Learner Workbook

LP4:
Financial and Mathematical Literacy

Learner Name and Surname	
Learner ID	
Company / Branch	
Date	
Learner Signature	

SAQA ID 9016: Represent, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts; NQF Level 4, 4 Credits
SAQA ID 7468: Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues; NQF Level 4, 6 Credits
SAQA ID 9015: Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems; NQF Level 4, 6 Credits

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Class Activities

During and after the initial training the learner will be required to complete a number of activities. These activities will be both individual and group activities (class activities formative activities). The activities are numbered and are to be included in the learner's portfolio of evidence. These activities will measure the progress of the learner through the programme. For authenticity reasons these activities must be handwritten.

Class Activity 1: Measure, estimate, and calculate physical quantities Complete the following in small groups / individually as per the instructions from your facilitator:	9016.1

Measuring instruments

Length

1. How long is the stick in the following example?

1. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

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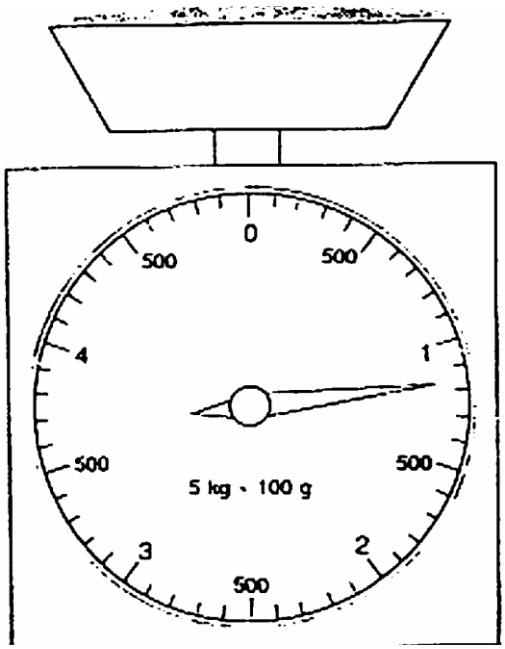
2. Select and list three items from your desk.

3. Use a ruler to measure these three items. Record the findings.

4. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

Mass

1. What is the reading on the scale in the following example? 1.2 kg



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2. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

3. How much do you weigh? Use an appropriate scale to measure your weight. Record the findings.

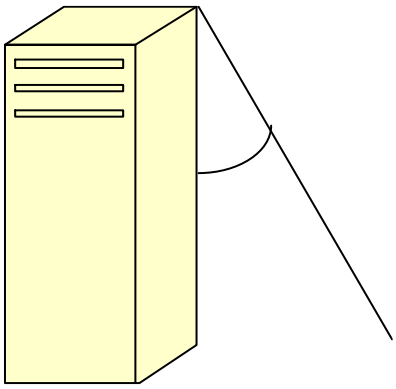
4. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

5. Arrange the masses from small to large

0.065kg; 20kg; 45mg; 200g; 2500g; 0.67g; 2000mg

Angles

1. Use a protractor to measure the following angle



2. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

3. The four corners of your office should each be 90 degrees. Describe how you would measure these without a protractor.

Time

1. Measure 15 seconds on a watch (non-digital) and request your supervisor or colleague to verify this for you and provide you with written feedback that you are able to do it on the following form.

Learner Name		**Date**	
Measure time **Did the learner:**		**Yes/No**	**Comments**
1. Measure 15 seconds on a watch (non-digital)?			
Person Signature			
Person Name			
Person Designation			
Person Contact Details			

2. How did you ensure that the quantities that you measured are correct to within the least step of the instrument (AC 1.4)?

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Estimating Quantities

Your Pen

1. Estimate the length of your pen

2. Measure the pen

3. Describe the difference

4. If you had to ask someone to estimate the length of your pen, describe the possible answers, to the length of the pen that you would consider to be tolerable for this context.

Your Kettle

1. Estimate the volume of the kettle in the kitchen with reference to the number of cups of tea that you could make with the boiled water in this kettle.

2. Measure how many cups of water the kettle holds

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3. Justify what the tolerance would be for estimating the volume of the kettle for this scenario.

Measuring Instruments

1. Complete the following table to identify the appropriate measuring instrument that you would use / choose to measure the various particular quantities:

Activity	Measuring Instrument	Reason
Height of your colleague		
Capacity of a glass		
Temperature of a sick colleague		
Time taken to answer a call		
Distance between Pretoria and Johannesburg		

Selecting and Using Formulae

1. Complete the following table to show that you can select the appropriate formulae:

Measurement	Description	How to calculate (formula)
Speed		
Area		
Perimeter		
Time		

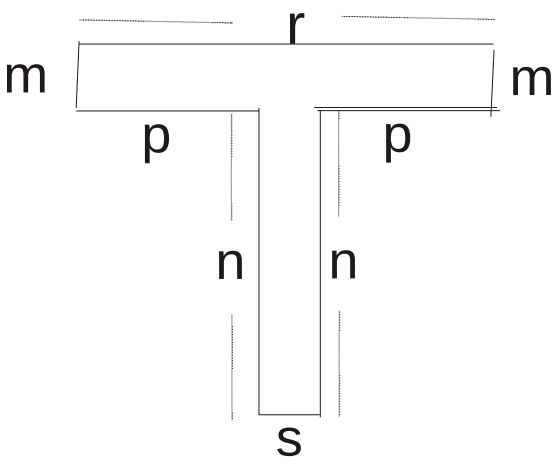
2. Show that you can use the formulae by selecting an example for each of the above and then performing the calculation. Use the following table to record your data:

Measurement	Example description	Calculation (formula) and answer
Speed		
Area		
Perimeter		
Time		

Quantitative Descriptions

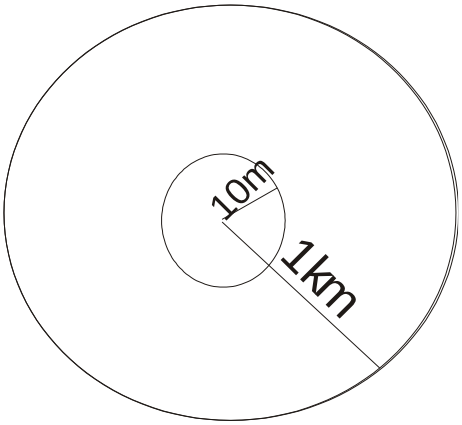
1. Perimeter

An old man wants to fence a plot of land in the form of a T as shown in the figure. The symbols on the sketch represent sides of different lengths.



