

Mathematical Literacy 3 - Module 1 Summative Assessment

Name: Solutions

Marks Available: 50

Time: 45 minutes

Question 1:

Choose the correct answer:

- $\frac{3}{7}$ expressed as a percentage is:
 - 233.33%
 - 42.86%**
 - 2.33%
 - 0.429
- Jet offers a 25% discount on selected clothes. A shirt that costs R150 will now cost:
 - R37.50
 - R120
 - R30
 - R112.50**
- If 62.5% of a class of 24 passed. How many learners passed?
 - 12
 - 13
 - 14
 - 15**
- The calculation: $(7 \times 3 + 2 \times 3 + 1) \div (20 \div 2 + 4)$
 - 3.57
 - 2**
 - 10
 - 42
- If the conversion for Celsius to Fahrenheit is $C = \frac{5}{9}(F - 32)$ then 0°C
 - 28°F
 - 30°F
 - 32°F**
 - 34°F

Question 2

Give the meaning of each of the following terms:

1. Perimeter
Distance around a shape
2. SI measurements
International system of measurements
3. Recurring decimal fractions (give an example)
0.33333333
4. Mixed number (give an example)
1 $\frac{1}{2}$
5. Equivalent fractions (give an example)
 $\frac{3}{6} = \frac{1}{2}$

[10]

Question 2#

Calculate the following:

1. $7 \times (3 + 2) = 35$
2. $8 + \frac{1}{2} \text{ of } 50 = 33$
3. $28 \div 7 - 3 \times 4 = -8$

[6]

Question 3

Using the formula to calculate a measurement:

1. The simple interest on loan of R5000 if the interest rate is 15% and term is 6 years
 $SI = 6(5000)(0.15) = R4500$
2. The area of a circle if the radius is 7cm
 $Area = \pi r^2 = \pi 7^2 = 49\pi = 153.94$
3. The temperature in Fahrenheit if the temperature in Celsius is 50°C
 $C = \frac{5}{9}(F - 32) \therefore F = \frac{9}{5}C + 32$
 $F = 122^\circ$

[6]

Question 4

A building company recommends that you mix 2 wheelbarrows of sand, 2 wheelbarrows of stones and 2 bags of cement for a high strength building foundation. Assume that a bag of cement weighs 40kg and each wheelbarrow can carry 200kg of cement and stones.

1. Translate this ratio into kilograms (6)

40: 400: 400 → 1:10:10

2. Calculate the amount of each substance needed to create 30t of cement mix. (6)

21 parts = 1.428 conversion ratio

1.43: 14.29: 14.29

3. If it is recommended that you need 3000 bricks, 3.3m^3 of sand and 13.2 bags of cement to build a wall with a surface area of 60m^2 , calculate the number of bricks required, the volume of sand and the number of bags of cement needed to build 1 m^2 of wall. (6)

50 bricks; 0.22 bags cement; 0.55m^3 sand

[18]

[50]

Mathematical Literacy 3 - Module 2 Summative Assessment

Name: Solutions

Marks Available: 50

Time: 45 minutes

Question 1:

State the meaning of the following terms:

1. Income

All the money that is earned by a business

2. Expenses

The money that a business has to pay out for its day-to-day operations

3. Current Account

The account that is used for the daily transactions of the business

4. Source Document

Documents that are originally completed in order to have evidence of a transaction

5. Hire Purchase Contract

An agreement to buy now and pay later. In essence you only own the good once your last payment is made.

[10]

Question 2:

Case study: Mary-Jane runs a shop that repairs watches. She is given a Timex Ironman by a Mr T. Smith to repair. The watch strap needs to be replaced for R200 and the battery for another R49. The invoice is no 657.

1. Complete the invoice and calculate the VAT. (5)

TAX INVOICE		NO: _____	
FROM: Mary-Jane's Watches 23 Springbok Road Welkom		VAT registration no.:	
TO: _____			
DATE: _____ Watch Make: _____ Model: _____			
Labour (A)	Materials (B)	R	c
	Strap	200	
	Strap	49	
	Total:	249	
		Total	
Labour:		SUB	
Total (A & B)			
VAT:		34.86	
GROSS AMOUNT:		283.86	

2. The customer pays the amount by cheque when collecting the watch. Complete the cheque and invoice and cheque stub. (5)

BEST BANK		101-923				
Ltd Reg no. 1961/0004/06		Date: <u>[current date]</u>				
SHONGOLO Main Road						
Pay	<u>Mary-Jane's Watches</u>	or bearer				
Amount	<u>Two hundred and eighty three rand and eighty six cents</u>					
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">R</td> <td style="width: 20px;">c</td> </tr> <tr> <td style="text-align: center;">283</td> <td style="text-align: center;">86</td> </tr> </table>	R	c	283	86
R	c					
283	86					
	T. Smith					

