Mathematical Literacy 2
Hands-On Support

Answers to activities, case studies and assessment questions

Contents

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Answers to Activities

Module 1

Activity 1

Do the following calculations using the M+ and MRC keys on the calculator. Write down the complete keystroke sequence as in the example above.

35 965	+ 2 698	= 38 663
35 965	– 6 428	= 29 537
35 965	× 14	= 503 510
35 965	÷ 5	= 7 193

Activity 2

1. *A second hand car salesman adds R260 to the price of each vehicle sold, to compensate for damages suffered during a burglary. Calculate the prices of the following cars by programming your calculator to do constant addition.*

Programming of calculator: 260 + = …..

R 60 650 + 260 = 60 910	R 25 295 + 260 = 25 555
R 39 475 + 260 = 39 735	R 125 855 + 260 = 126 115
R 28 975 + 260 = 29 235	R 49 999 + 260 = 50 259

2. *A bill for 6 of each of four items has to be calculated. Work out the bill, item by item. Then write the total for the bill. Work out the bill again, but this time use the short-cut methods of your calculator. Then write down the keystroke sequence that you could use with your short-cut method.*

Price of one item	Price of 6 of these items
R125,68	754,08
R 252,75	1 516,50
R 78,52	471,12
R 59,87	359,22
Total amount owed	3 100,92

Keystroke sequence for shortcut method:
6 ⇒ x ⇒ = ⇒ 125,68 ⇒ = etc…

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3. *Do the following calculations using the M+ and MRC keys on the calculator. Write down the complete keystroke sequence as in the example above.*

48 248 +	6 629 =	54 877
48 248 -	5 936 =	42 312
48 248 ×	37 =	1 785 176
48 248 ÷	8 =	6 031

4. *Explore the % sign. See who can figure out how to perform % calculations with the use of the calculator. Different calculators work differently.*

You can calculate percentages easily with a simple calculator. **Example with calculator % key**:
If you need to express $\frac{5}{8}$ as a percentage, press as follows on your calculator:

5 ⇒ ÷ ⇒ 8 ⇒ %

You should now see 62,5 on the screen.

Activity 3

1. *In a small group, list any 5 numbers between 500 and 20 000. Let each member in the group give a number that first comes to mind. Write them down and do the following:*

   a. *Give the value of the 1st digit of every number*

   b. *Give the value of the 3rd digit of every number*

   c. *Divide each number by 1000.*

   d. *Then give the value of the 2nd digit after the comma.*

   Example given – followed by own work.

2. *Work with a partner; calculate with a calculator and then make a conclusion of what happens when you multiply or divide by a factor of ten:*

   a. 2,56 x 10 =25,6
   b. 2,56 x 100 = 256
   c. 2,56 x 1000 = 2560
   d. 2,56 ÷ 10 = 0,256
   e. 2,56 ÷ 100 = 0,0256
   f. 2,56 ÷ 100 = 0,00256

Activity 4

1. *Now calculate without a calculator:*
   a. 82 x 100 = 8 200
   b. 3,85 x 100 = 3850
   c. 4,07 x 10 = 40,7

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d. 0,64 x 1000 = 640
e. 0,003 x 100 = 0,3

2. *Arrange from largest to smallest:*
   a. *265; 625; 256; 526; 652; 562:* 652**; 625; 562; 526; 265; 256**
   b. *2904,621; 2904,216; 2904.162; 2904.126; 2904.261; 2904.621:* **904,621; 2904,612; 2904,261; 2904,216; 2904,162; 2904,126**
   c. *0.38; 3.8; 3.08; 0.83; 8.03; 8.38; 8.83:* **8,83; 8,38; 8,03; 3,8; 3,08; 0,83; 0,38**
   d. *6.53; 3.56; 65.36; 563.35; 563.53; 653.63:* **653,63; 563,53; 563,35; 65,36; 6,53; 3,56**
   e. *0.44; 4.4; 0.04; 0.044; 4.04; 44.4; 44.04:* **44,4; 44,04; 4,4; 4,04; 0,44; 0,044; 0,04**
   f. *8.09; 0.89; 8.9; 80.9; 89.09; 0.98; 0.098:* **89,09; 80,9; 8,9; 8,09; 0,98; 0,89; 0,098**
3. *Write in decimal notation:*
   a. *3 / 10* = 0,3
   b. *4 / 1000* = 0,0004
   c. *4 + 73 / 100* = 4,73

Activity 8 (pg 15)

1. *What does the -1˚C for Kimberly mean?*
   The temperature in Kimberly is one degree below the freezing point of water.
2. *Which is the colder place, Kimberly or Polokwane? Which is the warmer of the two?*
   Kimberly is the colder of the two (-1˚ C vs. 1˚ C); Kimberly is also the warmer of the two (18˚ C vs. 14˚ C)
3. *Which city has the most extreme weather patterns? What is the temperature swing from cold to hot of this city?*
   Kimberly; 19˚C
4. *Which city has the mildest climate? What is the temperature difference in this city?*
   Cape Town; 8˚C

Activity 10

1. *Arrange the following in order form the smallest to the largest:*
   a. *1/8; ½; 1/15; 1/80; 1/3; 1/13; 1/60; 1/5:* **1/80; 1/60; 1/15; 1/13; 1/8; 1/5; 1/3; ½**
   b. ¾; 7/12; 5/6; 7/8: **7/12; 17/24; ¾; 5/6; 7/8**
   c. *0,751; 0,625; 0,589; 0,435; 0,753; 0,448; 0.598:* **0;435; 0,448; 0,589; 0,598; 0.625; 0,751; 0,753**
   d. 49%; 0,491; 7/12; 0,55; 50%; 4/9: **4/9; 49%; 0,491; 50%; 0,55; 7/12**
2. *Give an estimate of the sections of this pizza that is to be given to four friends each with a different degree of hunger.*

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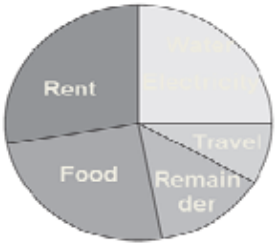
Section to:	Fraction	Decimal	Percentage
John	1/8	0,125	12,5%
Peter	1/4	0,25	25%
Bongani	5/16	0,3125	31,25%
Andele	5/16	0,3125	31,25%

3. *Give an estimate of each of the five sections of Ntombizodwa's budget:*



Section	Fraction	Decimal	Percentage
Rent	9/32	0,28125	28,125%
Water & Electricity	¼	0,25	25%
Food	¼	0,25	25%
Travel	1/16	0,0625	6,25%
Remainder	5/32	0,15625	15,625%

Activity 11 (page 23)

Working with a partner, review the level of the dams in the Free State and answer the questions below:

1. *What is the combined capacity of the dams in the Free State?*
   16037 Megalitres
2. *Which dam is the smallest and what percentage of the total capacity of all the dams is that?*
   Egmont dam; 0,058%
3. *Which dam is the biggest of all the dams and what percentage of the total capacity is this dam holding?*
   Gariep Dam; 33.3%
4. *How full is the dam compared to last year?*
   This year 60,2% of total capacity; Last year 91,1% of total capacity; As a percentage of total capacity it is 30.9% more full or as a percentage of last year it is 33.9% emptier.
5. *There are 17 dams in total. Ranking them from smallest to biggest which dam is no.9 on the list?*
   From smallest to biggest: Egmont; Welbedacht; Groothoek; Armenia; Saulspoort; Koppies; Rustfontein; Krugersdrift; Knellpoort; Allemanskraal; Erfenis; Kalkfontein; Bloemhof; Vaal; Sterkfontein; Vanderkloof; Gariep
   No 9 on the list is therefore Knellpoort.

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Activity 12

1. *Simplify the following fractions:*

   a. $\frac{63}{77} = \frac{9}{11}$

   b. $\frac{9}{24} = \frac{3}{8}$

   c. $\frac{36}{120} = \frac{3}{10}$

   d. $\frac{25}{1500} = \frac{1}{60}$

   e. $\frac{96}{132} = \frac{8}{11}$

2. *Complete the following conversions:*

Common fraction – first simplify the fraction	Decimal fraction	Percentage
$\frac{7}{8}$	**0,875**	**87,5%**
$\frac{125}{1000}$	0,125	**12,5%**
$\frac{12}{20} = \frac{3}{5}$	**0,6**	**60%**
$\frac{16}{20} = \frac{4}{5}$	**0,8**	**80%**
$\frac{45}{100}$	0,45	**45%**
$\frac{65}{100}$	**0,65**	**65%**
$\frac{3585}{10000}$	0,3585	**35,85%**
$\frac{1}{2}$	0,5	50%
$\frac{1}{5}$	**0,2**	**20%**

3. *Colour the relevant sections of a circle to demonstrate the following fractions:*

 a. ¼

 b. ½

 c. ¾

 d. 3/8

 e. ¼

 f. 90%

 g. 50%

 h. 60%

 i. 100%

4. *Three words relating to a situation are given. State which you would consider positive, which negative and which are zero / neutral. Mark an X in one of the columns.*

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Situation	Words	Positive	Negative	Neutral
Soccer:	gaining territory	√		
	losing territory		√	
	no gain.			√
Time:	today			√
	tomorrow	√		
	yesterday		√	
Savings account	deposit	√		
	withdrawal		√	
	constant amount			√
Business:	break even			√
	loss		√	
	profit	√		
Games	ahead	√		
	behind		√	
	even.			√

5. *Complete the following sentences:*
    a. *Negative numbers are usually to the* **left** *of positive numbers on a horizontal number line.*
    b. *Positive numbers are usually* **above** *negative numbers on a vertical number line.*

Activity 13 (page 25)

Study the telephone message and answer the questions:

1. *Could there be a misunderstanding of the time Lulama has to meet Jack?*
   Yes; it could be 8 in the morning or 8 in the evening.
2. *What kind of misunderstanding is this?*
   It is a misunderstanding of the use of time notation.
3. *How could or should the time rather be written?*
   It could be written in 24 hour notation as 08:00 or 20:00; or it could be written in 12 hour notation as 8 AM or 8 PM.

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Activity 14

16 x 2 = 32	52 x 5 = 260	12 – 4 = 8	44 – 6 = 38
12 x 8 = 96	88 x 3 = 264	13 – 8 = 5	47 – 23 = 24
11 x 9 = 99	42 x 7 = 294	16 – 4 = 12	49 – 22 = 27
13 x 2 = 26	67 x 6 = 402	12 – 3 = 9	56 – 15 = 41
15 x 3 = 45	99 x 2 = 198	10 – 7 = 3	59 – 18 = 41
24 x 3 = 72	33 x 4 = 132	10 – 4 = 6	66 – 38 = 28
23 x 4 = 92	44 x 5 = 220	11 – 6 = 5	67 – 18 = 49
25 x 4 = 100	77 x 4 = 308	11 – 3 = 8	71 – 18 = 53
28 x 5 = 140	35 x 3 = 105	15 – 8 = 7	79 – 15 = 64
30 x 8 = 240	43 x 8 = 344	16 – 9 = 7	82 – 18 = 64
60 x 4 = 240	37 x 4 = 148	17 – 5 = 12	85 – 17 = 68
70 x 5 = 350	93 x 2 = 186	22 – 3 = 19	89 – 73 = 16
80 x 6 = 480	84 x 5 = 420	25 – 8 = 17	93 – 57 = 36
50 x 3 = 150	72 x 6 = 432	27 – 9 = 18	95 – 47 = 48
40 x 9 = 360	68 x 8 = 544	29 – 13 = 16	97 – 48 = 49
20 x 8 = 160	49 x 3 = 147	32 – 8 = 24	96 – 69 = 27

Activity 15

1. 12 x 36 432	2. 36 x13 468	3. 18 x22 396	4 22 x18 396	5 15 x26 390
6 24 x17 408	7 43 x35 1505	8 56 x19 1064	9 64 x37 2368	10 38 x40 1520
11 59 x70 4130	12 78 x20 1560	13 44 x90 3960	14 57 x30 1710	15 66 x42 2772
16 39 x28 1092	17 27 x55 1485	18 77 x49 3773	19 51 x24 1224	20 99 x38 3762

Activity 16

1. 235 + 111 346	2. 52 + 12 64	3. 428 + 428 856	4. 792 + 792 1584	5. 537 +537 1074

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6. 684 +795 1479	7. 546 +738 1284	8. 523 + 128 651	9. 652 +759 1411	10. 985 +999 1984
11. 235 - 111 124	12. 1052 - 12 1040	13. 428 - 428 0	13. 584 - 321 263	14. 1999 - 637 1362
15. 745 - 337 408	16. 853 - 846 7	17. 764 - 675 89	18. 245 -157 88	19. 1 842 -579 1263