Suppose m = 500m; r = 2 km; n = 2.5km and s = 250m

Calculate the perimeter of the plot (show your calculations)



2. The illustration above is that of a circular farm containing a circular drinking area with radius 10m. Find the area of the farm (excluding the drinking area), if the radius of the farm is 1km.

Business Card

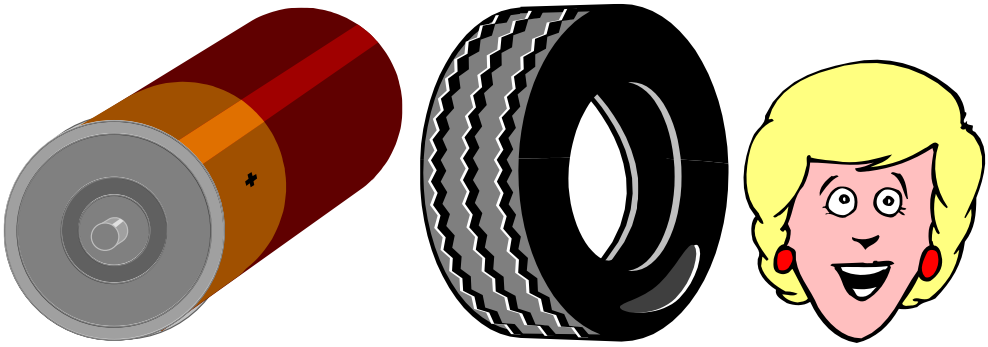
3. A business card has an area of 30cm². Calculate how many of these can you fit on an A4 sheet of paper?

4. Draw and measure the layout onto an A4 sheet of paper. Draw the layout to show how you will arrange these business cards to fit in the maximum number of cards.

Place any extra evidence after this page, clearly marked for easy reference.

Class Activity 2: Explore, analyse & critique, describe & represent, interpret & justify geometrical relationships Complete the following in small groups / individually as per the instructions from your facilitator:	9016.2 9016 EEK1 9016 EEK2 9016 EEK3 9016 EEK4

1. Draw (represent) the following objects (battery, tyre and face) in top, front and side views



Top view:

Front view:

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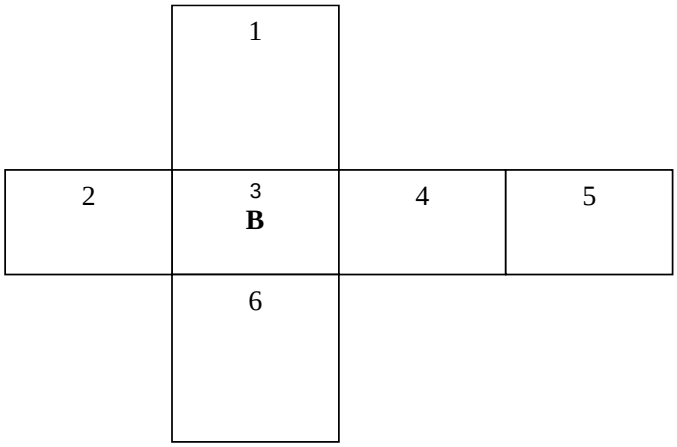
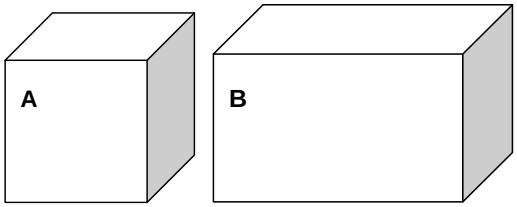
Side view:

Interpret Box Representations

Task 1

1. Which of these two boxes has this net? B





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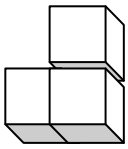
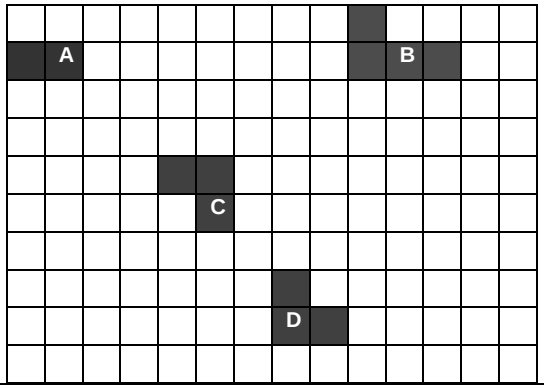
Task 2

Look at the building block and the floor plans given below.

1. On which floor plan will this building block fit? A only, because of smaller block on the left of the object given
2. Mark it on the grid





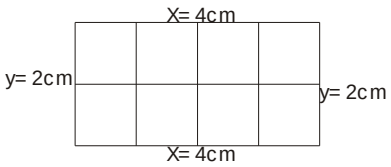
Analyse and Create Representations

Task 1

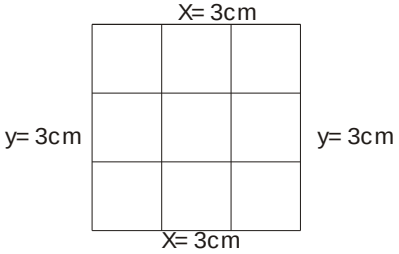
You are given a fence of length 12 m to arrange into a rectangular vegetable farm. The following are 3 possible representations for this rectangular vegetable farm.

1. Which one is not a representation of the farm?

A



B



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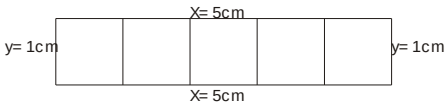
C



Task 2

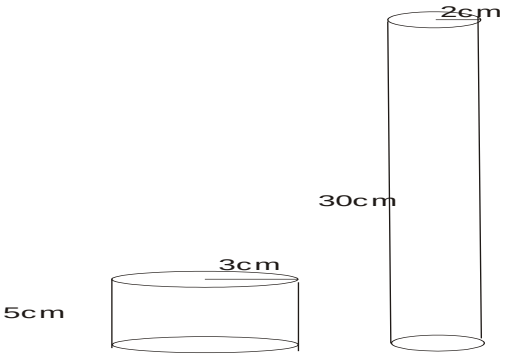
1. Create a presentation of the layout of your house / home. Use isometric paper (paper with squares on it) to represent the layout (floorplan).

Volume

1. Calculate volume of a rectangular block with the following measurements:

l = 20cm, b = 4cm and h = 6,5cm

2. Compare the containers given below. Which of the two is bigger? Explain your reasons.



(first container = 3cm diameter and 5 cm high;

second container = 2cm diameter and 30cm high)

Distance and Position

Task 1

1. Identify and list (in the table) 4 different objects (Chair, table, window, etc.) in your office.

2. Estimate and then measure the distance between objects and the distance in relation to the entrance door using a tape measure and record your answers in m(meters). Fill in the table provided.