	T. Smith					
0065 2024 1175 245324 09						

Date: [current date]

To: Mary Jane's Watches

For: Watch repairs

Balance brought forward	
Deposits	
Total	
This cheque	283.86
Sub-total	
Withdrawals	
Balance carried forward	

0065

3. Complete the deposit slip of R5630 for cash received during the week by the shop. (4)

BEST BANK Deposit slip Date (ddmmyyyy): _____

Branch: _____

Credit: (name in block letters) _____

Depositor's signature: _____

Account no to credit: _____

	Rand	cents
Cash		
Cheques:(name of drawer/branch code/bank)		

Depositor's contact no. _____ Total amount: _____

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Question 3:

Calculate the interest on R18 500 in a fixed deposit at 9% for 4 years. Calculate the compound interest on an annual basis.

$$Interest = A(1+r)^n - A = (18\ 500)(1.09)^4 - 18\ 500 = R7614.26$$

[7]

Question 4

1. Compile an income statement for Sandra's Bakery based on the following information. (8)

- Sales R14 400
- Labour R4 000
- Flour, yeast and other inputs R3 000
- Rental R2 000
- Water and electricity R800
- Tax is charged at 30% on Profit

Sales	14 400	12 000	120% → 20% variance
Less: Cost of sales	(3000)	2 500	120% → 20% variance
Gross Profit	11 400		
Less: Expenses	(6800)		
Rental	2000	2000	100% → 0% variance
Water + Electricity	800	700	114% → 14% variance
Labour	4000		
Net Profit	4600		
Less: Tax	(1380)		
Net Profit after tax	3220		

2. Sandra has budgeted the following:

- Sales R12 000
- Input costs R2 500
- Rental R2 000
- Water and electricity R700

Calculate her budget variance (you can do it on the income statement above) (8)

3. What three things can income statements be judged against? (3)

Past performance; the performance of competing companies; the performance of the market in general

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Mathematical Literacy 3 - Module 3 Summative Assessment

Name: Solutions

Marks Available: 50

Time: 45 minutes

Question 1:

A business has fixed costs of R1000 and variable costs of R500 for every R1000 of sales.

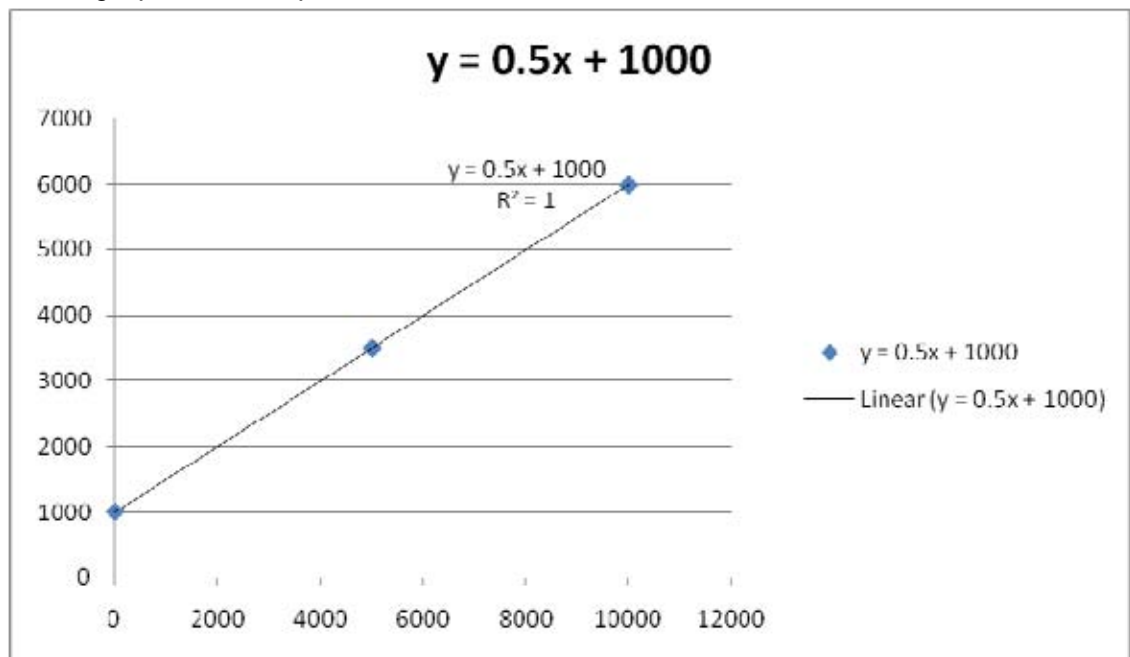
1. What kind of a relationship is this? (1)