Activity 17

1. R3,50 + R2,75 6,25	2. R5,80 +R17,42 23,22	3. R12,65 + R 8,20 20,85	4. R 24,76 +R324,50 349,26	5. R 66,99 + R128,45 195,44
6. R376,67 + R 7,35 384,02	R 56,91 + R 38,52 95,43	R 27,73 +R 56,39 84,12	R4056,78 +R 23,87 4080,65	R485,26 + R327,55 812,81
11 . R3,50 - R2,75 0,75	12. R12,65 - R 8,20 4,45	13. R376,67 - R 7,35 369,32	14. R 56,91 - R 38,52 18,39	15. R4056,78 -R 23,87 4032,91
16. R485,26 + R327,55 812,81	17. R76,55 -R22,22 54,33	18. R521,99 -R 99,36 422,63	19. R737,48 -R648,59 88,89	20. R846,34 -R567,57 278,77

Activity 19

1. *Approximate/round off the following figures:*

Approximate to the nearest:	***Actual figure***	**Approximated figure**
thousand	*56 985*	**57 000**
	123 489	**123 000**
	5 928	**6 000**
	9 135	**9 000**
hundred	*54 391*	**54 400**
	629	**600**
	142 850	**142 900**
	1 267	**1 300**
ten	*1 482*	**1 480**
	106 789	**106 790**

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	55	**60**
	61	**60**
whole number or unit	*498 625,467*	**498 625,0**
	32 453,92	**32 454**
	574,5	**575**
	62,5	**63**
first decimal place	*489,18*	**489,2**
	64,58	**64,6**
	1 784,29	**1 784,3**
	23,43	**23,4**

Activity 20

R100 is shared between Katie and Simon. Calculate Katie's share if the money is divided in the ratio:

1. *3:7*

   Katie receives: $\frac{3}{10}$ X R100 = R30;

   Simon receives R100 - R30 = R70
2. *8:12*

   Katie receives: $\frac{8}{20}$ x R100 = R 40;

   Simon receives R100 - R40 = R60
3. *6:4*

   Katie receives: $\frac{6}{10}$ x R100 = R60;

   Simon receives R100 - R60 = R40

Activity 21

1. *Express the following ratios in the simplest form:*

   a. *42:49* 6 : 7

   b. *56:* 80 7 : 10

   c. $\frac{36}{60}$ $\frac{3}{5}$

2. *Divide R120 between three employees. One employee worked for two hours, the other worked for three hours and the third worked for five hours.*

   Ratio is: 2: 3: 5

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The first person receives: $\frac{2}{10}$ x 120 = R24

Second person receives: $\frac{3}{10}$ x 120 = R36

Third person receives: $\frac{5}{10}$ x 120 = R60

3. *The workers in a clothing factor include 180 men and 120 women.*
   a. *Give the simplified ratio of men to women*
      Ratio of men to women is 180: 120
      Simplified ratio is 3: 2
   b. *Give the simplified ratio of women to the total number of workers*
      Ratio of women to the total number of workers is 120: 300
      Simplified ratio is 2: 5
4. *Three families are sharing a house. The first has three members, the second has four members and the last has two members. How should they divide paying the rent of R500 for the house?*
   Ratio of family members is 3 : 4 : 2
   Ratio of money:

   First family pays $\frac{3}{9}$ x 500 = R166,67

   Second family pays $\frac{4}{9}$ x 500 = R222,22

   Third family pays $\frac{2}{9}$ x 500 = R111,11

5. *A packer in the wine industry oversees a machine that bottles 10 000 bottles per hour. How long will it take to bottle 60 000 bottles?*
   60 000 ÷ 10 000 = 6 hours
6. *Water leaks from a tank at the rate of 5ml per second. If the tank has 950 ml of water, how long will it take before it is empty?*
   950 ÷ 5 = 190 seconds = 3 minutes 10 seconds
7. *A train travels 144 km in two hours. Find the speed of the train in km.h^{-1}*
   144 ÷ 2 = 72 km/h

Activity 22

1. *Convert the quantities in the first column to the units in the second column.*

1 kg	**1000**	g
1 km	**1000**	m
1 kl	**1000**	ℓ

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1 g	**1000**	mg
1 m	**1000**	mm
1 ℓ	**1000**	ml
2575 mm	**2,575**	m
3824 ml	**3,824**	ℓ
8,257 ℓ	**8257**	ml
450 km	**450 000**	m
32,8 kg	**32 800**	g
7495 g	**7,495**	kg

2. *Complete the following:*

m	**0,5**	2,5	2	**1,75**	4,25	**0,4**	3,5	**8**
cm	**50**	**250**	200	175	**425**	40	350	800
mm	**500**	2500	**2000**	1750	4250	400	**3500**	8000

cm	600 000	350 000	**12 985**	275000	40000	5000	2500	845000
m	**6000**	3500	129,85	**2750**	400	50	**25**	8450
km	6	**3,5**	0,12985	2,75	**0,4**	**0,05**	0,025	**8,45**

kg	**2**	0,001	**3,25**	**2,75**	1	0,75	0,00095	0,05
g	2000	1	3250	2750	**1 000**	**750**	0,95	**50**
mg	2000000	**1 000**	3250000	2750000	1000000	750 000	**950**	50 000

kl	0,001	**1**	0,0005	**0,5**	0,02	0,2	0,003	**0,85**
l	**1**	1000	**0,5**	500	**20**	**200**	3	850
ml	1000	1000000	500	500 000	20000	200000	**3000**	850000

Activity 24 (Pg 40)

1. *Measure the lines in millimeters with your ruler:*

   AB = 38mm
   CD = 52mm
   EF = 22,5mm
   GH = 54,5mm

2. *Read the measuring instruments and give the answers with the correct abbreviations of measuring unit*

   Volume in the top sketch: Almost empty
   Volume in the lower sketch: More than three quarters full
   Mass: 400g
   Temperature: 150 degrees Celsius

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Speed: 55 km/h

3. *Complete the table with a Yes or No*

Question with regard to measuring unit	Yes/No
Can you hold a mass of 250 g in your one hand?	Yes
Can you carry a mass of 600kg on your back in a ruck-sack?	No
Can a sparrow drink 6 litres of water at one visit to a bird bath?	No
Can you paint the exterior of a house with 2 000ml of paint?	No
Can you build a road 1 000 km long for R3 000?	No
Can a flight from Cape Town to London be completed in two hours?	No
Can you eat 6 kg of meat at one meal?	No
Is it practical to take the measurements of a house with a metre long ruler?	No
Is it possible to live in the outdoors in a temperature of minus 40 degrees Celsius?	No

Assessment questions:

Self assessment (page 33)

1. *Calculate:*

    1. *48 - 14 + 8 =* 42
    2. *22 + 12 - 5 =* 29
    3. *50 - 3 =* 47
    4. *6 x 6 =* 36
    5. *600 ÷ 30 =* 20
    6. *26 - 8 + 8 =* 26
    7. *12 + 13 - 5 =* 20

2. *The work problems in this activity deal with the logical use of the four basic operations of arithmetic.*

    a. In a factory there are 285 workers. On a certain day there are 105 men and 75 women working. How many workers were absent that day?

    285 - (105 + 75) = 105

    1. *In the year 2007 there were 20 845 learners enrolled in a certain FET programme throughout South Africa. If 16 626 of them passed, how many failed?*
    20 485 - 16 626 = 3 859
    2. *When a number is increased by 47 676 it becomes 100 000. Find the number.*
    100 000 – 47 676 = 52 324
    3. *Joe has R987. Beverly has R25 more than Joe. If Petra has R376 less than Joe, how much have the three people altogether?*
    987 + (987 + 25) + (987 - 376) = 2 610

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4. *A nurse has 12m of cotton material which she wants to cut into equal pieces each 75 cm long. How many pieces of material does she get? The material is one metre wide. She will cut the 75cm long strips 10 cm wide. How many strips will she eventually have?*

   1 m = 100 cm and 12 m = 1200cm

   1200 ÷ 75 = 16 pieces of material

   100 ÷ 10 = 10 strips of material in each piece

   Therefore, the total number of strips = 16 x 10 = 160

Summative Assessment (pg 42)

1. *Give the values of the numbers that the digits printed in bold represent:*
   a. *128 9**4**5* = 40
   b. ***5**42* = 500
   c. *6**2** 565* = 2000
   d. ***5**9 246* = 50 000
   e. *23**8*** = 8
   f. 94,6**2**5 = two tenths
   g. 12,18**3** = three thousandths
2. *Calculate:*
   a. *20 – (5 + 2) =* 20 - 7 = 13
   b. *10 x (3 + 6) =* 10 x 9 = 90
   c. *1000 ÷(30 – 5) =* 1000 ÷ 25 = 40
   d. *38 – 3 x 6 + 9 =* 38 - 18 + 9 = 29
3. *Solve the following word problems:*
   a. *A worker on a fruit farm packs 475 peaches. Six of them are rotten. She packs the remainder in boxes, each containing 12 peaches. How many boxes can she fill?* (475 - 6) ÷ 12 = 39,08 = 39 boxes.
   b. *Bronwyn wins R357 000 in a competition. She invests R300 000 in an equity fund and distributes the rest amongst her four children. How much does each child receive?* 357 000 - 300 000 = 57 000. 57 000 ÷ 4 = R14 250 for each child.
   c. 20 apples and 16 pears cost R30. If the apples cost R2,50 each, find the cost of one pear.

      20 x R2,50 = R50,00 R80 - R50 = R30

      R30 ÷ 16 - R1,875 = R1,88
   d. *Every day Sam saves 50 cents and his sister Jamina saves half as much. How long will it take them to save R26,25 together?*

      2625 ÷ (50 + 25) = 2625 ÷ 75 = 35 days.
   e. *The product of a calculation involving two numbers is 1575. One number is 35. What is the other number or numbers?*

      1575 ÷ 35 = 45

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f. *How many times can 53 be subtracted from 3 286?*

3286 ÷ 53 = 62 times

4. *It takes 18 workers to finish building three packing sheds in 5 weeks. How many weeks will it take 60 workers to finish packing 8 sheds?*

One worker finishes $\frac{1}{6}$ of a packing shed in 5 weeks.

Sixty workers finish 10 packing sheds in five weeks

Therefore 60 workers finish two sheds in one week

Therefore 60 workers finish eight sheds in 4 weeks.

5. *Estimation of an unknown is used to solve a problem*

a. *How long will it take to travel 1 500 km by car if your average speed is 100 km/h?*

1500 ÷ 100 = 15 hours

b. *If you walk one kilometer in 10 minutes, how long will it take to complete a 20 km walk?*

20 x 10 = 200 minutes = 3 hours and 20 minutes

c. *If a typist types at a speed of 60 words per minute, how long will she take to type a document of 6000 words?*

6000 ÷ 60 = 100 minutes = 1 hour and 40 minutes

d. *If a tourist has R600 to spend per day, how many days can he travel on R10 000?*

10 00 ÷ 600 = 16,67 days

e. *Estimate the monthly income of a business which operates five days per week, at an estimated daily income of R900.*

900 5 = R4500 per week income. R4500 x 4 = R18 000 per month

f. *If four sheets of corrugated iron cover roughly 8 square metres of roof, estimate the number of sheets necessary to cover a roof of 96 square metres.*

96 ÷ 8 = 12 four-sheet sections

Number of sheets is 12 x 4 = 48 sheets.

6. *In which units would you measure?*

Quantity	**Unit of measurement**
Distance between two towns	kilometre
Volume of fluid injected into a patient	millilitre
Vit C tablet given to a cold sufferer	milligram
Quantity of water used by a household during the year	kilolitre

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Height of a person	centimetre
Length of a rugby field	metre
Paint used to paint a room	litres
Ingredients used to bake a cake	gram
Mass of bricks necessary to build a house	ton
Height of an aeroplane on a long distance flight	metre

Case studies

Car Dashboard Case study (pg 43)

Below is an instrument console of a modern car. It contains a lot of information to help the driver to drive safely and to make an informed decision along the way. Study this console and answer the questions below:

1. *List the number of different measurement tools that are used on this car's dashboard.*
   Speedometer; Rev counter; Fuel gauge; Temperature gauge; Clock; Economy gauge; Odometer.
2. *How fast was this car driving?*
   Approximately 55 km/h
3. *What rate is used to measure how fast this car is moving?*
   Speed
4. *Is this a direct or indirect ratio?*
   It is in direct proportion to distance, and indirect to time.
5. *Was this car driven in the morning or the afternoon?*
   Afternoon (the clock says PM)
6. *What is the "044607" and the "735.8" measurement on the screen?*
   The odometer readings. The car has travelled 44607km since it was manufactured, and 735.8 km since the odo was reset.
7. *Estimate how far this car can still drive before it must fill up again.*
   Difficult to do, since the odo clearly wasn't reset when the car was last refueled. Neither can we use the economy gauge, since we don't know the capacity of the tank.
8. *What type of fraction is used to determine how much petrol is in the car's tank?*
   Common fraction
9. *What is the "outside" temperature and what does it mean?*

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18˚C. The temperature is 18 /100 between the freezing point of water and the boiling point of water.