Object	Estimated distance between objects	Estimated distance from the entrance door	Measured distance between objects	Measured distance from the entrance door

3. Which item is the nearest to the door?

4. Which item is the furthest from the door?

5. Which item is the closest to you when you are working in your office?

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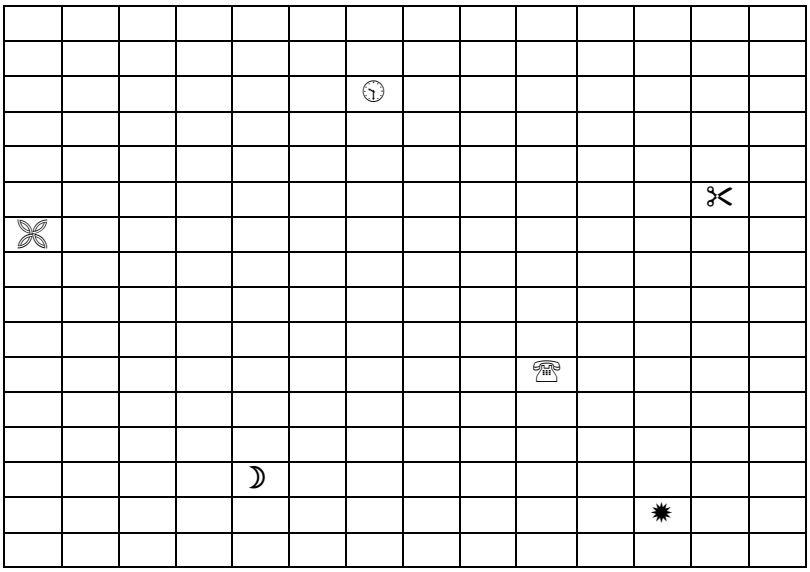
6. Draw a plan (view from the top) to show the positions of the objects.

Task 2

1. Number the following grid A; B; C; … along the horizontal line (left to right) and 1; 2; 3 … along the vertical line (top to bottom).



2. In which box is the phone?

3. In which box is the watch?

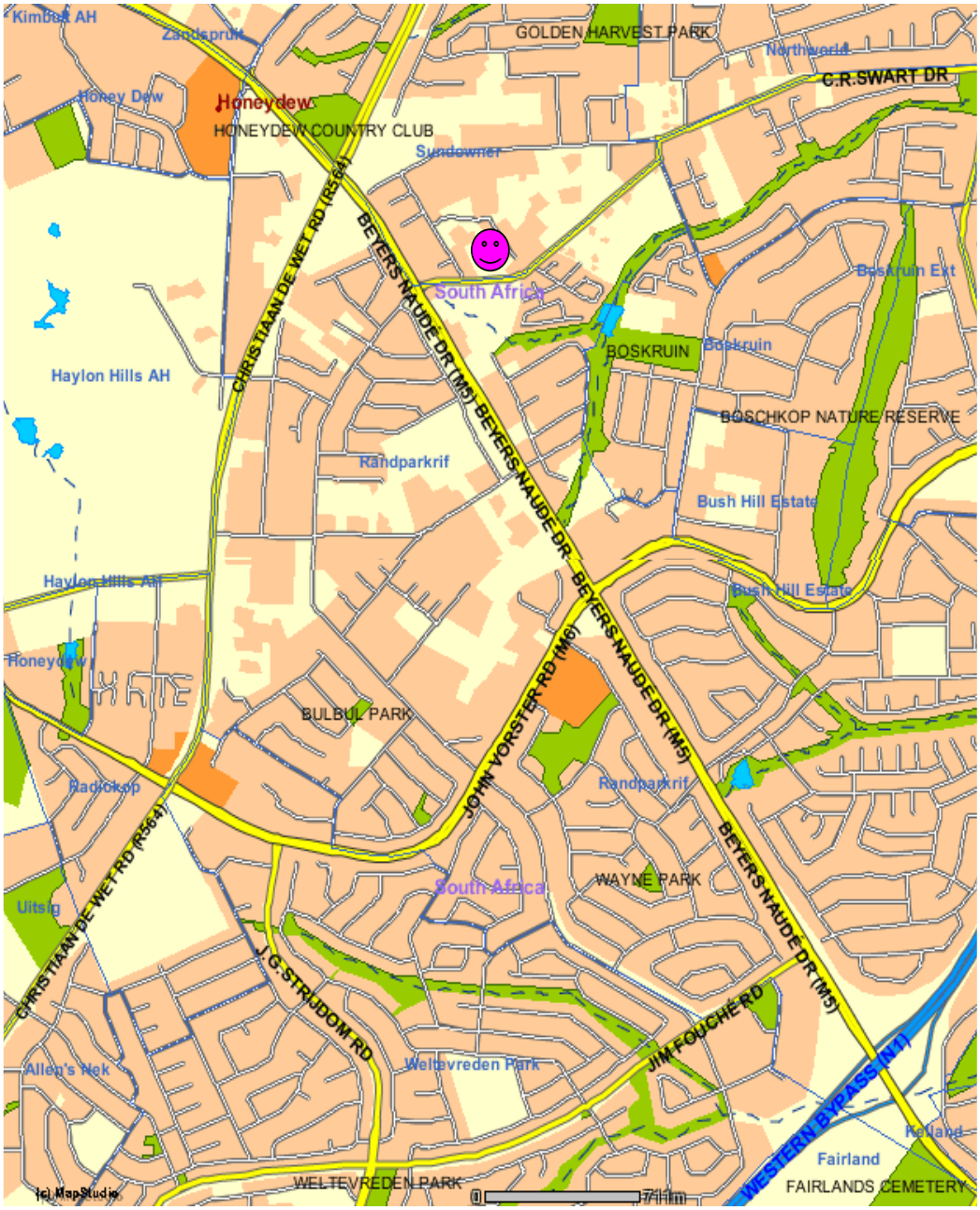
4. What is the position of ( ) in relation to (✹) – describe it by using the directions of South, North, East, West.

5. Draw a flower in c8

6. Colour-in the following: h4; i2; a6; d9; f5

Task 3

1. Use the map below to describe to your work colleague how to get to your favourite restaurant called The Lemon Rose Farm and is in CR Swart Drive, Sundowner. It is indicated on the map with the Smiley Face symbol. The nearest main highway is the Western Bypass (N1).



Place any extra evidence after this page, clearly marked for easy reference.