Linear / direct

2. If the business sells R4 000 of goods, what is its total costs? (3)

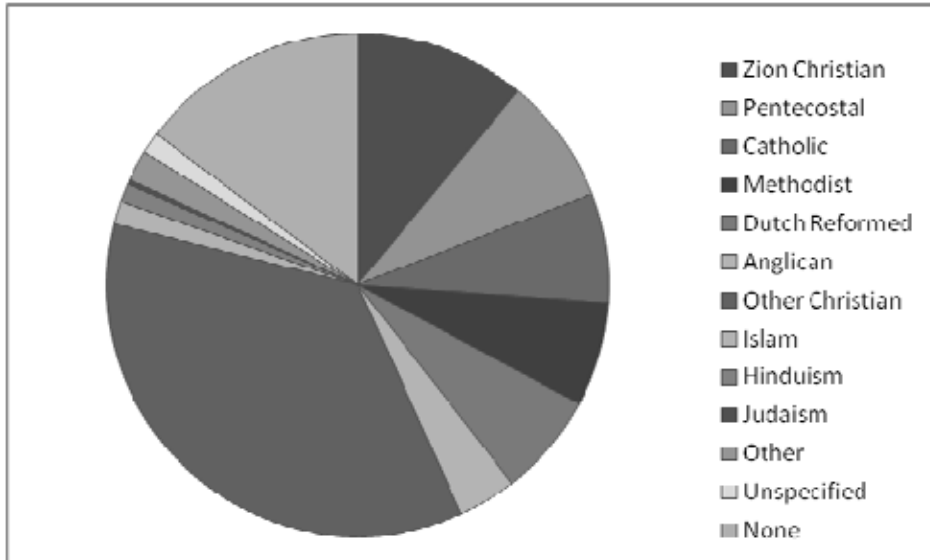
$$Y = 0.5x + 1000$$
$$= 3000$$

3. Draw the graph of the equation. (6)



Question 2:

Study the pie chart on religions in South Africa and answer the questions that follow (the categories start at the top and move in a clockwise direction so that Zion Christian is at 12:00 while Pentecostal is around 1:00)

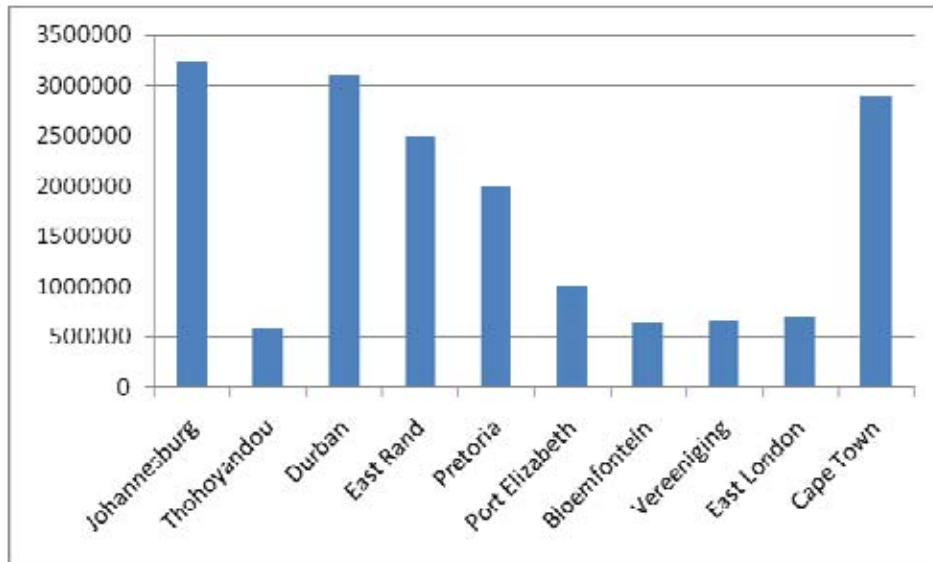


1. What is the largest religion? Approximately what percentage does this represent?
(3)
Other Christian 36%
2. What is the smallest represented religion? (1)
Judaism
3. How many religions are represented in the pie chart? (2)
10
4. Approximately what % are atheist (have no religion)? (2)
15%

[10]

Question 3

Study the bar graph of the population of various towns in South Africa and answer the questions that follow:



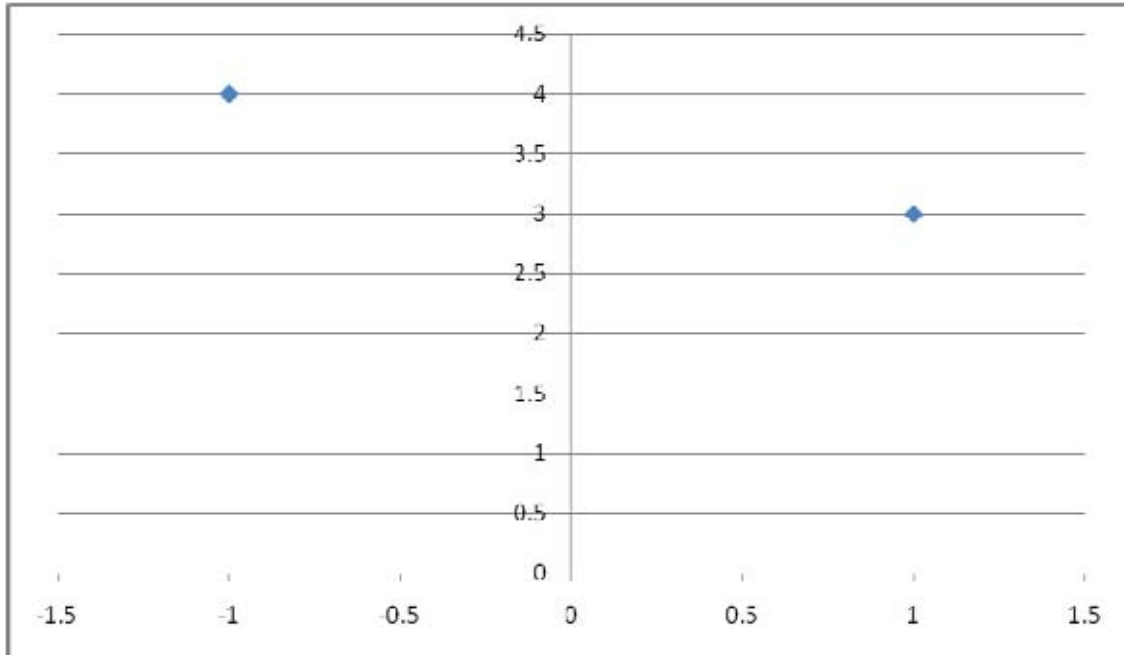
1. Decide on an appropriate title for the bar graph. (1)
Population of the ten largest towns in South Africa
2. Arrange the towns from largest to smallest (3)
Johannesburg; Durban; Cape Town; East Rand; Pretoria; Port Elizabeth; East London; Vereeniging; Bloemfontein; Thohoyandou
3. Approximately what fraction of Johannesburg's population does Vereeniging have? (4)
Approximately one sixth
4. Estimate the total population in these ten cities combined. (4)
Actual population = 17 271 000 ∴ estimate around 17 million

[12]

Question 4

Plot the following points

1. (1; 3)
2. (-1; 4)



[4]

Question 5

Calculate the following:

1. Simple interest if the Principle = R3 000; time = 6 years and the interest rate is 15% (4)
 $SI = 6(3000)(0.15) = R2700$
2. The time taken for a trip if the speed is 100km/h and the distance is 450km. (4)
4.5 hours or 4 hours 30 minutes
3. If a pool has a volume of 400m^3 , what is its depth if its length is 20m and its breadth is 10m. (4)
 $V = lbd \therefore 400 = 20 \times 10 \times d = 2 \text{ metres}$

[12]

[50]

Mathematical Literacy 3 - Module 4 Summative Assessment

Name: Solutions

Marks Available: 50

Time: 45 minutes

Question 1:

Give the meaning of the following terms:

1. Cone

A three dimensional shape formed by a straight line when one end is moved around a simple closed curve, while the other end is kept fixed at a point which is not in the plane of the curve

2. Concentric Circles

Two or more circles that have the same position for their centres

3. Projection lines

Lines that extend or project from the sketch so that the dimension lines end exactly on them.

4. Isometric sketch

Shows a 3-dimensional view of an object in a two-dimensional drawing

5. Perspective drawing

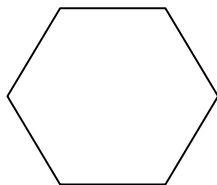
Show all the features that cannot be shown in an orthographic drawing

[10]

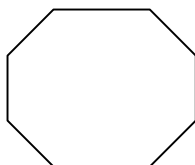
Question 2

Sketch the following shapes:

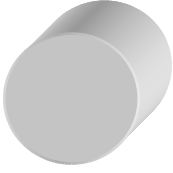
1. Hexagon



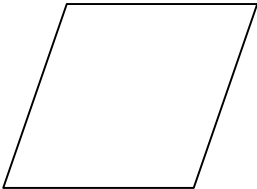
2. Octagon



3. Cylinder



4. Parallelogram

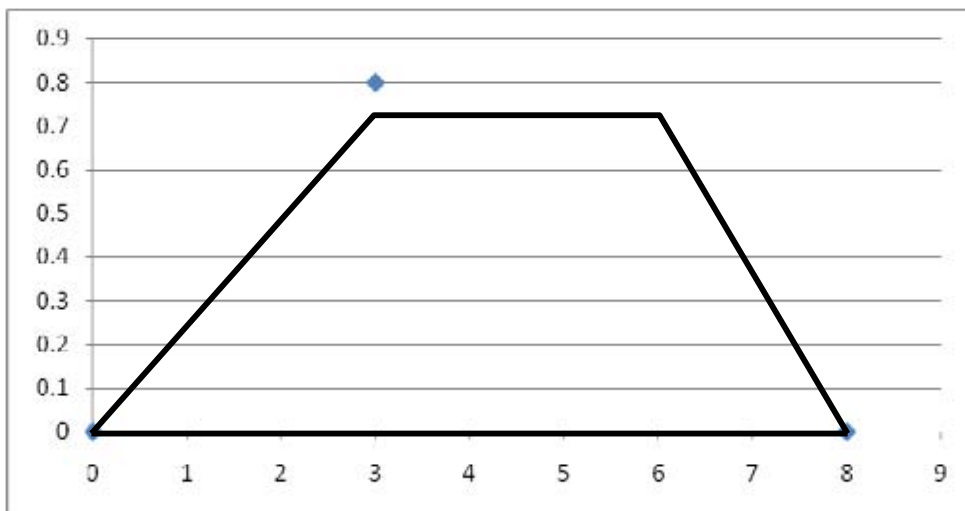


[8]

Question 3

Calculate the area of the following:

1. A trapezoid with coordinates: (8; 0); (0;0); (3; 2); (6; 2) (5)



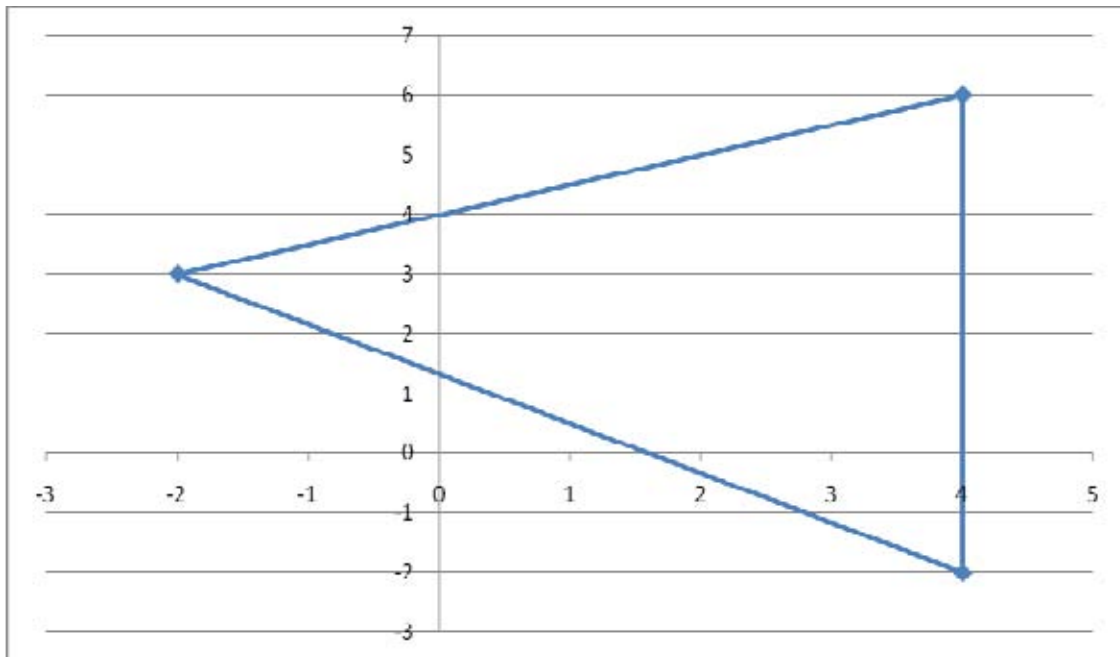
$$\text{Area} = \frac{\text{height}}{2} (\text{sum of parallel sides})$$

$$= 11 \div 2 \times (11)$$

$$= 11$$

2. A triangle with dimensions (-2; 3); (4; 6); (4; -2)

(5)