10. *What answer do you think the owner will give if a friend asks him while having a cup of coffee somewhere, "what is the mileage of your car?"*
    44 thousand kilometres
11. *What is the actual RPM reading of this vehicle and what does it mean?*
    Approx 1800 rpm. The engine is turning 1800 times per minute.
12. *How many litres of petrol will this car need to drive 150km?*
    14.4 litres.

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Module 2

Answers to activities

Activity 3

Refer back to the self-assessment in the previous section and consider the following: Rosie and Lily now have the following changes to their lifestyle as of May: Lily's father has disappeared and is not paying maintenance any more. Petrol prices have increased and Rosie's taxi fare now adds up to R400 per month. Monthly crèche fees have increased to R400. Winter is close and Rosie had to buy warm clothes for Lily. In the second week of May, Lily fell in the playground at crèche and broke her arm. Doctor's fees cost Rosie R500. She will have more doctor's fees in June when Lily's cast comes off. Rosie is very worried and decides to spend R100 extra per month on lotto tickets – she can see no other way of getting more money. Her stress levels also cause her to smoke more cigarettes. She now buys three packets of cigarettes per week.

a. Rosie needs your help. Complete the following table for her:

   If she wants to remain in the black, she will have to start using her savings.

   She overspent by R454 in May.

   If she estimates the next month's medical expenses to R400, and if she returns to her budgeted lotto habits and reduces her smoking to the initial level, she will spend R3200 and draw even.

   Her expenses have increased as follows:

Expense item	Budget amount per month	Amount spent (May)	Variance amount	Percentage variance	Adapted budget
Rental amount of room	R 650	650	0	0	**650**
Crèche fees for Lily	R 350	400	50	14,3	**400**
Food	R 900	900	0	0	**900**
Taxi fair	R 300	400	100	33,3	**400**
Telephone	R 150	150	0	0	**150**
Entertainment	R 100	100	0	0	**50**
Money saved	R 250	0	250	100%	**0**
Clothes	R 200	200	0	0	**100**
Lotto	R 50	150	100	200%	**50**
Cigarettes	R 100	204	104	104%	**100**
Medical expenses		500	500	n.a.	**400**
Total:		3654			**3200**

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Activity 4 (Pg 63)

1. *In a group to two, check the table of bank costs / charges of a bank that we called "Wonder Bank" and answer the questions below:*
    a. *If you want to withdraw R500 in cash at the Wonder Bank ATM, how much will it cost you?*
    R3.10 + 0.9% x 500 = R3.10 + R4.50 = R7.60
    b. *How much will it cost, if you withdraw the same amount from an ATM of any other bank?*
    R8,40
    c. *At Wonder Bank, if you have to go inside the bank to withdraw at the teller, what will it cost?*
    R17,50 + 0.9% x 500 = R17,50 + R4,50 = R22,00
    d. *Writing out a cheque for the same amount, what will the bank fee on that be?*
    R3,10 + R5,50 = R8,60
    e. *If the R500 was meant to pay an account, how much will it cost to link this account and pay it electronically?*
    R3,10 + 0.6% x 500 = R3,10 + 3,00 =R6,10
    f. *Two other methods of payment are the internet and telephone banking. How much will they cost you?*
    R21
    g. *How much will it cost to deposit money at the ATM and inside the bank?*
    ATM = R3,10 + 0.90% x 500 = R7.60
    Assuming that the fixed charge is R17.50 to deposit at the teller:
    Teller = R17,50 +0.90% x 500 = R22,00
    h. *What is the cost if you unsuspectingly deposit a fraudulent cheque?*
    R31,50

Activity 6 (page 66)

1. *The diagram below lists a number of words from the two bank statements. Refer to the bank statements and decide whether a particular work means:*
    - *"money into the account"*
    - *"money out of the account"*

    Make a tick in the appropriate column

Word	***Income***	***Expenses***
Deposit	✓	
Card levy		✓
Overdraft interest		✓
Administration fee		✓
Interest	✓	
Internet banking cost		✓
Transfer cost		✓

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Cheque deposit	✓	
Opening balance	✓	
Cheque payment		✓
Cheque payment reversal	✓	

2. *On both bank statements, the last column (balance) is incomplete. Complete this column to determine the closing balance at the end of the month.*

Date	***Branch***	***Transaction Description***	***Funds in***	***Funds out***	***Balance***
17/05/07	*PicknPay1*	*PNP purch CB fee*		*0,55*	*6744,79*
19/07/07	*Head Office*	*Electronic Dep*	*5000*		**11744.79**
25/05/07	*Biesiesfontein Str*	*Cheque Deposit*	*535,00*		**12279.79**
26/07/07	*ATM Fontein Str*	*Cash Withdrawal*		*500*	**11779.79**
31/07/07	*Head Office*	*Monthly fee*		*2,00*	**11777.79**

Date	**Ref**	**Description**	**Fees**	**Db**	**Cr**	**Bal**
12/07/08	518	Council	4.25	104.52		-655.81
25/07/08	Internet	Salary			2968.25	**2312.44**
25/07/08	Debit Order	Foschini	4.86	160		**2147.58**
30/07/08	Debit Order	TV	3.31	18.81		**2125.46**
30/07/08		Service fee Cheque	35.00			**2090.46**
30/07/08		Serv. Fee Card	2.00			**2088.46**
30/07/08		Over the limit	79.00			**2009.46**

3. *Does Mr Mkize have any money left in his bank account?*

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Yes

4. *Calculate the fees on both bank accounts.*
   Mr Mkize: R6,55
   Benni Mokoena: R186.28

Activity 9 (Pg 70)

1. *Why is it necessary to have the ID number of Mr Mokoena?*
   The ID number is used for tax purposes and to uniquely identify Mr Mokoena.
2. *How much does he earn per hour?*
   Earnings per hour = R4011.15 ÷ 25.5 = R157.30 per hour.
3. *What percentage of his gross payment is claimed by the receiver of revenue?*
   Percentage tax = R1 002,79 ÷ R4 011,15 x 100 =25%
4. *What percentage of his gross income is claimed by the Unemployment Insurance Fund?*
   UIF contributions go into the Unemployment Insurance Fund, which he can claim from if he becomes unemployed.
5. *What do you think happens to UIF contributions that are subtracted each month?*
   UIF contributions go into the Unemployment Insurance Fund, which he can claim from if he becomes unemployed.
6. *Check whether the net pay has been calculated correctly.*
   Net Pay = Gross Pay – Tax – UIF
   = R4011.15 – 1002.79 – 40.11
   = 2968.25 Therefore tax has been calculated correctly.

Activity 10 (Pg 71)

1. *What was the balance brought forward on this account?*
   Balance bought forward = R0.00
2. *How much does it cost annually for waste removal?*
   Annual waste removal = monthly waste removal x 12
   = 56,68 x 12
   = R704,16
3. *No amount is mentioned for water. Why not?*
   Water is paid on a separate bill
4. *Electricity is also not listed. Why not?*
   Electricity is prepaid
5. *On what date did the council take an actual reading? What was the estimated amount?*
   Sewerage was read on 16/05/07. The estimated consumption was 2,824 kl
6. *Why is the previous month's total account the same as the current month's account?*
   The fees are calculated on an annual basis, and divided by 12 to give a monthly figure.
7. *How many litres is the basic charge and what was the council usage estimate?*
   Basic charge = R33,00
   Estimation of usage = 2,824kl

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8. *Sewerage usage is based on the water usage of a household. A percentage rate is used. If the rate is 15%, how much water did the Mokoena family use?*
   Water usage = Sewerage usage ÷ 15 x 100
   = 2,824 kl ÷ 15 x 100
   = 18,827 kl
9. Did Benni Mokoena pay his account on time or did he fall behind on his council payments as well?
   He paid his accounts on time.

Activity 11

Study the Foschini account and answer the questions below:

a. *What does "closing balance" mean?*
   It means the balance at the end of the month
b. *What does "90 days +" mean?*
   It is the amount of credit that is older than 90 days.
c. *What is the total amount that Mrs Mokoena will have to pay to settle the account?*
   Balance = R1859,00
d. *The "installment due" is the sum of two amounts. Give these two amounts as well as the total installment of this account.*
   Installment due = R55 + R105 = 160
e. *Why is there a difference between the amount due and the amount of R190 that is given as the answer to the question what is my installment?" Explain your answer.*
   Possible since she has already paid R30 of the installment.
f. *What is the maximum prescribed interest rate by the National Credit Act and what rate is Foschini promising its customers?*
   Maximum prescribed rate = 22.5% + 8.4% = 30.9%
   Foschini rate = 22.5%
g. *How much interest is she paying in July? Give the amount.*
   Interest in July = R18,47 + 14,34 = R32,81
h. *In fine print beneath the account is typed: "A fine of 10% per month is levied for late payments. How much will her balance be is she is one month late?*
   Late payment = amount due x 10%
   = R160 x 0.1 = R16

Activity 15

1. *Who is the beneficiary of this salary slip?*
   Willie Syothula
2. *How much UIF will he pay in a year if his income is a fixed amount?*
   R1 113
3. *What percentage of his salary does he contribute to the UIF?*
   1%
4. *How much will his gross salary be if he gets a 6.5% increase?*

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R 9 831.50

Activity 16

1. *Use the price table to determine which transport option will be the best if you have to travel to college. Motivate your answer.*
   Per trip the train costs: R2,06 for monthly and R2,59 for weekly. It is therefore cheaper than the taxi.
2. *You get the opportunity to travel by plane to Johannesburg on a cheap flight with Mango airlines. Calculate the total cost for a return trip if you have to take a taxi to Cape Town International Airport.*
   The cost of the trip = 2 x airfares + 2 x taxis
   = 2 x R239 + 2 x 75
   =R628
3. *Estimate your total travelling time knowing that all airlines require you to book in at least an hour before the departure time. Also, collecting your luggage at the other end takes on average 15 minutes. Your answer should explain the different travelling legs and the time each leg will take.*
   Taxi to airport = 30 min
   Check-in =1h15
   Flight =2hrs
   Luggage collection =30 min
   Arrange transport =15min
   Taxi from airport =45 min
   Total time =5hr 15

Assessment questions

Self assessment page 56

1. Francois who lives on his own in a rented room, wrote down in a notebook the following amounts that passed through his hands during the month of August.
   a. *Organise Francois's money matters for him neatly into a table separating income and expenses*

Monthly Income:	Amount	Fixed	Variable
Salary	4000,00	√	
Subtraction (UIF at 1%)	40,00	√	
Net Income	**3960,00**		
Monthly Expenses:			
Food	800,00		√
Room rental	750,00	√	

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Clothes	500,00		√
Cell phone	220,00		√
Travel costs	190,00	√	√
Lunches	500,00	√	
Lotto	80,00		√
Beer	56,00		√
Cigarettes	476,00		√
Total Expenses:	**3572,00**		
Income after Expenses:	**388,00**		

b. *Calculate his net income i.e. after deductions*

Francois earns R4000 per month which will total R48000 for the year. Therefore he will not pay tax. For the purpose of this income statement we will therefore exclude the tax subtraction

c. *Calculate the amount he has left after all his expenses have been subtracted from his net income.*

Income after expenses = R3960 - R3572 = R388

d. *Advise him on actions to take with regard to a safe financial future. For example, advise him on how to save and why he should save.*

Francois should think about the fact that he is smoking to the value ofR5 712 per year. His annual cell phone costs are also high at R2640. Lotto for the year comes to almost R1000. These three items add up to the value of two months' salaries. He should contemplate whether it would not be better for him in the long run to save this money as there will come a time when he will have medical expenses as well as other responsibilities.