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	Class Activity 3: Plan and control financial instruments Complete the following in small groups / individually as per the instructions from your facilitator:	7468.1 7468 EEK1 7468 EEK3

Use mathematics to plan and control financial instruments including insurance and assurance, unit trusts, stock exchange dealings, options, futures and bonds:

1. Use market terminology to read the stock data of Pioneer foods for 5th of August 2013. Remember that stock prices are always given in cents

PIONEER FOODS	12:15:03	08/05/2013
All JSE data delayed by 15 min.	2950	N/A
	O N/A	LT N/A
KEY: O=OPEN | LT=LAST TRADE	B 2950	A 2974
B=BID | A=ASK	H N/A	L N/A
H=HIGH* | L=LOW*	YH 3050	YL 1850
YH=YEAR HIGH* | YL=YEAR LOW*	VOL N/A	
VOL=VOLUME	P/E 9.46	YLD 10.57
P/E=PRICE/EARNINGS* | YLD=YIELD*	DY 3.46	
DY=DIVIDEND YIELD*		
*Calculated by I-Net Bridge		

   a. What is the share price for Pioneer Foods stock?

   b. How much are buyers prepared to pay for Pioneer Foods stock?

   c. What is the lowest price that a seller of Pioneer Food stock is prepared to accept?

   d. What was the highest price of a Pioneer Food share up to 5th August 2009?

   e. What was the lowest price of a Pioneer Food share up to 5th August 2009?

f. Using the P/E ratio, state how much an investor is willing to pay for every R1.00 of Pioneer Food's current earnings?

2. The table below shows the price of a share in the companies listed and how many shares were bought. Complete the table:

Company	Price per share	No. of shares	Total price
ABSA Bank	R119.45	2	
SAB (Breweries)	R174.55	3	
MTN	R127.67	5	
Woolworths	R14.59	12	

a. The table given below shows the same companies listed in the table above. This time complete the table showing how many shares you will be able to buy for the amount of money given in the money to spend column

Company	Price per share	Money to spend	Max no. of shares
ABSA Bank	R119.45	R120.00	
SAB (Breweries)	R174.55	R500.00	
MTN	R127.67	R1 500.00	
Woolworths	R14.59	R2 300.00	

b. A safe investment will always give the same return. A risky investment's return will vary, and may be one of the following. Complete the following table. Round each calculation to the nearest cent:

	Money to Invest	Return	Gain/Loss	Total
1.	R1,000,00	0%	R0,00	
2.	R1,000,00	–8%	(R80,00)	
3.	R1,000,00	19%	R190,00	
4.	R1,000,00	–6%	(R60,00)	
5.	R1,000,00	14%	R140,00	
6.	R1,000,00	12%	R120,00	

c. Should one choose the safe investment? Or do you prefer the risky investment?

Place any extra evidence after this page, clearly marked for easy reference.

	Class Activity 4: Use simple and compound interest Complete the following in small groups / individually as per the instructions from your facilitator:	7468.2 7468 EEK2

Use simple and compound interest to make sense of and define a variety of situations including mortgage loans, hire purchase, present values, annuities and sinking funds:

1. A sinking fund is established to replace a machine that will be obsolete 5 years from now. The machine will cost R140 000 to replace. The fund earns 10% per annum.

    a. What monthly instalment must be paid into the sinking fund?

2. What is the simple interest earned on R50 000 if it is invested for 12 years at 8% per annum? (Remember: Simple interest is earned when the investor withdraws the interest earned as soon as it is earned.)

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3. What is the compound interest earned on R50 000 that is invested for 12 years at 8% per annum? (Remember: compound interest is earned when the investor leaves the investment to grow by not withdrawing any interest from the account or fund.)

4. What will your savings be worth if you saved R500 per month for 30 years? The bank offers a rate of 8% per annum

5. Jimmy buys a furniture suite for R9 800. He takes out a hire-purchase loan involving equal monthly payments over five years. The interest rate charged is 15% per annum. He also takes out an insurance premium of R12 per month to cover the cost of damage or theft

    a. Calculate the actual amount paid for the furniture suite
    b. Calculate the interest paid
    c. Calculate the monthly payment

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Place any extra evidence after this page, clearly marked for easy reference.

	Class Activity 5: Aspects of costs and revenue Complete the following in small groups / individually as per the instructions from your facilitator:	7468.3

Investigate various aspects of costs and revenue including marginal costs, marginal revenue and optimisation of profit:

1. A clothing factory sells jackets for R300 each. The factory produces 400 jackets at a total cost of R100 000. When the director decides to increase production to 500 jackets, the total cost increases to R120 000

    a. Calculate the profit on the sale of the first 400 jackets.

    b. Calculate the marginal cost incurred when increasing production to 500 jackets.

    c. Calculate the marginal revenue from the increased sales.

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2. The average rate of inflation over the last 10 years was 7,2% p.a. The current price of 2.5 kg packet of maize meal is R9,95.

    a. Calculate the expected price of maize in 10 years' time if the rate of inflation continues at the same level

    b. How much did the 2,5 kg packet of maize cost 10 years ago?

    c. A DVD player costs R350, 00. Determine the expected cost of a similar DVD in 5 years' time, based on an inflation rate of 7,9%.

3. Samuel builds a house that costs R750 000, 00. Building costs are expected to increase by 12, 3% p.a. Calculate the expected cost of building the same house in 8 years' time

4. Please read the following article carefully and answer the questions that follow.

Stieglitz: SA must drop targets 2009/07/08 07:34:00 PM **[Source: Fin24.com]**
Leani Wessels

Johannesburg — Nobel Prize winning economist Joseph Stieglitz has warned South Africa that economic policies like rigid inflation targeting should be a secondary concern amid the worst economic crisis since the Second World War. Speaking on the global financial meltdown at the University of Witwatersrand on Wednesday, the well-known economist said South Africa's inflation targeting mechanism was "a very indirect way of getting to the economy's underlying problems".

"I'm very strongly opposed to rigid inflation targeting," said Stieglitz, a professor at Columbia University in New York, who was awarded the Nobel Prize for economics in 2001. "The financial crisis is in part as a result of central banks focusing on inflation. You have to balance it with other concerns. It's not that I don't care about inflation, but you need policies that will do something about the current economic situation," he said. The South African Reserve Bank (SARB) shocked the market last month when it announced that it would not cut interest rates, in an attempt to achieve its inflation target of between 3% and 6%. The key repo rate — the rate at which the central banks lends to its commercial counterparts — is currently 7.5%. Stieglitz said he favoured a world economic order in which developed nations effectively subsidised developing nations by dropping surcharges and tariffs on their exports.

a. Based on your understanding of imports, exports and exchange rates, discuss the validity of Stieglitz's view that dropping surcharges and tariffs on export will benefit the world economy

b. Based on your understanding of inflation provide support to the argument that the SARB should target inflation to benefit the South African economy

Place any extra evidence after this page, clearly marked for easy reference.