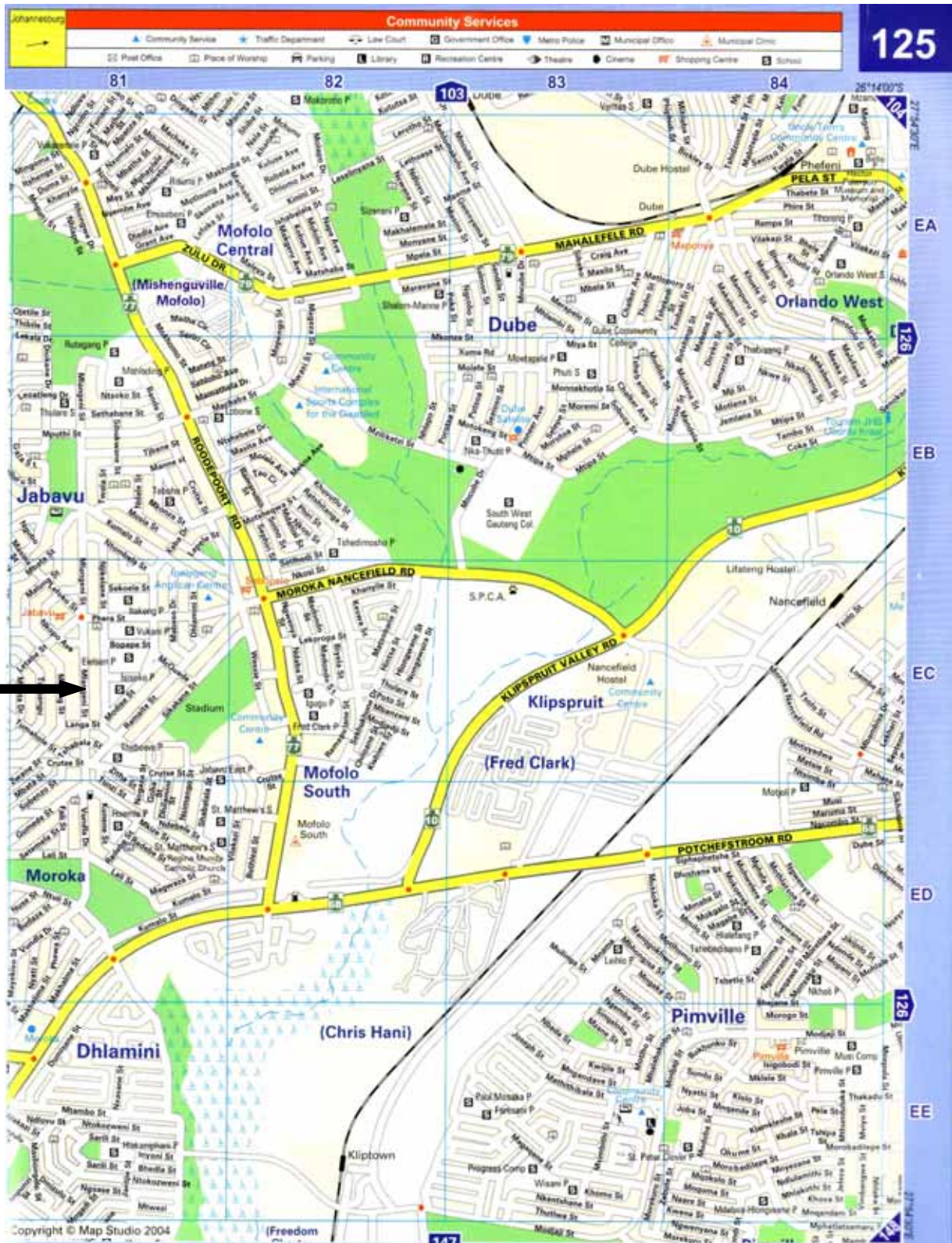


$$\text{Area} = \frac{1}{2} \text{ base} \times \text{height} = \frac{1}{2} (8 \times 6) = 24$$

[10]

Question 4

Study the map and answer the questions that follow (1 side of the grid represents approx 850m)



Nomsa and her daughter, Thandi live at Mangeni Street (marked on the map). Nomsa has a car which she parks at the station every day on her way to work. Thandi studies at South West Gauteng College.

1. Measure the distance to South West Gauteng College (as the crow flies). (2)
1.781 km
2. Measure the distance to Kliptown and Nancefield stations from the house (as the crow flies). (4)
Nancefield = 2.90km; Klipfontein = 2.0km
3. How far is to drive from home to the college? Draw your route on the map. (4)
2.01 km
4. On days that Nomsa doesn't drop Thandi off at college, is it shorter to drive to Nancefield or Kliptown station. Explain your answer. (6)
While it is shorter to Kliptown as the crow flies, it is further to drive. Approx 3.2km vs 4.4 km (these figures may not be accurate)

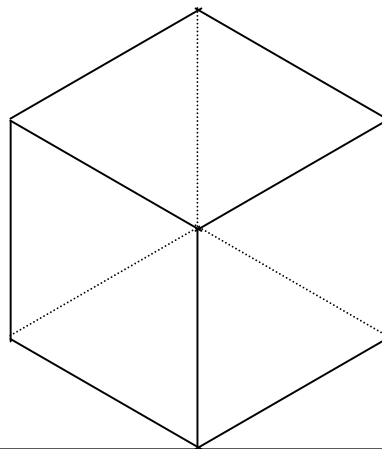
[16]

Question 5

Draw an isometric drawing of a cube of sides 3cm

[6]

[50]



Mathematical Literacy 3 - Module 5 Summative Assessment

Name: *Solutions*

Marks Available: 50

Time: 45 minutes

Question 1:

On Saturday 8th August 2009, the Springboks played the Wallabies. The test line up of each team was as follows with the number of tests played next to the player's name.