2. *Rosie is the single mother of one child, whose name is Lily. Rosie and Lily live in a rented flat. She has the listed expenses per month.*

a. *List each item as either fixed or variable and calculate her total expenses.*

See table

b. *She earns R800 per week and receives maintenance money of R150 each month from Lily's father. Calculate her monthly income.*

Rosie's income : Salary = 800 x 4 = R3200

Maintenance = R150

Total income = R3350

c. *Calculate what percentage of her income is spent on each item.*

See table

d. *Calculate how much money Rosie has left after deducting all her expenses for the month.*

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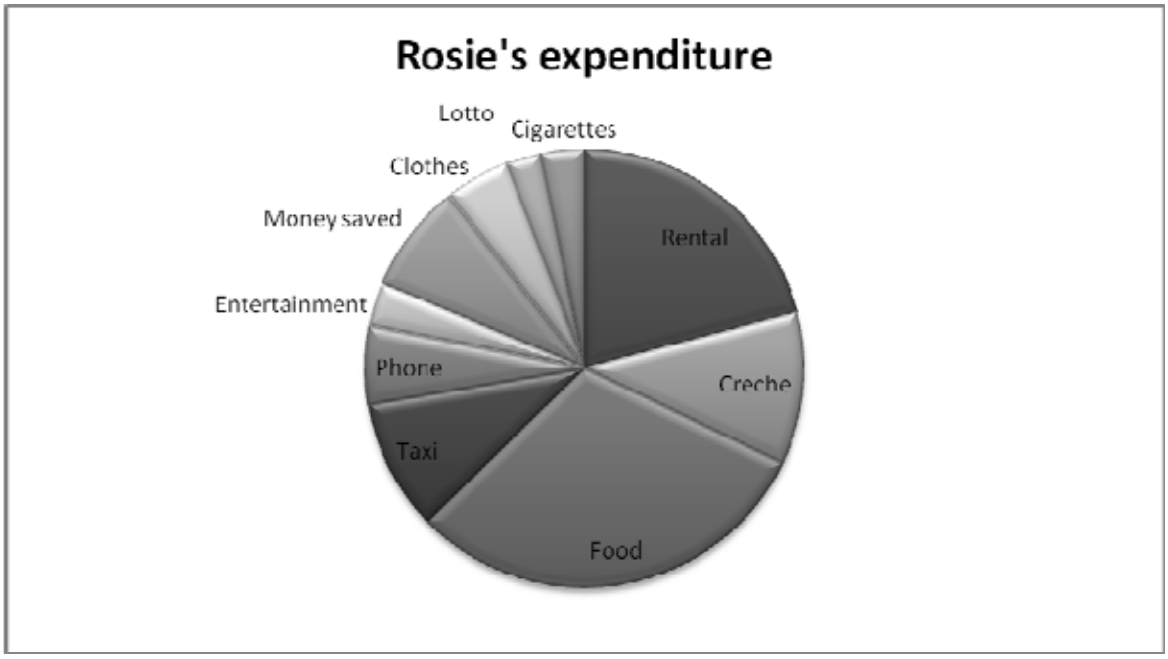
See table

e. *What would you advise Rosie to do with any remaining money?*

Rosie should put any extra money in a savings account as she has not budgeted or clothes, medical expense and any other possible unforeseen expenses.

f. *Draw a pie chart of Rosie's expenses items.*

Expense item	Fixed	Variable	Amount	Percentage of income (c)
Rental amount of room	√		R650	19,4
Crèche fees for Lily	√		R350	10,4
Food		√	R950	28,4
Taxi fair		√	R300	9,0
Telephone		√	R180	5,4
Entertainment		√	R100	3,0
Money saved		√	R250	7,5
Clothes		√	R150	4,5
Lotto		√	R 80	2,4
Cigarettes		√	R100	3,0
Total:			a.) R3110	
Net Income			d.) R240	7,2



Self Assessment page 61

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From the income statement of Francois's parents, a budget can be compiled given their expected fixed income of R7 550 per month.

a. *Calculate the total budgeted expenditure*
b. *Calculate the total expenditure for the month of April*
c. *Calculate how much Francois's parents had left in April for entertainment.*
d. *Calculate the percentage that each expense item constitutes with respect to the total expenditure.*
e. *Calculate the variance amounts between the budgeted amounts and the expenses for April. State whether the variance is positive or negative.*
f. *Calculate the percentage variance for each expense item.*

Expense items	Amounts expected as budgeted from an average of 6 months.	Percentage expense with regard to total expense	April Expenses	Variance amount (positive here taken as "bigger amount")	Variance percentage
Rent	2 050-00	**27,13%**	2 050-00	**0**	0
Insurance and funeral policies	400-00	**5,29**	400-00	**0**	0
Water & electricity	265-00	**3,51**	300-00	**+35**	+13,2%
Telephone	480-00	**6,3**	500-00	**+20**	+4,2%
Transport	300-00	**3,97**	350-00	**+50**	+16,7%
School fees	265-00	**3,5**	265-00	**0**	0
Clothes	250-00	**3,3**	100-00	**-150**	- 60%
Medical	146-00	**1,93**	200-00	**+54**	+37%
Food and household	2 850-00	**37,72**	3 500-00	**+1500**	+52,6%
Savings	250-00	**3,3**	200-00	**- 50**	-20%
Entertainment	300-00	**3,97**	c 0	**-300**	-100%
Totals	a. **R7556-00**	**99,92%**	b R7865-00		

Answers to Case Studies

Case Study page 48

1. *Why do you think Benni agreed to pay R239.00 per month for the TV?*
   He wanted the TV now, even though he couldn't afford to pay for it upfront, hence he accepted making monthly payments.
2. *Do you think that Benni should pay for the TV even though it was destroyed in the fire? Why?*
   He signed a contract saying that he would; The TV was in his possession.
3. *How much would Benni have paid in total had he managed to stick to his monthly installment?*

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Total payment = R239 x 24 = R5 736

4. *How much does a TV with the same specifications that Benni bought cost, if it is bought for cash?*
   Approx R2 800
5. *What do you ask for when paying with cash?*
   A discount
6. *Did Benni have spare money saved to pay for unforeseen expenses?*
   No
7. *What other unforeseen events can you think of that could have similar results?*
   Theft or floods

Case study page 77

1. *Give at least 5 reasons why Benni was "stunned".*
   Any acceptable learner answer
2. *What advice would you give to Benni?*
   Buy for cash as much as possible and save for the items that you want.
3. *What can Benni do to stop being blacklisted?*
   Keep his total debt level as low as possible. If he knows that he is not going to be able to make a payment then he should contact the company before he defaults.

Case study Page 81

1. *Benni's monthly installment of R239 for the TV that be bought and which was destroyed is not included on his bank statement. What are the reasons for this omission?*
   Benni stopped paying for the TV after it was destroyed.
2. *Why are all the debit orders coming off at the end of the month on his bank statement?*
   They come off at the end of the month, since this is when Benni's salary is likely to be at its highest.
3. *Which transactions on the bank statement "costs" the most? Look at the bank charges that are linked to the individual transactions.*
   The fee for being "over the limit" R79; The service fee for the cheque account: R35; Payment of accounts to Pick 'n Pay (R11.44) and Dr. Williams (R7.74)
4. *If Mrs Mokoena suddenly decides to "spend it all" on her Foschini account, how much can she spend? Before answering, consider the "due date" on the account and refer back to the bank statement.*
   The amount she can immediately spend on her Foschini account is R4 140.
5. *The Dentist, Dr Williams, asked you to deposit the cheque that Benni Mokoena gave him. His account number is 601700 104. Use the deposit slip of any bank and assume Dr William's account is at this bank.*
   See slides.
6. *Write a cheque to Pick 'n Pay for the amount that is indicated on Benni Mokoena's bank statement. Use the alternative method for writing "cents" on the cheque itself.*
   See slides.

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7. *Not all the Mokoena family's financial information is shown on the bank statement. Make a list of income and expenses that is either not shown or only shown in an indirect way. In other words, although money was withdrawn from the account, what was it possibly used for?*

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Module 3

Answers to activities

Activity 7

1. *Answer the questions that follow:*
    a. *What are three things that you do in the a.m. hours?*
    Wake up; get dressed; go to work etc…
    b. *Do you sleep more in the a.m. hours or p.m. hours*
    AM: typically anytime from 12-8; PM typically anytime from 9 -12 therefore AM.
    c. *Why is the second part of daylight hour time called the afternoon?*
    It is after noon.
2. *Study the clocks below:*
    From left to right from top row downwards, readings can e.g. be:
    09h18 a.m.(analogue)
    15h57 (digital)
    08h27 p.m. (analogue)
    21h00 (digital)
    02h53 a.m. (analogue)
    13h17 (digital)
    05h00 a.m. (analogue)
    12h46 (digital)
    10h27 p.m. (analogue)

Activity 10

The drawing is a floor plan of a house which the owner calls, "Tree house". It was drawn by an architect. Looking from the top down you will notice the different rooms of the house. The owner want to buy a new carpet for the lounge / dining area. Using the scale of 1:100 how many m^2 of carpet should he buy?

Measurements	= 37 mm x 35 mm
To scale	= 3 700mm x 3 500mm
	=3.7m x 3.5 m
	= 12.95 m^2

Activity 11

1. *Sketch the rectangles with the following dimensions and then calculate:*
    - *The perimeter of each*
    - *The area of each*

Dimensions of rectangle	Perimeter	Area

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length = 12cm; breadth = 8cm	40cm	96cm²
length = 45 mm; breadth = 2,6cm	14,2cm	11,7cm²
length = 16,25 cm; breadth = 1238mm	280,1cm	2011,75cm²

2. *Write the dimensions and various units of measurement for the following spaces or shapes.*

Aspect of shape/space	Number of dimensions	Unit of measurement
Perimeter / Circumference	One	mm, cm, m, km
Area	Two	mm², cm², m², km²
Volume / Capacity	Three	mm³, cm³, m³, km³ or ml, L, kl

Activity 12

1. *Calculate the circumference of circles with the following radii:*
    a. *Radius =8cm*
    2 x 3,14159 x 8 = 16cm
    b. *Radius = 3m*
    2 x 3,14159 x 3 = 18,84954m = 18,850m
    c. *Radius = 10cm*
    2 x 3,14159 x 10 = 62,83cm
2. *Calculate the area of the three potholes below using the area formula. Measure the circles.*
    a. 3,14159 x 5 x 5 = 78,54mm²
    b. 3,14159 x 10 x 10 = 314,159mm²
    c. 3,14159 x 19 x 19 = 1134,11mm²
3. *A triangle with all sides of the same length has the following measurements. Calculate the perimeter as well as the area (base 5 cm)*
    Each side = 5cm
    Perimeter of triangle = 5 + 5 + 5 = 15cm
    Area of triangle:
    (Perpendicular height)² = 5² minus 2,5² = 25 minus 6,25 = 18,75cm.
    Therefore perpendicular height = 4,33cm
    Therefore, area of triangle = 5 x 4,33 ÷ 2 = 10,83cm²
4. Calculate the area in square units of:
    a. *A rectangle with length 16 cm and breadth 12 cm*
    Area of rectangle = 16 x 12 = 192cm²
    b. *A circle with radius 15 cm*
    Area of circle = 3,14159 x 15 x 15 = 62,124cm²

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Activity 14

Work in pairs and measure the "Tree house" drawings on pg 109. Use the scale of 1:100 and complete the table below.

Dimension measured	Sketch measured	Actual house measurement
Height of walls	17mm	1,7m
Width of house	59mm	5,9m
Length of roof	59mm	5,9m
Height of window	9mm	0,9m
Width of window	10mm	1m
Size of house	3128mm^2	31,28m^2
Total surface of walls*	4320 mm^2	43.2m^2

Ignoring the doors and windows and measuring the "A" shape of the side of the house.

Front: 6,5m x 1,8m x 2

Side: 4,5m x 1,8 x 2 + 2 x ½ x 4,5m x 0,8m

Total = 23.40m^2 + 19.8m^2

Activity 17

1. *To be completed by the learner (for solutions, see slides)*
2. Find and give the horizontal and vertical co-ordinate values for:
    a. *City Hospital in Green Point*
    BY 23
    b. *Jan van Riebeeck High School*
    CC 22 – top left hand corner
    c. *The Green Point Common*
    BY 21
    d. *Sea Point High School*
    BZ 20 – top left hand corner
    e. *Karos Arthur's Seat Hotel*
    CA 19 – top left hand corner
    f. *Fresnaye Sports Club*
    CA 20 – bottom left hand corner
    g. *Green Point Track*
    BY 22 - bottom of grid block
3. *Notice the two circles on map2 (page 115). A tourist visiting Cape Town will most probably like to see both. The "Houses of Parliament" is very close to the Company Gardens.*
    a. *Mark the shortest route a tourist would walk from the Company Gardens to the Waterfront.*
    Go down Plein St, turn left in Darling Street, right in Adderley St, carry on past the first circle and turn left at the second circle into Coen Steytler Boulevard which takes you straight to the Western Quay.
    b. *As the crow flies, what is the shortest route between these two landmarks?*
    110mm on map. Use scale of 1:20 000. Distance as crow flies is therefore 2,2km

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c. *Measure the distance the tourist will need to walk to get from the one to the other.*
   153mm on the map. Using a scale of 1:20 000, the distance is 3,04km
d. *Estimate how long it will take to get there.*
   At an average walking speed of 12 minutes per km, it will take 36 minutes to walk this distance.
e. *If the same tourist decides to go and see the castle as well, what route will this tourist take? Mark it on the map.*
   Turn right into Darling Street to reach the arm of the castle which is closest to the road. This measures 27mm on the map, times two, to previous route to the Western Quay. It is an extra 1,08km.
f. *Estimate how much longer it will take to eventually get to the Waterfront. Give your answer as a common fraction.*
   To visit the Castle before going to the Western Quay will take an estimated 12 minutes longer, that is 12/60 of an hour which can be simplified to 1/5 of an hour.