Class Activity 6: Aspects of the national and global economy Complete the following in small groups / individually as per the instructions from your facilitator:	7468.4

Use mathematics to debate aspects of the national and global economy, including tax, productivity and the equitable distribution of resources:

1. A DVD player costs $300 in California. What would it cost in South Africa if the rand/dollar exchange rate is R8,45 to the US dollar?

2. You want to buy a book online costing £35 in London. How much will it cost you in Rands? The rand/pound exchange rate is R13,00 to the pound

3. You want to buy a box of Japanese sweets costing 50 yen (¥). If the rand/yen exchange rate is one rand to 16.78 yen, calculate the cost of the sweets in Rands

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4. Peter is visiting a friend in New York for a week. He has R2 500 to spend and will exchange the money for US dollars. How many dollars will he have to spend if the rand/dollar exchange rate is R8.45 to the US dollar?

Place any extra evidence after this page, clearly marked for easy reference.

	***Class Activity 7: Critique and use techniques for collecting, organising and representing data*** Complete the following in small groups / individually as per the instructions from your facilitator:	9015.1 9015 EEK1 9015 EEK2 9015 EEK3 9015 EEK4

1. Identify 3 situations or issues in your workplace that can be dealt with through statistical methods and in each case say what type of information you would gather:

Situation/issue	Type of Information

2. Explain how you would use the information gathered to solve each of the issues you identified above:

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3. Determine trends; What pattern do you see in the figures supplied in the table below?

Estimated number of people infected with HIV in South Africa in 2002

Age Group	15-19	20-24	25-29	30-34	35-39	40+	Total
Estimated Female Population	2385012	2132045	2073425	1777153	1602721	2459411	12429766
Age-specific HIV prevalence among pregnant women (%)							
Low estimate	13.4	27.5	32.6	27.4	17.5	13.5	
Best estimate	14.8	29.1	34.5	29.5	19.8	17.2	
High estimate	16.1	30.8	36.4	31.6	22.0	20.9	
Estimated number of females infected in South Africa in 2002							
Low estimate	318876	586739	676766	486229	280957	333004	2549218
Best estimate	351789	619572	715746	523727	316858	423019	2883804
High estimate	384702	652193	754519	561225	352759	513279	3217860
Estimated number of births that occurred in South Africa in 2002	181261	296354	296500	193710	118601	49396	1135823
Estimated number of babies infected from pregnant women in 2002							
Low estimate	7270	24467	29033	15900	6237	2006	84914
Best estimate	8021	25836	30705	17126	7034	2549	91271
High estimate	8771	27196	32368	18352	7831	3093	97613

Estimated number of HIV infected persons by the end of 2002

	Females (age 15-49)	Males (age 15-49)	Babies	Total
Low Estimate	2682571	2099467	84914	4866952
Best Estimate	2950711	2307952	91271	**5349935**
High Estimate	3218677	2514247	97613	5830536

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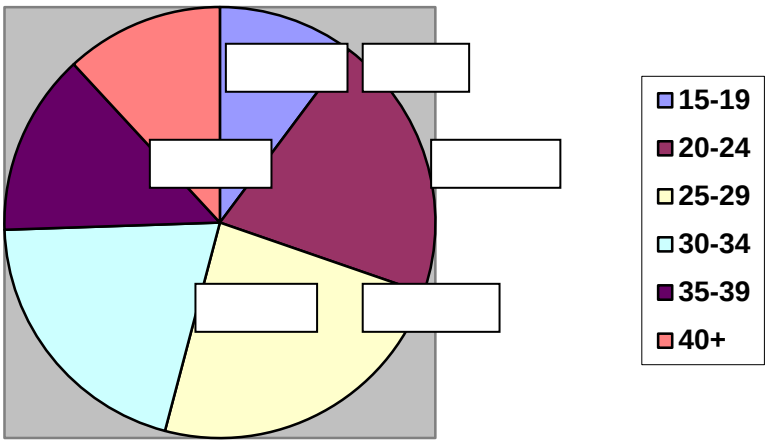
4. Fill in the percentages on the pie chart that follows (estimate the values from the previous table):



5. Do you think the table or the pie chart gives the reader the best idea of the number of HIV-infections per age group amongst pregnant females? Give a reason for your answer.

6. These statistics only refer to women and infants, as they are tested when they attend antenatal clinics. How would you be able to determine the statistics for men and older children?

7. What is the difference between data and information?

8. Explain how you would collect the information you referred to in 1.1:

9. Give three examples of situations where a checklist can be used:

10. How would you formulate questions in an interview? Why is it important to be careful in formulating the questions? Discuss the results of leading questions. Give an example of a leading question. Reword the question to be more neutral.

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11. Explain each of these concepts. Use the data set below as an example and show how to calculate each measure.

- {2; 4; 7; 1; 3; 6; 3; 4; 2; 4; 9; 15; 8; 2; 5; 7; 4; 9; 1}

a. Range
b. Mode
c. Mean (give the formula)
d. Median

12. Here are the test scores of a class of learners:

100, 100, 99, 98, 92, 91, 91, 90, 88, 87, 87, 85, 85, 85, 80, 79, 76, 72, 67, 66, 45

a) What is the **average score (mean)** of the class for this test?
b) Is the sequence written in **ascending or descending** order?
c) Determine the **median** score
d) James obtained a mark of 90 and Petrus obtained a mark of 79 for the test. How would you describe their results in relation to the mean?
e) In order to get a better idea of how a given data point relates to other data, it is important to get an idea of how spread out the data are. One way of doing this is by using the **range**. The range is the distance between the highest and lowest data points in a set. What is the 'range' of the scores for this test?

13. Company ABC wants to know its customer profile per region. Research shown that the customer distribution is as follows:

    Southern region - 156
    Northern region – 234
    Western region – 144
    Eastern region – 66.

Draw a pie chart of the data:

14. Explain what a “sample” is in statistics and name two advantages of using a sample.

15. You want to undertake a statistical study of absenteeism in your company. Would you take a census or a sample? Give reasons for your answer.

16. In order to collect a representative sample from your team/ business unit, how many members would you have to survey? Explain how you arrived at that figure.

17. In order to collect a representative sample from your company, how many employees would you have to survey? Explain how you arrived at that figure.

18. Explain what you understand by “contamination” of data.

19. List some possible causes for contamination of data:

20. When interviewing your team for the purposes of a survey, do you think that there could possibly be bias from either your side or their side? Discuss possible reasons for the bias and how bias can contaminate the results of your survey.

