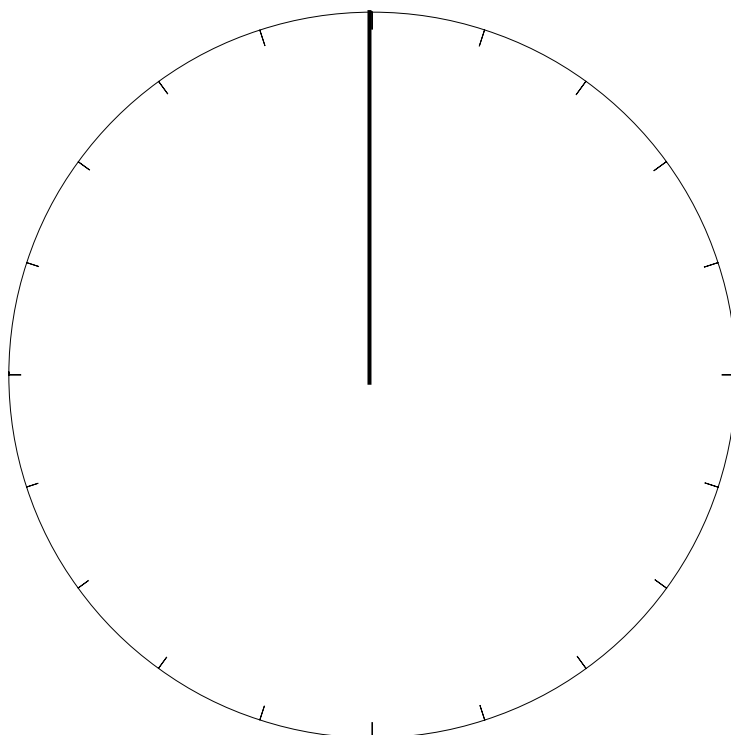


ANNEXURE A**CENTRE NUMBER:**

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EXAMINATION NUMBER:

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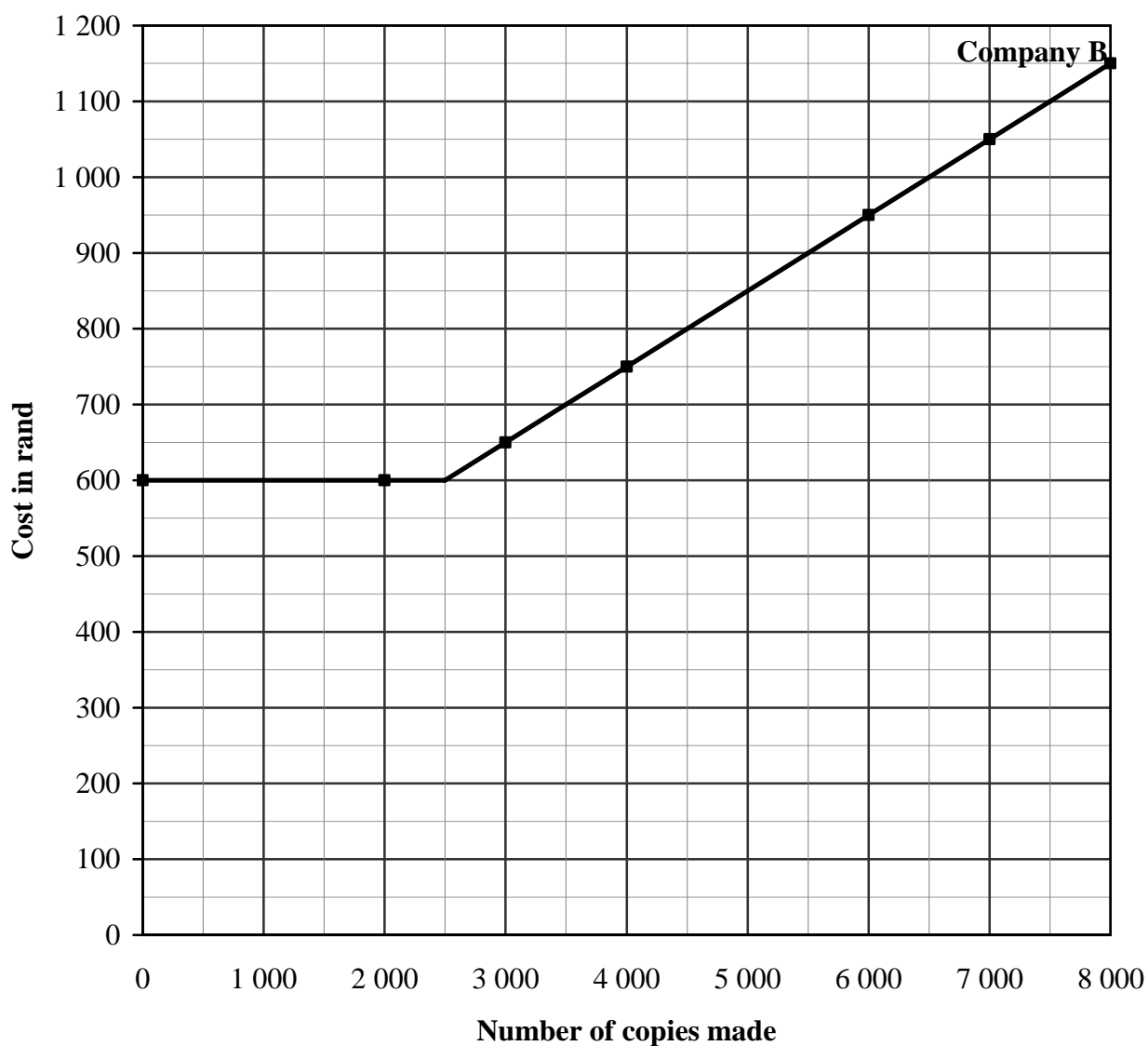
QUESTION 3.3.2**THE MOST POPULAR WARM-SEASON VEGETABLE SEEDS SOLD IN 2011**

ANNEXURE B**CENTRE NUMBER:**

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EXAMINATION NUMBER:

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QUESTION 4.1.3**COST OF RENTING A PHOTOCOPIER**

ANNEXURE C**CENTRE NUMBER:**

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EXAMINATION NUMBER:

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QUESTION 4.3.1**NUMBER OF COPIES MADE**