Activity 23

The town park has been upgraded and a circular fish pond has that is 4m in diameter was built. Around the fish pond there is a flower bed that is 1m wide. There is a safety fence on the edge of the lawn.

1. *Calculate the diameter and radius of the fence*
   Diameter = 4 + (2 x 1m) + (2 x 2.5m) = 11m
   Radius = d/2 = 5.5m
2. *The circumference of the safety fence*
   Circumference = πd
   =22 ÷ 7 x 11
   = 34.57m
3. *The length of the material that is needed to build the fence. There will be two gates in it, each 1.85m wide.*
   Length of material = circumference
4. *What the fence will cost if it costs R285 per meter for the fencing and the gates cost R750 each.*
   Total cost = Cost of fencing + Cost of gates
   = 30.87m x R285/m + 2 x R750
   = R10 297.95

Assessment Questions

Self Assessment (Pg 93)

Triangle Rectangle

Square Equilateral triangle

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Octagon Rectangular prism

Self Assessment (pg 95)

Hexagon – 30 square units

Octagon – a little bit less than 52 (i.e. 52 minus four small triangular corners)

Triangle – a little bit less than 19,5 square units

Rectangle – 35 square units.

Self Assessment (pg 104)

Top Figure

1. Perimeter = 194mm

2. Area = 25 x 60 minus 12 x 7 = 1500 minus 84 = 1416mm²

Lower Figure

1. Perimeter = 35 + 33 + 22 + 20 + 8 + 52 = 170mm

2. Area = 35 x 52 minus 22 x 20 = 1820 minus 440 = 1380mm²

Self Assessment (Pg 106)

Calculate the total external surface areas of the following boxes / cylinders:

Total external surface areas:

a. *Rectangle as base:*
Area = 2(26 x 18) + 2(26 x 10) + 2(18 x 10)
= 936 + 520 + 360
= 1816cm²

b. *Circle as base:*
Area = (2)(3,14)(2)(18) + (3,14)(2)(2) =
= 238,64cm²

c. *Square as base:*
Area = 2(12 x 16) + 2(12 x 16) + 2 (12 x 12)
= 1056cm²

d. *Circle as base:*
Area = 2(3,14)(1,5)(3) + (3,14) (1,5)(1,5)
= 35,33m²

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Summative assessment (pg 125)

1. *Add descriptive labels to the sketches*
    a. Height
    b. Diagonal
    c. Length
    d. Right angle
    e. Side of a rectangular prism
    f. Base
    g. Centre
    h. Radius
    i. Circumference
2. *The carpenter needs to paint the microwave oven cupboard…*
3. *Draw a rough map of the CBD of the doing where you are doing this course…*
4. *The grid overlay of the next map of a section of Soweto gives numbers on the horizontal axis and letters of the alphabet on the vertical access. (see slides)*
5. *Then find and give the horizontal and vertical coordinates for:*
    a. *Tladi* EC77
    b. *Itshepeng Community College* EC80
    c. *Jabulani Amphitheatre* EB79
    d. *Zola* EB77
6. *If the scale is 1:50 000, what is the distance between:*
    a. *Region 6 People's Centre and Phiri Hall?* 5,3Km
    b. *Hospital and Police Station?*
7. *On the table of distances, what is the distance between?*
    a. *Port Elizabeth and Umtata* 585km
    b. *Pretoria and Nelspruit?* 322km
    c. *Colesberg and Durban* 860km
    d. *Johannesburg and Ladysmith* 356km

Answers to Case Studies

Case Study (pg 115)

1. *What is the distance between:*
    a. *Johannesburg and Windhoek?* 1434km
    b. *Namutoni and Okaukuejo?* 123km
    c. *Windhoek and Namutoni?* 1998km
2. *If your average speed is 100km/h, how long will it take you to drive from:*
    a. *Johannesburg and Windhoek?* 14h20min
    b. *Namutoni and Okaukuejo?* 1hr14min
    c. *Windhoek and Namutoni?* 5h20min
3. *What is the distance across the park?* 19mm
4. *Using the scale of 1:20 000 000, what is the distance between East and West (i.e. across the park)?* 380km

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5. *A flight from Cape Town to Windhoek takes two hours. A friend in Cape Town decides to fly instead of driving. SAA's schedule of flights indicates that the aircraft leaves Cape Town at 10:35 and arrives in Windhoek at 11:35, exactly an hour later. Discuss the discrepancy.*

   Windhoek lies one time zone to the West of South Africa. Therefore, when travelling from Cape Town to Windhoek, you gain one hour, hence the discrepancy.

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Module 4

Answers to activities

Activity 1

1. *Formulate the questions that you think had to be asked to obtain the given results:*

   a. Who do you think will win the soccer world cup tournament in 2010?

   b. Who do you think is the strongest soccer team in Africa?

   c. Do you intend watching the games live?

   d. Will you bunk work to watch the games?

2. *Name two firms that do marketing surveys*

   Plus 94 Research and Synovate.

3. *How do you think the percentages were calculated?*

   All percentages are calculated by dividing the number of the item/people that you are interested in by the total number of items/people and multiplying by 100.

Activity 2:

1. *Organise the data into a table. Your table should show the name of the newspaper as well as the paper's circulation for both years.*

Newspaper	Circulation this year	Circulation last year
Daily Sun	494 875	443 280
Isolezwe	96 485	88 664
Soccer Laduma	303 461	280 933
Mail and Guardian	48 292	41 723
UmAfrica	32 978	21 878
Ilanga	100 906	108 858
Son (weekly)	76 830	172 612
City Press	183 101	175 125
Sunday Sun	200 315	188 369
Ilanga Langesonto	70 291	41 474
Sunday World	184 772	155 997
Sunday Times	504 475	513 702

2. *Compare your table with the table of other groups? Are they similar?*

3. *Do they meet the objectives of tables and graphs?*

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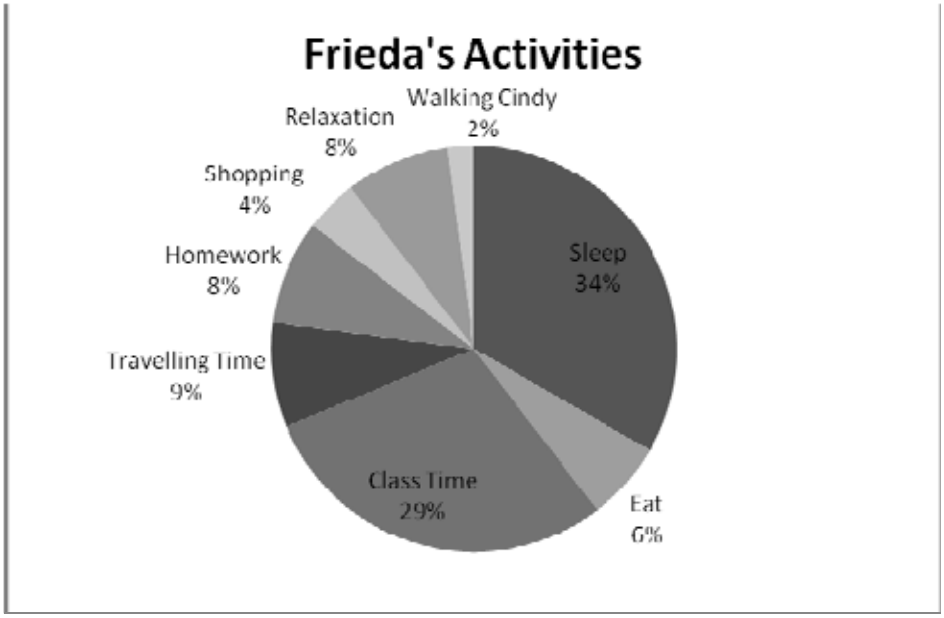
Activity 3

Present the daily activities of Frieda and Cindy in a Pie Chart



Activity 4:

1. *From the sketch of the Cartesian co-ordinate system, give the co-ordinate values of the points A-F*

   A (-4; 4)

   B (0; 3)

   C (3; 2)

   D (5; 0)

   E (5; -1)

   F (-2; -2)

2. Sketch the Cartesian co-ordinate system on square ruled paper and plot the points:

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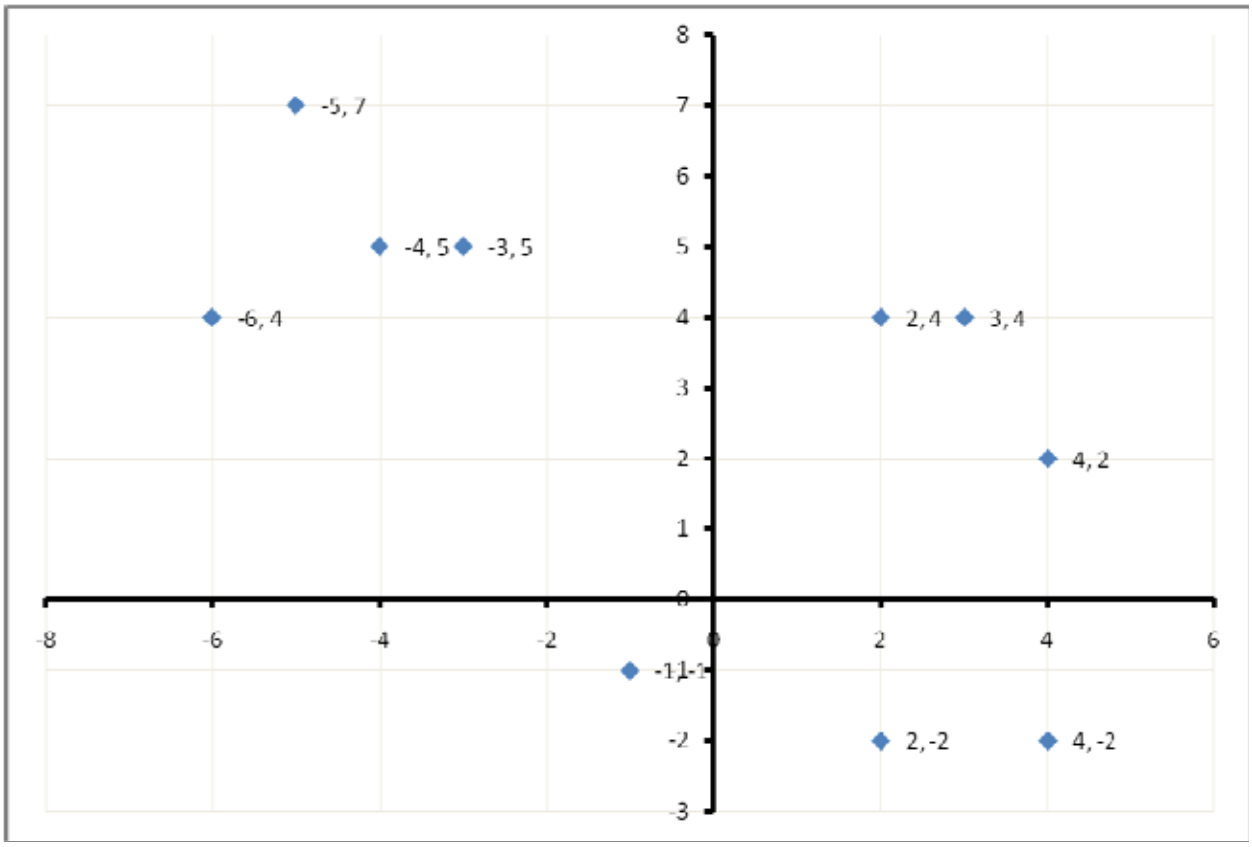
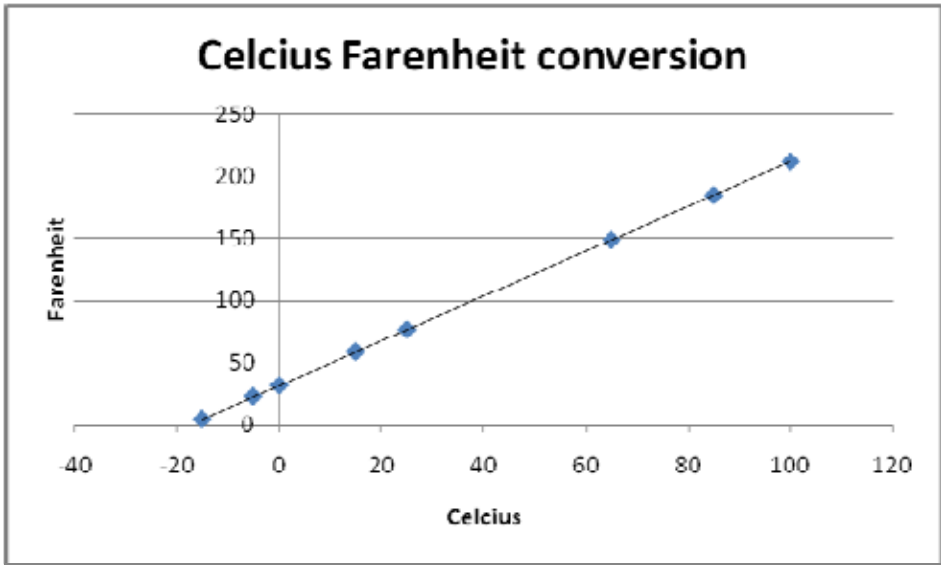