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Group work (30 minutes):

21. Choose a topic that relates to your class, e.g. you want to determine the education level of the learners in the class, or any other topic of your choice. Draw up a questionnaire using the dichotomous (yes/no) key (about five sets of questions), do a quick survey and present your findings to the class:

Topic:

Questionnaire:

Question	Yes/no
1. A. B.	
2. A. B.	
3. A. B.	
4. A. B.	
5. A. B.	

Place any extra evidence after this page, clearly marked for easy reference.

Class Activity 8: Communicate the outcomes of experiments and simulations Complete the following in small groups / individually as per the instructions from your facilitator:	9015.2

1. Calculate the mathematical probability of drawing an ace of spades, followed by an ace of hearts from a full deck

2. Calculate the mathematical probability of rolling four dice and getting each die to land on six

3. What is the chance of two dice both landing on four?

4. Toss a coin eighteen times and record the results below (write either T or H in each empty block):

1	2	3	4	5	6	7	8	9

10	11	12	13	14	15	16	17	18

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5. The probability of sunny weather on a day in Cape Town is $\frac{1}{5}$ and the probability of wet weather is $\frac{1}{4}$.

Are the two events:

a. Complementary?
b. Mutually exclusive? and/or
c. Disjointed events?

Explain your answer

6. Explain and calculate the probability of a wet day being followed by a sunny day in Cape Town based on the individual probabilities in question 7.1 above

Group work (15 minutes): ***Find out how old each learner in the class is***

7. Planning phase:
   - First decide on the quickest and most effective way to obtain the required information
   - How can you ensure that the information is accurate and representative?

8. **Obtain and sort data:** Calculate the **average age (mean)** of the learners in this class

9. Calculate the **median** of the ages of all the learners. Show the sequence in ascending order

10. **Analyse data:** What conclusions can you reach based on the data?

11. Give feedback to the class in the form of a mini presentation

Key points:

Introduction

Body

Learner Signature	Date

Conclusion

12. Reflect on the process you followed to obtain the information:

- Was it effective?
- Were respondents cooperative?
- What would you do differently next time?

Place any extra evidence after this page, clearly marked for easy reference.

Learner Signature	Date

Class Activity 9: Critically interrogate and use probability and statistical models

Complete the following in small groups / individually as per the instructions from your facilitator:

9015.3

New employment survey makes three improvements

By Pali Lehohla

This article was originally published in the Business Report on 07 July 2005

Statistics SA continues to improve the quality of its statistics. The quarterly employment statistics (QES) survey was published for the first time on June 28. This survey replaces the quarterly survey of employment and earnings (SEE), which in turn replaced the survey of total employment and earnings (STEE).

There are important differences between these surveys, all aimed at improving the quality of the information. First, the STEE was drawn from the initial business address register, which was not based on the comprehensive taxation database that the current surveys are based on. It reported formal employment in the non-agricultural sector of 4.7 million people.

Second, the recently introduced QES covers all employing enterprises in the formal non-agricultural business sector registered for income tax, whereas the SEE was restricted to enterprises registered for VAT, with an annual turnover of R300 000 or more.

The increase in the coverage of businesses in the QES results in extensive coverage of the formal labour market, as most small businesses are now included in the estimates as well.

For the quarter to December 2004, the SEE reported employment of 6.559 million people, compared with the estimate of 7.075 million in the QES.

Third, the definition of employees has been brought in line with International Labour Organisation (ILO) definitions and concepts. Previously, the SEE included working proprietors and own account workers in the estimates of employment, in addition to the employees of an enterprise. This did not allow for the meaningful calculation of estimates for average monthly earnings of employees.

However, the QES restricts the coverage to employing businesses only, therefore excluding working proprietors in the estimates. It is therefore now possible to provide estimates for employment and earnings as well, as the survey is in accordance with ILO definitions and recommendations.

The SEE and the QES are not comparable because of these improvements. The estimates for employment for the quarter to December, published on June 28 in the QES, show a difference of about 500 000 employees. This was largely due to the extended coverage of the QES survey, made possible by improvements to the business frame that I reported on in earlier articles.

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The drop in employment in the first quarter was largely caused by seasonal factors, with many people being employed for the December period only. The published results do not take this seasonality into account as it is not possible to develop seasonally adjusted estimates for a series that has only been published for two periods.

As the series progresses and more results become available, it will become possible to get a clear insight into the labour market by using the QES survey estimates.

Furthermore, the major contributors to differences in employment levels between the QES for December and the SEE for December are the financial intermediation, insurance, real estate and business services industry, up about 40 percent; the construction industry, up about 30 percent; and the transport, communication and storage industry, up about 50 percent. These increases are mainly due to the QES survey's coverage of small businesses in these industries. The SEE did not cover many of these small businesses.

Information regarding employers, employees and the self-employed can be obtained from the six-monthly labour force survey, conducted among 30 000 households countrywide. The results of this survey should be read in conjunction with those of the QES, as they all inform on the dynamics in the labour market.

Over time, by using register-based frames, Stats SA has continued to provide a more representative picture of the economic and the population dynamics of the country.

The underlying purpose of statistics is to inform users and policy, and statistics should not be misconstrued to suit specific situations. Extreme caution should be exercised when commenting on a time series that has only two data points and the differences between relevant series should be kept in mind at all times.

Pali Lehohla is the statistician-general and head of Statistics SA. For more information on Stats SA and its outputs visit www.statssa.gov.za, or contact user services on (012) 310-8600

1. Explain how the representative sample has grown from 4.7 million (STEE findings) to 6.559 (SEE) to the current 7.075 million (QES findings):

2. What categories of workers have been excluded from QES and why?

3. Information regarding employers, employees and the self-employed is obtained by conducting surveys:

   a) What is the frequency of these surveys?
   b) Why should they be conducted frequently?
   c) What is the size of the sample?
   d) Do you think that it is a representative sample? Give a reason for your answer.
   e) What are some of the problems regarding choosing a sample of this nature?

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4. What are the limitations of a time series that has only two data points (par.14)?