Springboks		Wallabies	
Frans Steyn	32	Adam Ashley-Cooper	27
JP Pieterse	28	Lachie Turner	6
Jacque Fourie	47	Stirling Mortlock	79
Jean de Villiers	50	Berrick Barnes	17
Bryan Habana	50	Drew Mitchell	31
Morne Steyn	5	Matt Giteau	68
Fourie du Preez	48	Like Burgess	15
Pierre Spies	24	Wycliff Palu	29
Heinrich Brüssow	6	George Smith	100
Juan Smith	59	Richard Brown	8
Victor Matfield	85	Nathan Sharpe	77
Bakkies Botha	59	James Horwell	14
John Smit	86	Al Baxter	67
Bismark du Plessis	26	Stephen Moore	36
Tendai Mtawarira	15	Benn Robinson	21

1. Calculate the mean number of test played of the Springboks and then the Wallabies. Comment. (8)

$$\bar{x}_{\text{Springboks}} = \frac{\sum i}{n} = \frac{620}{15} = 41.33$$

$$\bar{x}_{\text{Wallabies}} = \frac{\sum i}{n} = \frac{595}{15} = 39.66$$

The springboks are more experienced, but not by much.

2. Calculate the medians of each team. Comment (6)
Springboks = 47 tests; Wallabies = 29 tests. This could tell us that most of the Wallaby players are less experienced than the Springboks.
3. Calculate the modes of both teams. Comment. (6)
Springboks = bimodal: 50 tests and 59 tests; Wallabies: no mode

4. What can you gather about the experience of the players in each team?

Comment critically. (6)

The Springboks are on average a more experienced team, however they have some players with very few caps that pulls their average down. The Wallabies, in contrast are generally less experienced with a couple of really experienced players that bring their average up.

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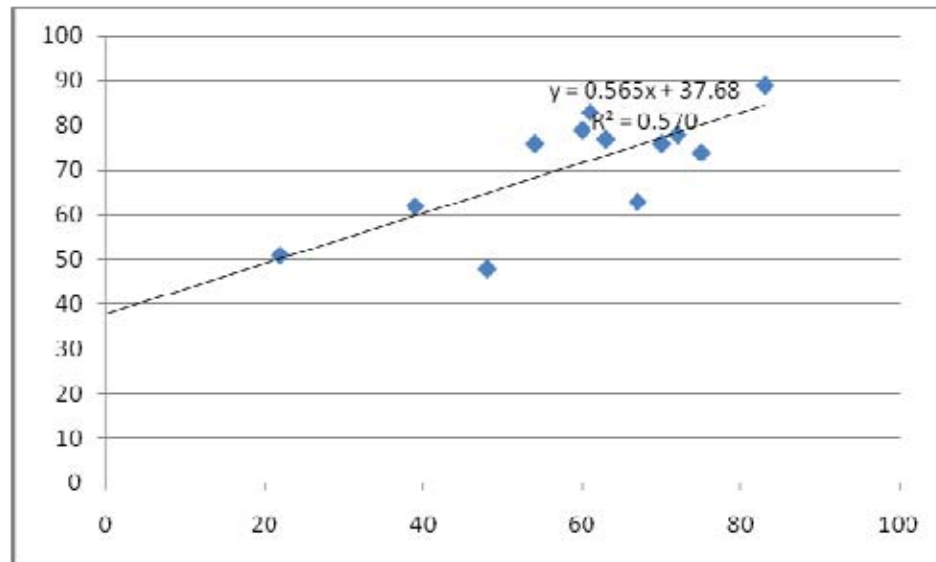
Question 2

Suppose we want to predict a learner's mark in the final exam based on his class work.

We gather the data for 12 learners.