3. *The relationship between ˚F and ˚C*

   a. *Sketch the conversion of Fahrenheit with ˚C on the horizontal axis and ˚F on the vertical access.*



   b. *From the graph, complete the table:*

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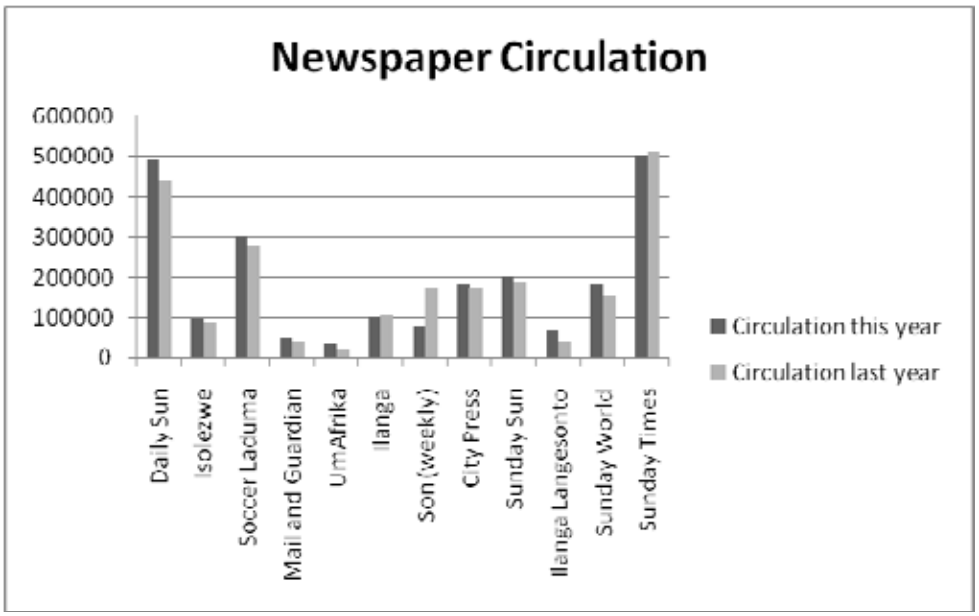
˚C	5	**10**	**32**	55	75	**49**	**88**
˚F	**41**	50	90	**131**	**167**	120	190

Activity 5

1. *From your table drawn up for the various newspaper circulations, do the following:*
   a. *Draw a bar graph with the newspapers on the horizontal axis and their circulation numbers on the vertical axis.*



   b. *Is it possible to represent all of the tabulated data in one bar graph?*
   Not really, since it provides a comparison from this year to last year.
   c. Could a pie chart be used instead of a bar graph?
   2 pie charts could be used to show the % of the market share of each newspaper last year and this year.

Activity 6:

For the data sets, calculate:

   b. *The mean, median and mode*
   c. *Explain the significance of these calculations*

1. 4; 5; 6; 8; 9; 10; 10; 11; 12
   Median = 9 (the value standing in the middle)
   Mode = 10 (the value that occurs the most frequently)
   Mean = 75 divided by 9 = 8,33

2. 2; 3; 4; 4; 8; 10; 12; 15; 17
   Median = 8
   Mode = 4
   Mean = 75 divided by 9 = 8,33

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Activity 7

1. *Study the salaries of Company A's employees and answer the questions.*

   a. *What is the highest salary earned in Company A?* R6 000

   b. *What is the lowest salary earned?* R2 350

   c. *What is the range of the figures?* 6 000 – 2350 = R3650

   d. Which salary occurs the most often? What measure is this?

      R3 550 ; this the mode of the set of values.

   e. *How many people work for the company?* 52 people

   f. *Calculate the mean salary*
      193795 divided by 52 = R3534,52

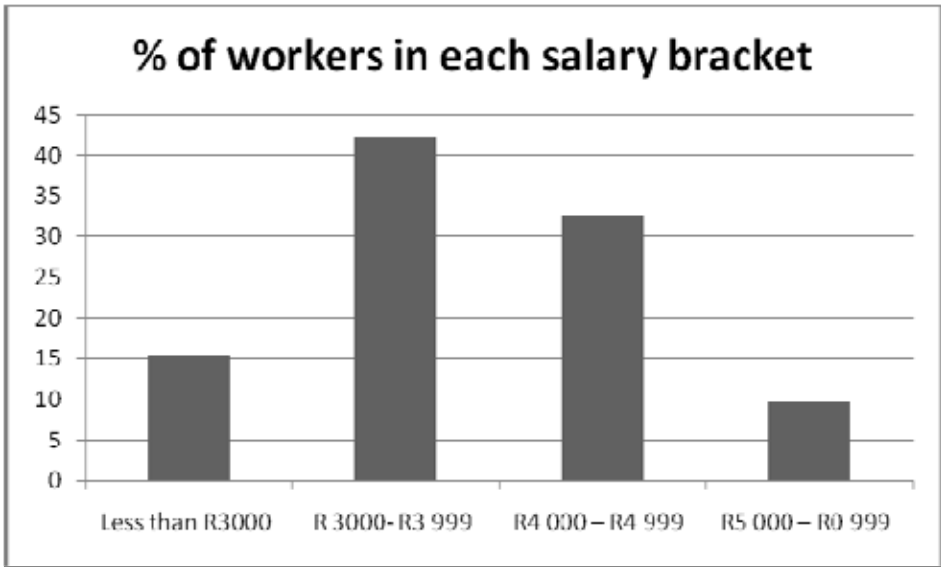
   g. *Is it practical to calculate the median salary for this set of data?*
      No, it takes too long.

   h. *The company would like to have four categories that all salaries would fit into. Suggest the ranges of these four categories.* (See table)

   i. *Complete the following frequency table for the data, using the suggested four categories.*

   j. *Draw a bar chart showing salary category against % occurrence.*

Salary category	Frequency	%
Less than R3 000	8	15,38
3 000 - 3 999	22	42,31
4 000 - 4 999	17	32,69
5 000 - 6 000	5	9,62
	52	100%



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2. *Given the information about company B, calculate the following:*

   a. *Calculate the mean, median and mode*

      Mean : R163 940 divided by 52 = R3 152,69

      Mode: R3 000

      Median: R2 775

   b. *Compare the statistics of the two companies in a table*

	Company A	Company B
Mode	R3550	R3000
Mean	R3534,52	R3152,69
Range	R3650,00	R14 000,00

   c. *Which of the two companies do you think will soon be challenged by employees for higher salaries? Motivate your answer.*

      Company B would be challenged sooner by the employees as the range between the highest and the lowest wages is much bigger than for company A.

Activity 8 (Pg 152)

1. *Describe the graphs. Use words such as "increase", "decrease", "remains constant" and rate of change"*

   a. For the first three minutes the distance increases to 300m. For the next four minutes the distance remains constant (person stationary). For the last two minutes the distance increase by 100m. Therefore after nine minutes, this person is 400m from where he/she started.

b. After two minutes this person is 160m from home. He then returns home during the next minute where he stays for one minute. During the next three minutes he moves to be 240m from home. He remains stationary for the next minute.

2. *Study the travel graph for the bus and bicycle and answer the questions:*

   a. *What was the fastest speed of the bus?* The fastest speed of the bus was 80km/h.

   b. *What was the speed of the bicycle?* The traveling speed of the bicycle after the initial increase, was 20km/h.

   c. *Explain the horizontal line of the bus graph between 5 and 20 minutes.* Between five and 20 minutes the bus maintained the same speed.

   d. *What happened to the bicycle at minute 25?* At minute 25 the bicycle reduce speed and came to a halt just after 26 minutes.

3. *Sort out the speed time graphs for: zero acceleration, positive acceleration, uniform negative acceleration, or none of these:*

   Top left: Constant speed

   Top right: Uniform positive acceleration.

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Bottom left: Uniform negative acceleration.

Bottom right: None of the given options.

Activity 9:

1. For the graph on passenger traffic at the OR Tambo International Airport in Johannesburg, answer the following questions:

   a. *Is the scale on the horizontal axis uniform? Explain.*

      Yes the scale is uniform as even spacing is given to each two-year period.

   b. *Why is the horizontal scale not started at zero?*

      Totally unnecessary information would be included if horizontal axis started at the start of the Common Era (CE)

   c. *Are there more international or more local visitors to the airport?*

      There are more domestic passengers.

   d. *What is the variable used on the vertical axis?*

      Numbers of passengers, probably thousands, i.e. top value would then read 40 000.

   e. *What is the range of increase in total number of passengers from 2006 to a projected value in 2020?*

      Total number of passengers range from 15 (thousand) to 37 (thousand) between 2006 and 2020.

   f. *What could be the cause of the slight drop in total number of passengers from 2006 to a projected value in 2020.*

      An increased spike is expected for the soccer world cup in 2010, after which figures will probably drop again.

   g. *How do you think a forecast of passengers can be made?*

      By looking at the yearly increase in the past ten years.

   h. *What is the one factor that could change the forecast figures?*

      A dramatic rise in the price of oil and therefore of jet fuel.

Activity 10:

For the horizontal bar graph on the top sellers in the motor car industry answer the following questions:

   a. *How many VW Polo / Polo Classics were sold in May?*

      About 3 200

   b. *How many of these top seller cars in total were sold in May?*

      Add all of the values: 3200 + 2800 + 2700 + 2200 + 1700 + 1600 + 1550

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+ 1200 + 900 + 900 = 18750 cars of the top ten brands sold in May.

c. *It is reported that 52 534 cars were actually sold in May, and that the projection for June is 56 070 cars. Calculate the percentage increase.*

56070 - 52534 ÷ 52534 x 100 = 6,73%

d. *If 60 000 cars are sold in South Africa in a given month, how many new cars are brought onto our roads each day.*

60 000 ÷ by 30 = 2000 new cars per day.

e. *Do you think that our roads can carry this kind of increase indefinitely?*

No, definitely not.

f. *Think of a way to persuade people to not desire a car.*

A car is a very expensive item to keep running. The price of oil is forever on the increase. Also, earth cannot sustain man's present way of living.

g. *Why would the motor car industry not approve of your suggestion?*

Because they make their living by selling cars.

Activity 12:

Samuel is a long-distance runner. He keeps a logbook of the number of kilometers that he runs every week.

1. *Organise and represent the data of the distance per week. Draw your own frequency table.*

Distance	Frequency
60-69km	1
70-79km	2
80-89km	6
90-99km	3

2. *What is the average number of kilometers he ran per week?*

Average: (70 + 82 + 91 + 67 + 86 + 89 + 78 + 94 +83 + 85 + 82 + 90) ÷ 12 = 83.08km

3. *What is the range of the distance that he ran?*

Range = maximum value - minimum value = 94-67 = 27km

4. *During which month did he prepare the best? Motivate your answer.*

He ran the furthest during the 22-28th May. It is debatable whether this was his best week of training.