5. A survey attempted to evaluate student interest about a range of classroom topics. Students were asked to rank their interest in various potential topics according to this scale:

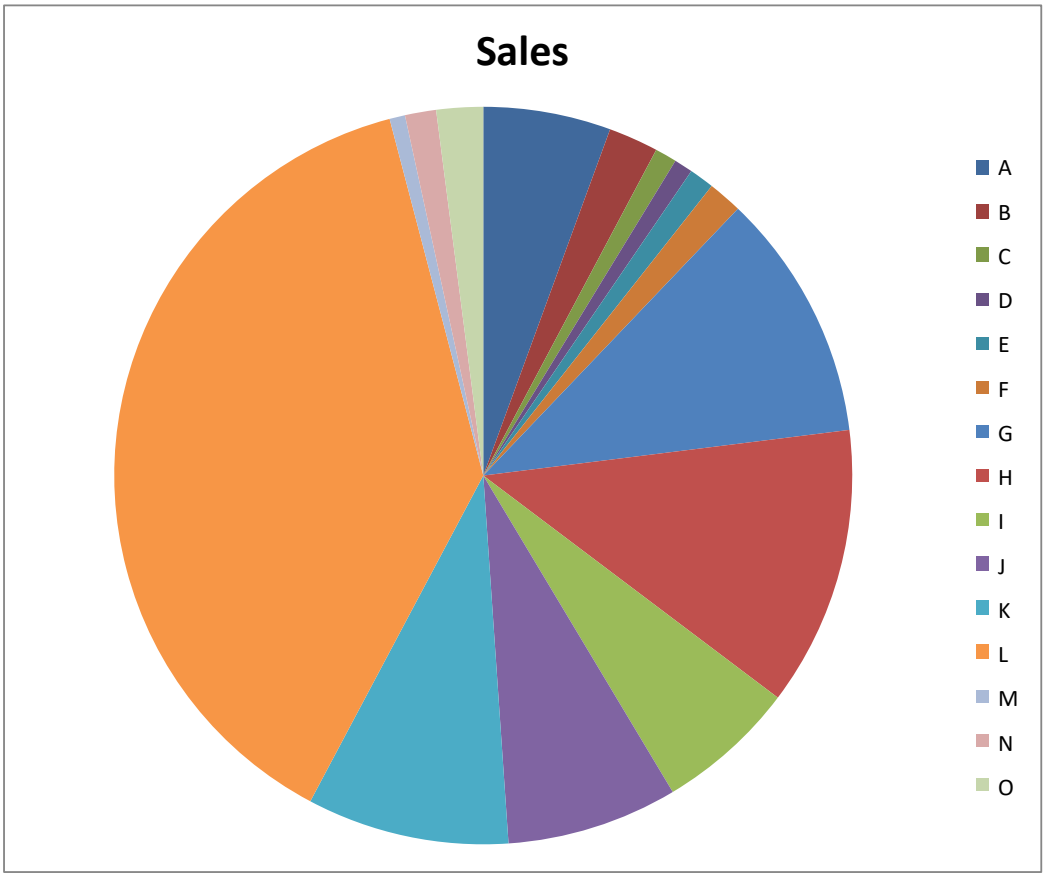
10	if they felt a topic was very interesting
6	if they felt a topic was above average interest
4	if they felt a topic was below average interest
1	if they felt a topic was not worth studying in class

Please note that only four responses were permitted: 10, 6, 4, and 1. Is this an acceptable survey design? Explain your answer:

Learner Signature	Date

6. Critique the following graphical representations:

a)



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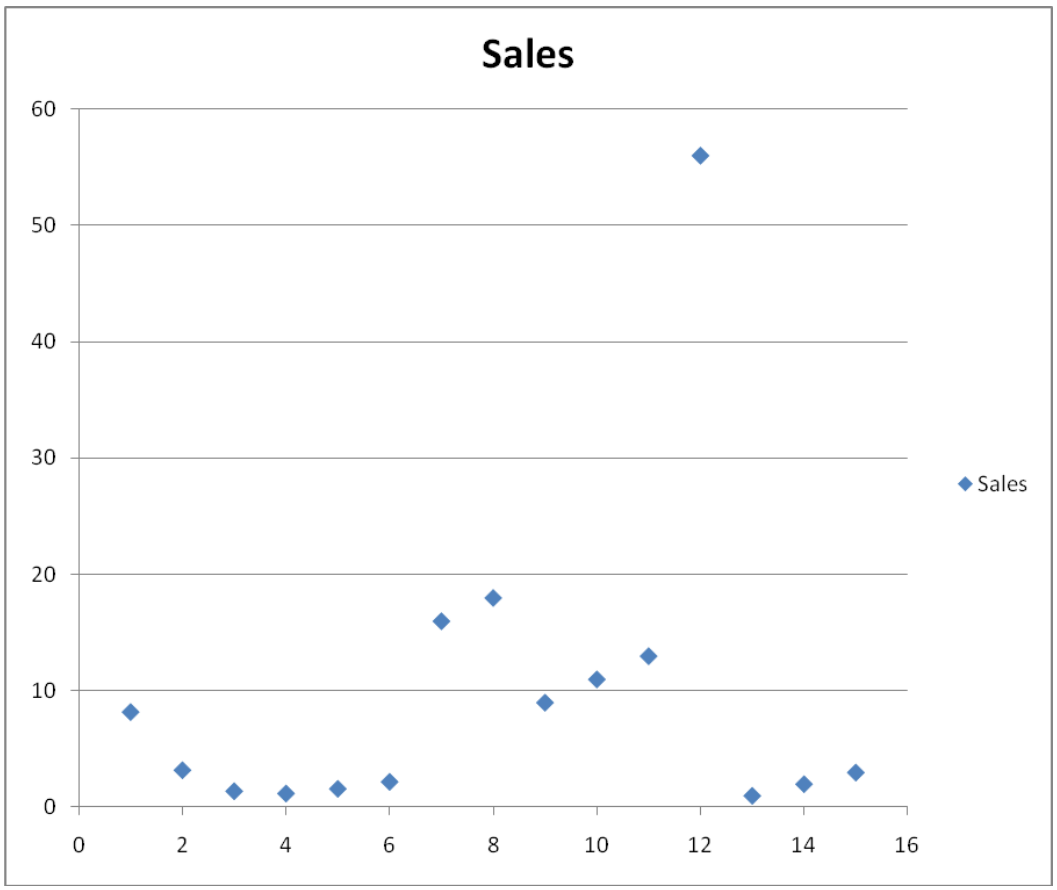
b)