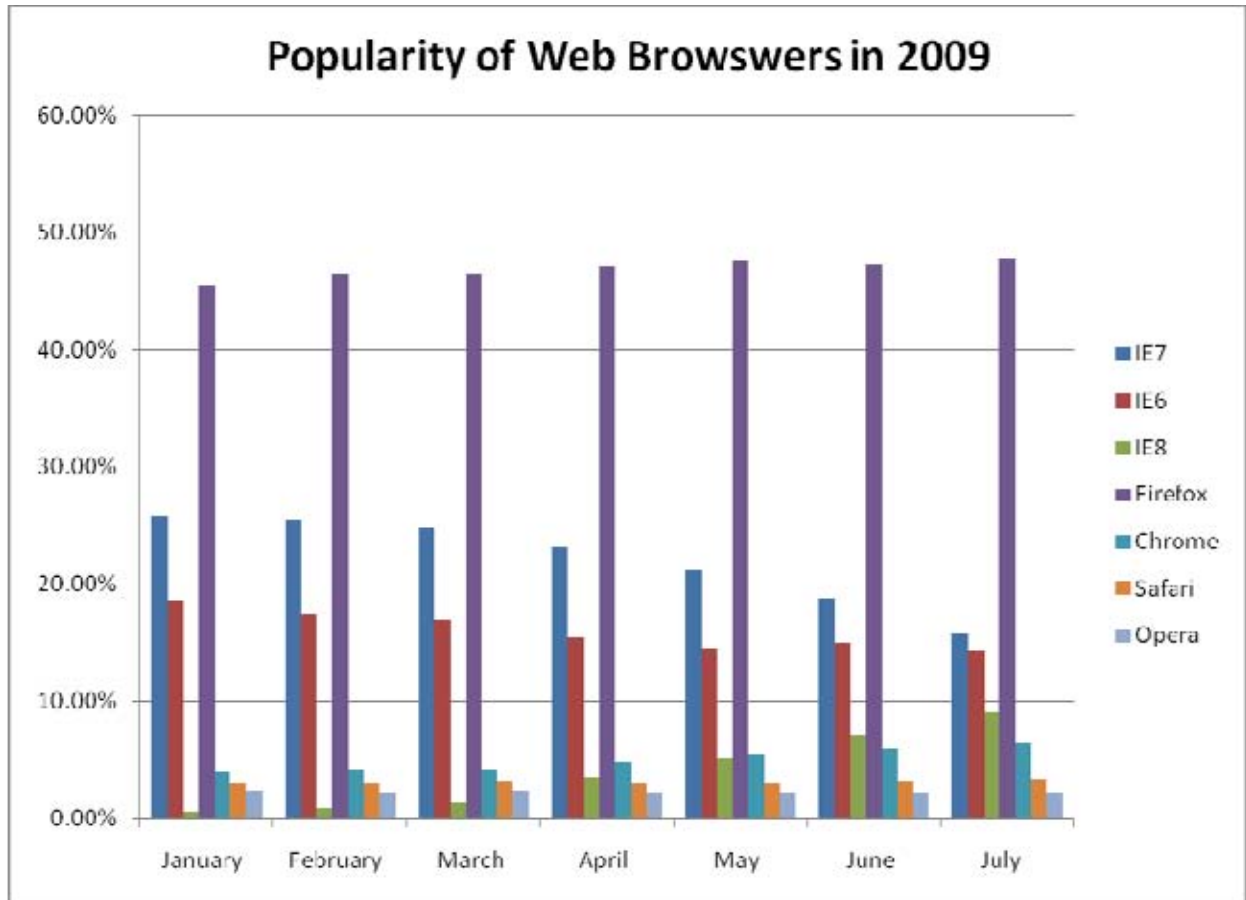
61	39	70	63	83	75	48	72	54	22	67	60
83	62	76	77	89	74	48	78	76	51	63	79

1. Draw the points on a scattergraph (8)



2. Draw a line of best fit (2)
3. Where does your line of best fit cross the y-axis? What does this tell you? (4)
Around 38. It tells us that if you got a year mark of 0, you would likely get a final mark of 38%
4. What can you predict about that learner who achieved a 50% year mark might achieve for the exam. (2)
Around 66 % for the exam
5. Do you think this is an accurate prediction? Why or why not? (4)
Definitely not, the mark of the student still very much depends on how hard they work. Also, there is not a very strong trend.

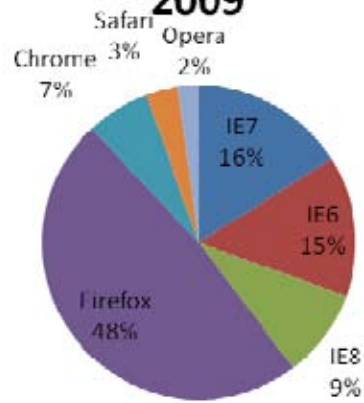
Question 3



Study the bar graph and answer the questions that follow (IE7 is the left most bar and Opera is the rightmost bar) (source: w3schools.com):

- Which is the most popular web browser listed? (2)
Firefox
- Which is the least popular web browser? (2)
Opera
- Name two browsers that are decreasing in popularity and three that are increasing in popularity. (5)
Increasing: Firefox; IE8; Chrome; Decreasing: IE7 and IE6
- Draw a pie chart of the relative usage of the browsers in July. (10)

Popularity of Web Browsers - July 2009



[19]
[50]