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Assessment Questions

Self assessment (pg 150)

1. *From the frequency table, work out the proportion and % of deaths at different ages.*
   Number of deaths at various ages out of 100 000 males born alive

Age interval: (includes all ages from lower limit up to but not including the upper limit)	Number of deaths	Proportion	Percentage
0 – 1	1 527	1527 : 100 000	1,53%
1 – 10	495	495 : 100 000	0,495
10 – 20	927	927 : 100 000	0,927
20 – 30	1 901	1 901 : 100 000	1,90
30 – 40	2 105	2 105 : 100 000	2,11
40 – 50	4 502	4 502 : 100 000	4,50
50 – 60	10 330	10 330 : 100 000	10,33
60 – 70	19 954	19 954 : 100 000	19,95
70 – 80	28 538	28 538 : 100 000	28,54
80 and over	29 721	29 721 : 100 000	29,72

2. *Interpret the representations of data.*

   a. *Calculate the totals for each column*

	2000	2001	2002	2003	2004	2005	2006	2007
Cars	58 204	95 599	113025	114909	101445	113899	119171	110000
Light vehicles	9 148	10 229	11 699	11 283	9 360	25 589	60 149	75 000
Medium and heavy comm.	679	465	582	469	448	424	539	650
Total	68031	108360	125306	126661	111253	139902	179859	185650

   b. *Draw the bar graph of the information*

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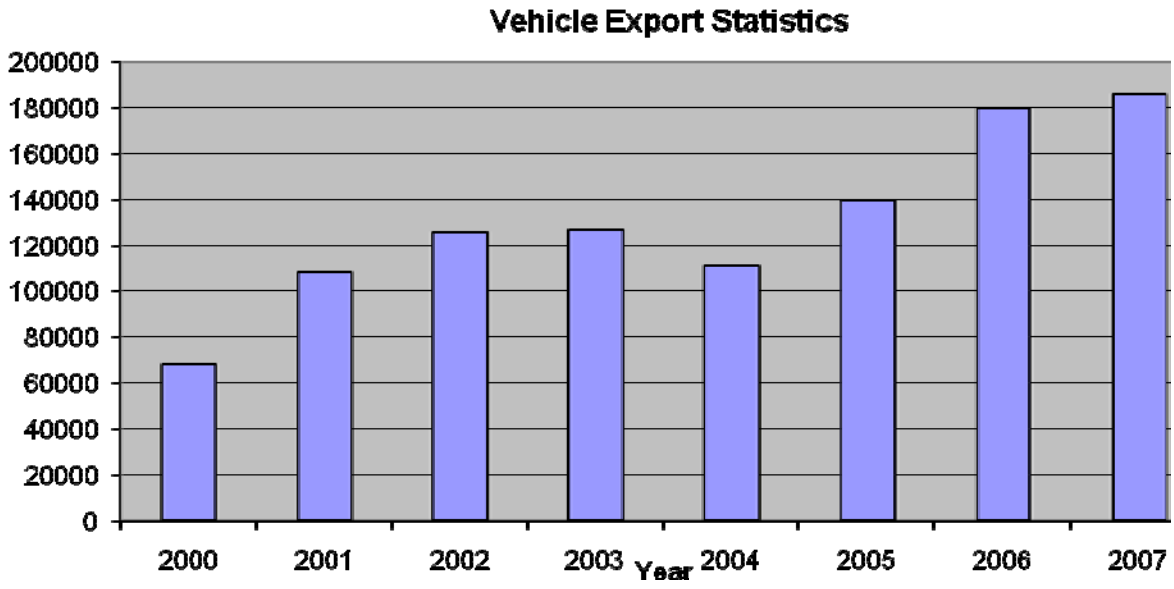


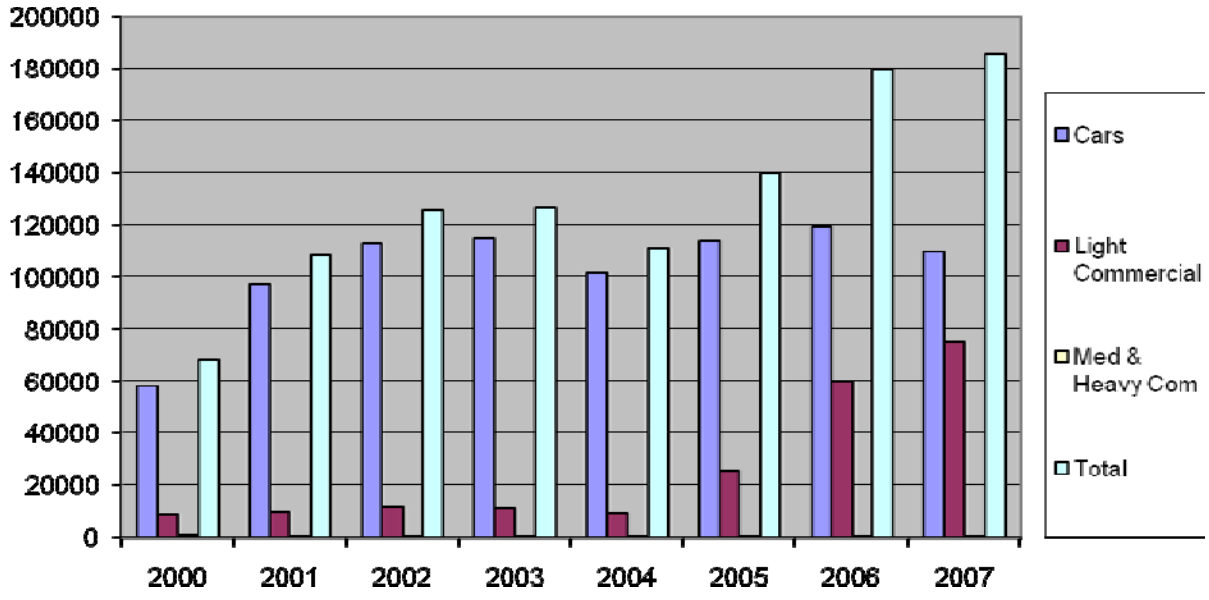
c. *Is the table or bar graph an easier way to give information to a person?*

Depends what the information is for.

d. *Explain your choice.*

If it is to present trends, a graph is a better way to present information.
However if the person is going to work with the data, a table would be better.

e. *Can all of the information in the table be presented in one bar graph.*



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Summative Assessment:

1. *Complete the following tables after studying the problem and writing a formula for the problem*

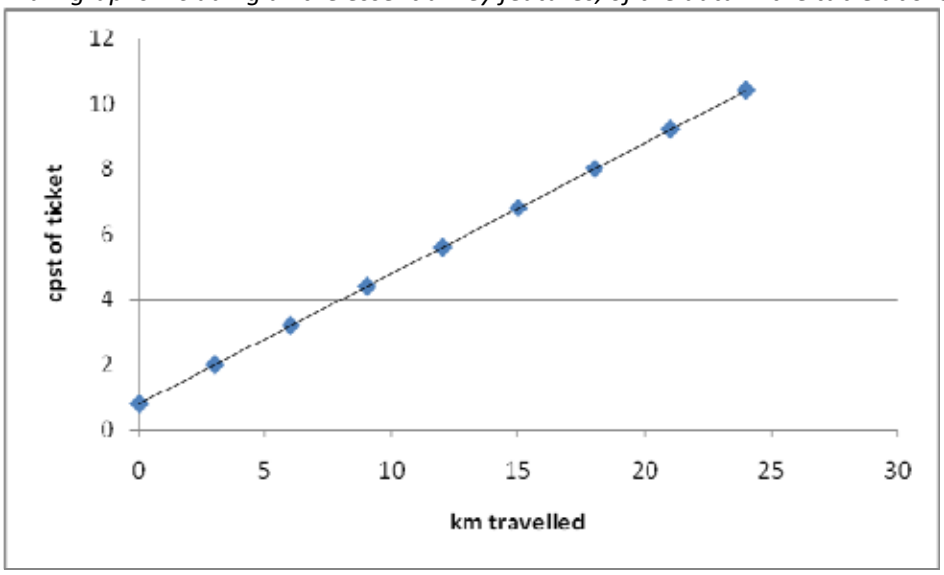
   a. Formula: y = 40x + 80

km travelled (x)	3	5	8	9
cost of ticket (y) in cents	200c	280c	400c	440c

   b. Formula: y = 1,5x + 50

km travelled (x)	185	200	750	1 500
cost of ticket (y) in rands	327,50	350	1175	2300

2. *Draw graphs including all the essential key features, of the data in the table above.*



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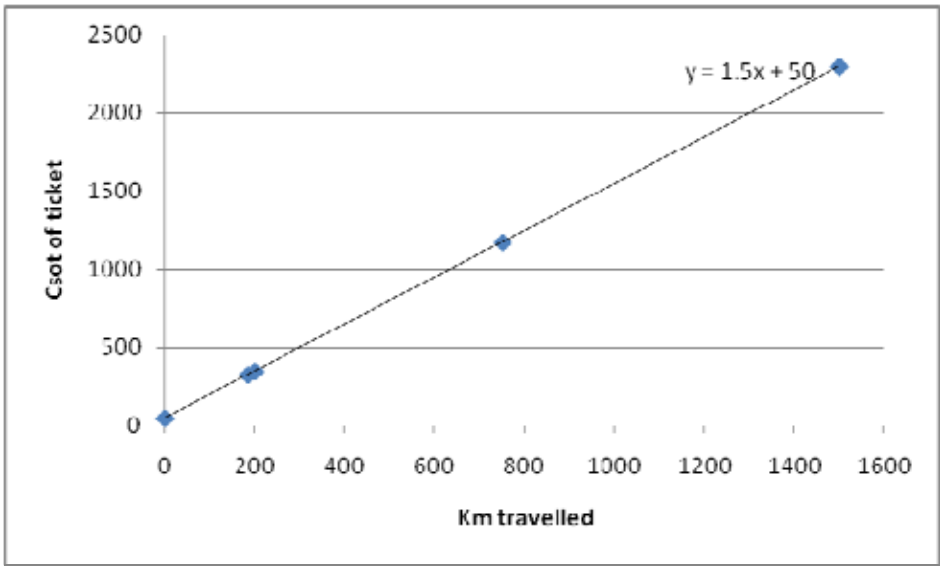


a. *How much will it cost to travel 15 km by Metrorail?*

Cost = 40 x 15 + 80 = 680c = R6,80

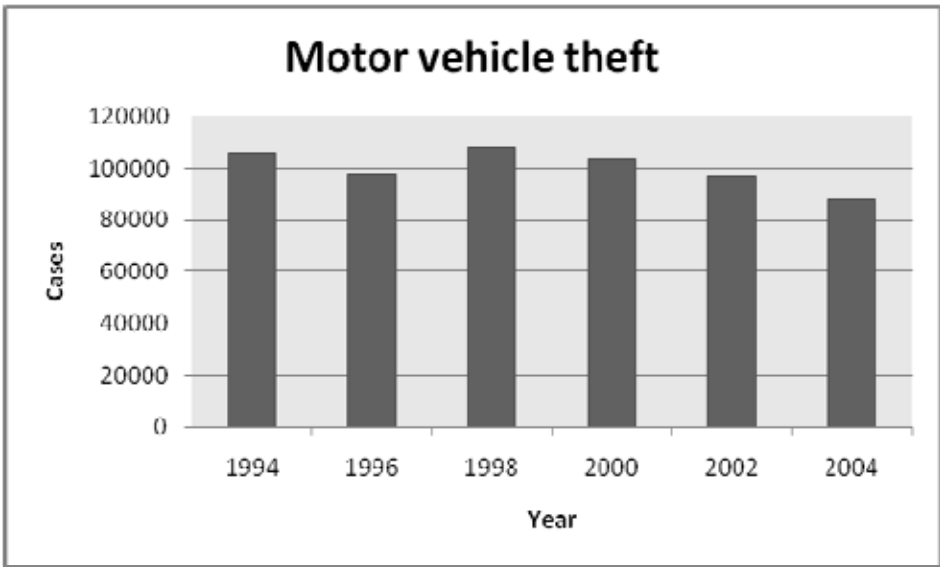
b. *How much will it cost to travel 500km by long distance bus?*

Cost = R800

3. *The table presents data on motor vehicle theft as well as common assault cases in RSA from 1994-2004*

a. Write the information on motor vehicle theft in a paragraph.

b. Draw the bar charts of the information



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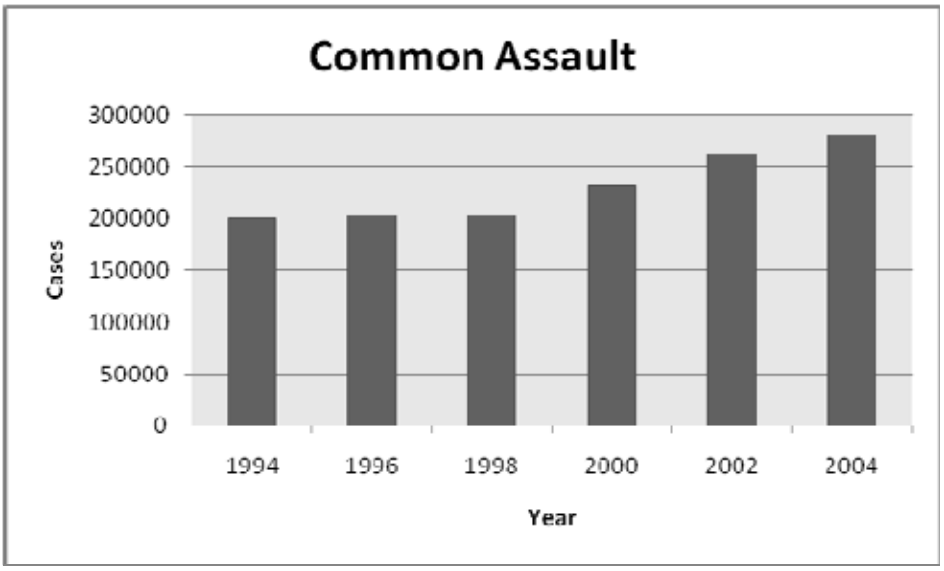

c. *Which method gives the best picture of the information.*

Bar chart

d. *Describe the trends in your own words i.e. draw your own conclusions about the two sets of data.*

Motor vehicle theft has decreased between 1994 to 2004. Cases of common assault has increased between 1994 and 2004 by 40%.

4. Complete the following tables according to the given formulas or written instructions.

a. $y = 5x + 7$ (Also write this instruction in words.)