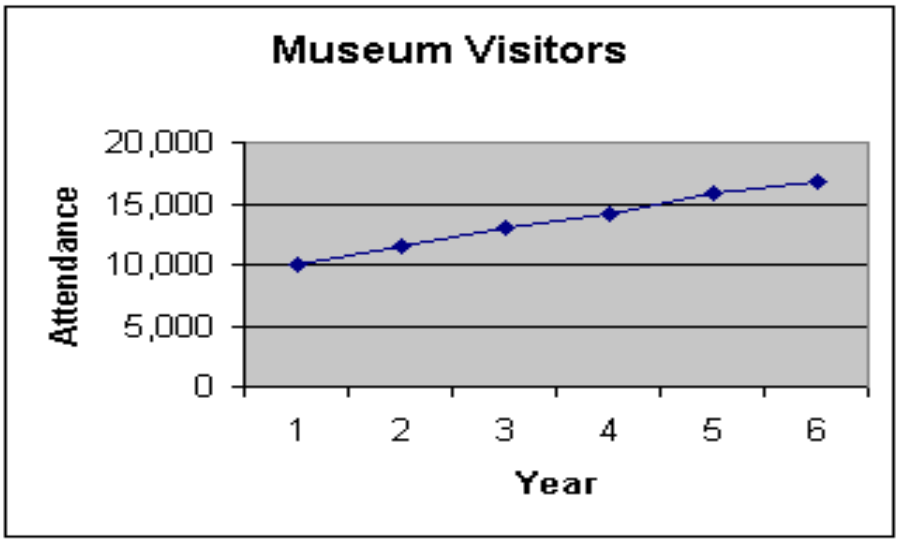
c)

A	B	C	D	E	F	G
8.2	3.2	1.4	1.2	1.6	2.2	16

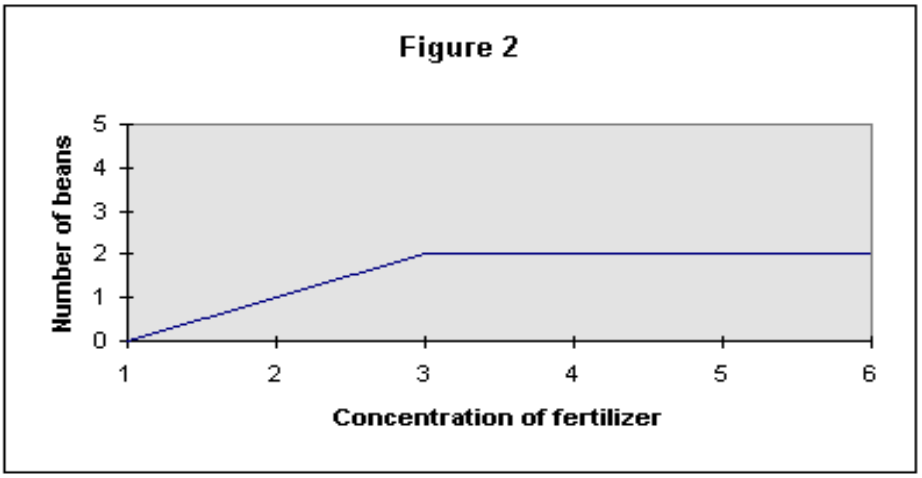
H	I	J	K	L	M	N	O
18	9	11	13	56	1	2	3

7. Make predictions and draw conclusions from the following graphs:

a)



b)



Learner Signature	Date

8. How can errors occur when collecting, organising and interpreting data?

9. Explain how statistics can be misused, for example in reporting statistics that are of concern to the population:

Place any extra evidence after this page, clearly marked for easy reference.

Reflection

Individually complete the following:

9016
7468
9015

The purpose of reflection is for you to consider what you have learnt and how you will use it in the future. Answer the following questions as honestly as you can:

1. After the training programme, I can now (tick):
   - ☐ Represent, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts
   - ☐ Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues
   - ☐ Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems
2. How would you apply what you have learnt during this skills programme in the workplace?

3. What was the most significant thing you have learnt in this programme?

4. What do you think you still need to learn more about? (Action Plan)

5. What did you enjoy most about the training?

6. If there was something about the training that you could change, what would it be?

Learner Signature	Date

	***Facilitator Observation Checklist*** The facilitator needs to provide feedback on the participation of each learner in the class:	9016 7468 9015

The purpose of the facilitator observation checklist is to provide the learner with feedback about his/her participation during the formative class activities and also to highlight the observed strengths and perceived weaknesses that the learner displayed during the workshop and/or learning programme.

The facilitator is required to complete the Facilitator Observation checklist for each learner in his/her Learner Workbook. The learner needs to sign-off the document to confirm that he/she has received the observation feedback.

Learner Name		**Facilitator Name**		**Date**	

Class Activity	**Group / Individual**	**Completed ✓×**	**Participation**			**Comments on perceived strengths and weaknesses of the learner**
			☺	😐	☹	
1. Measure, estimate, and calculate physical quantities						
2. Explore, analyse & critique, describe & represent, interpret & justify geometrical relationships						
3. Plan and control financial instruments						
4. Use simple and compound interest						

Learner Signature	Date

Class Activity	Group / Individual	Completed ✓✗	Participation			Comments on perceived strengths and weaknesses of the learner
			☺	😐	☹	
5. Aspects of costs and revenue						
6. Aspects of the national and global economy						
7. Critique and use techniques for collecting, organising and representing data						
8. Communicate the outcomes of experiments and simulations						
9. Critically interrogate and use probability and statistical models						
10. Reflection	Individual					

Learner Signature	Date

Has the learner sufficiently demonstrated application of the following CCFO's during the facilitated session?			
CCFO1: Identify and solve problems: using context to decode and make meaning individually and in groups in oral, reading, and/or written activities make responsible decisions about format, layout and material to be included in the text in which responses show that responsible decisions using critical and creative thinking have been made when linking information sources to the purpose and form of the report, and when creating report templates, and when ensuring that the report meets the requirements of the full spectrum of recipients	**CCFO2:** Work effectively with others and in teams: using interactive speech in activities, discussion and research projects in liaising with the report recipients	**CCFO3:** Organise and manage oneself and one's activities responsibly and effectively: through using language to ensure that the reports are distributed on schedule	**CCFO4:** Collect, analyse, organise and critically evaluate information: fundamental to the process of growing language capability across language applications and fields of study from a variety of technical texts when gathering the information required in the report and organising and collating it into the report as required by the relevant parties
Yes / No	Yes / No	Yes / No	Yes / No
CCFO5: Communicate effectively using visual, mathematical and/or language skills: in formal and informal communications in writing in the modes of oral and/or written presentations	**CCFO6:** Use science and technology effectively and critically: using technology to access and present texts when creating templates, compiling the report and using the required distribution system to deliver the report	**CCFO7:** Understand the world as a set of inter-related parts of a system: through using language to explore and express links, and exploring a global range of contexts and texts by considering the needs of all relevant parties	**CCFO8:** Contribute to the full development of oneself: by engaging with texts that stimulate awareness and development of life skills and the learning process
Yes / No	Yes / No	Yes / No	Yes / No

Learner Signature	Date

Statement by the facilitator: The learner has demonstrated sufficient knowledge and skill during class to proceed with the summative assessment *(circle)*	**Yes**	**No**	**Additional comments:** (optional)

Learner Signature		**Facilitator Signature**	

Learner Signature	Date