Input value (x-value)	1	2	3	4	5	6	7	8	9
Output value (y-value)	12	17	22	27	32	37	42	47	52

g. $y = 5x - 2$ (Also write this instruction in words.)

Input value (x-value)	1	2	3	4	5	6	7	8	9
Output value (y-value)	3	8	13	18	23	28	33	38	43

6. *Answer the questions on the graphs comparing electricity usage in the Western Cape before and after savings had been introduced by consumers.*

a. At which times are two peaks in electricity usage displayed?

Between 07h00 and 08h30 in the mornings as well as between 18h00 and 19h30 in the evenings.

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b. Why could the second peak be slightly higher than the first peak?

More electricity is probably used to cook dinner than breakfast.

c. Why could savings measures have been more successful at the first of these two peaks?

People can easily eat a cold breakfast, but most people eat a cooked dinner.

d. Why do you think consumers could decrease usage so much after 22:00?

People would switch off their geysers.

e. Why did ESKOM insert the three arrows that point downwards?

To show that this is the time slot that consumers must really attempt to lessen electricity usage.

f. What omission has ESKOM made in the sketching of this graph?

An indication of what the vertical scale means

g. Is the scale on the horizontal axis for continuous or for discrete data?

Continuous data

h. *Is there any information given about the sample used to draw the graph?*

No

i. *How was the information grouped?*

Not grouped – probably continuous minute by minute information

j. *How do you think such information could be collected?*

From the power stations in the country

Answers to Case Studies

MXit (page 130)

1. *Organise the profile of all the MXit users into a table*

Age	Percentage of users
0-11	2.5%
12-18	42%
19-25	36%
26+	19.5

2. *How many users are joining MXit every month?*
   New users per month = new users per day x 30 = 210-360 thousand new users per month
3. *What is the rand value of all the messages sent on a day?*
   Rand value = no of messages x cost of message
   = 100 million x 3c

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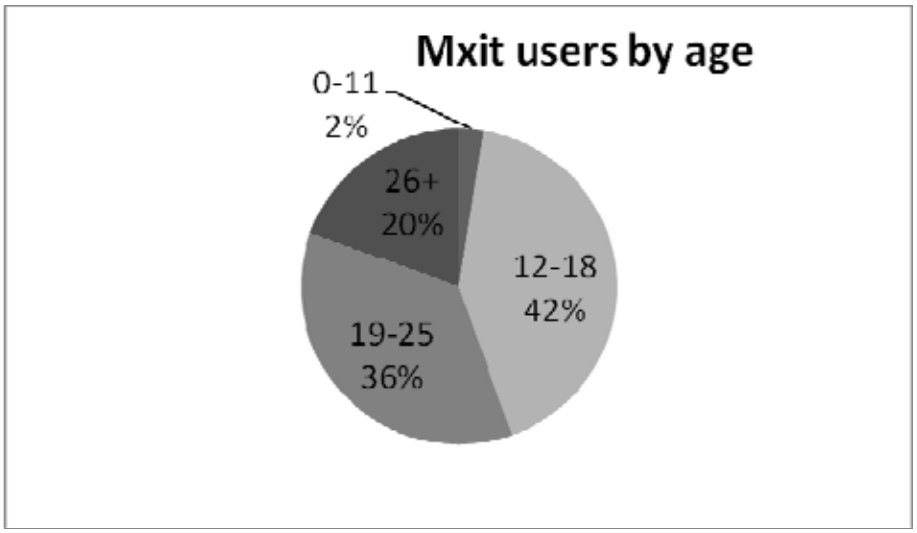
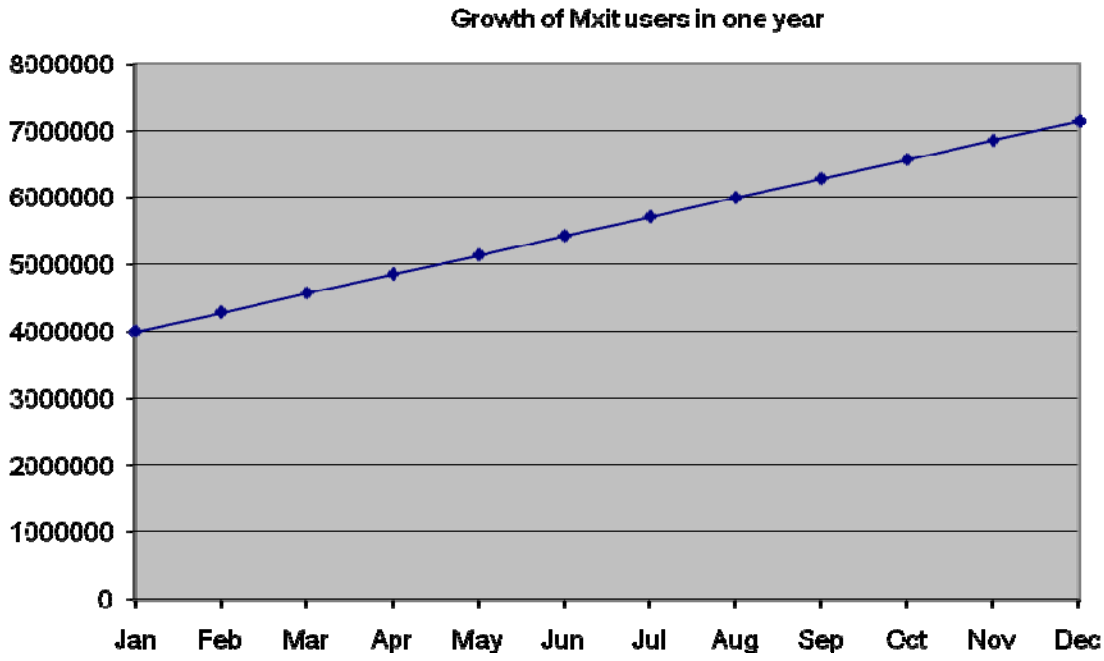
=R3 million

4. *What is the percentage increase per month of the MXit users?*
   No of new users per month = 210-360 thousand
   No of total users = 4 000 000
   % Increase per month (min) =210 000 ÷ 40 000 000 x 100 = 5.25%
   % Increase per month (max) =360 000 ÷ 40 000 000 x 100 = 9%
5. *What is the mean of the users that join every day?*
   Mean value = (7000 + 12 000) ÷ 2 = 9 500 users
6. *Draw a pie chart to illustrate the profile of users by age*



7. *Draw a line graph per month for a period of one year to illustrate the growth of MXit users*



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8. *Interpret both the pie chart and the line graph. What do these graphs reveal?*
9. The pie chart tells us the largest user group of MXit users is teenagers (12-18), while users from 19-25 still represent a significant proportion. The line graph tells us that the number of Mxit users is growing at a constant rate. This give us some power to predict the number of users in the future.

Case Study: iTunes (pg 136)

1. *Draw a table of "tunes" sold over the period May 2003-September 2006.*

Date	Songs sold
May, 5 2003	1 million
May 14, 2003	2 million
June 23, 2003	5 million
September 8, 2003	10 million
October 16, 2003	13 million
December 15, 2003	25 million
March 15, 2004	50 million
April 28, 2004	70 million
July 12, 2004	100 million
October 14, 2004	150 million
December 16, 2004	200 million
January 24, 2005	250 million
May 10, 2005	400 million
July 17, 2005	500 million
February 23, 2006	1 billion
September 12, 2006	1.5 billion

2. *Draw a broken line graph with the dates as x-values and the number of songs sold as y-values.*

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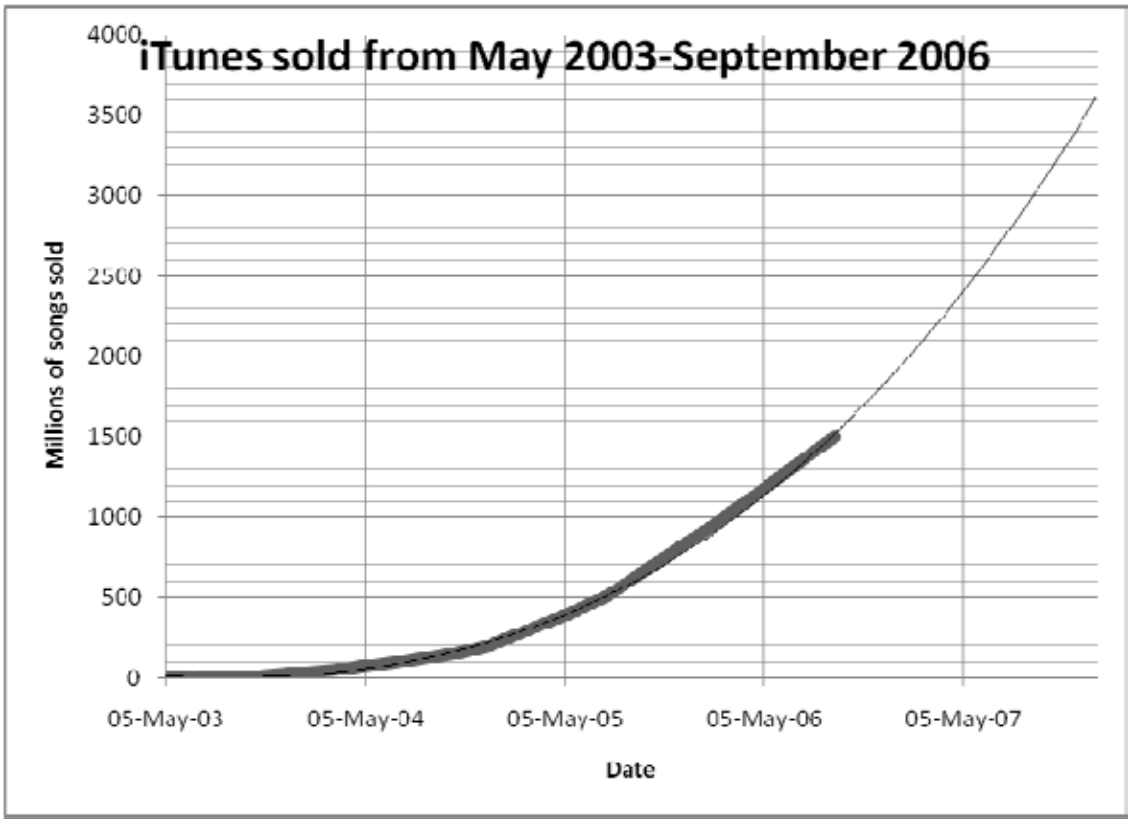

3. *From the graph determine how many tunes were downloaded in:*
    a. *August 2004* 120 million
    b. *February 2005* 280 million
    c. *October 2005* 680 million
    d. *April 2006* 1100 million
    e. *July 2006* 1320 million
4. *If this growth in the downloading of tunes on the internet continues, estimate how many tunes would have been sold in January 2007.*
    Approx 1.7 billion songs
5. *How many could be sold in January 2008?*
    Approx 3.5 billion songs
6. *Analyse the number of tunes sold by calculating*
    a. *The percentage increase between each year.*
    b. *What is the mean, median and mode years between October 2004 and September 2006?*

Year	No of songs sold	% increase
Oct 2004	120 million	----------
Oct 2005	620 million	416%
Oct 2006	1 480 million	138%

7. *Describe (interpret) the growth of iTunes sales on the internet.*

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Sales are growing at an almost exponential rate i.e. the graph is getting steeper. As the market saturates, we may expect to see the graph become more linear over time. This is because no new customers will be taken on board, but the current customers will continue to order.

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Module 5

Answers to activities

Activity 1

1. *How big a difference is there between the two percentages?*

   Store rate = 30.5% Bank rate=13% Difference = 17.5%

2. *How much would Benni have paid for the same TV if EasyBuy had charged him the bank's interest rate?*

   Note: This question is beyond the level of this course, and it suggested that you leave it out.

3. *What type of relationship exists between the interest rate of the bank and the amount you are paying?*

   Direct

4. *What advice would you give Benni given the above example?*

   Pay in cash. It would work out much cheaper, or rather borrow the money from the bank than from the store, as this would also work out much cheaper.

5. *Forecasting interest rates is a gamble at the best of times, but looking at the interest rate table, do you spot a pattern or patterns?*

   Interest rates rose still September 2002 and declined till April 2005, when they started rising again.

6. *If indeed, what would you expect to happen in 2008 with interest rates?*

   The last trend of interest rates was in an upward direction. We might expect to see interest rates rising through 2008. However, this is a somewhat simplistic answer, and many other factors need to be considered.

7. *Having the benefit of hindsight, what actually happened in 2008?*

2008-04-11	15.00
2008-06-13	15.50
2008-12-12	15.00
2009-02-06	14.00
2009-03-25	13.00
2009-05-04	12.00
2009-05-29	11.00

   We can see that interest rate did climb through till the end of 2008, when they started declining.

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Activity 2:

1. *Write down five numbers that you think should logically follow on the numbers in the following sets.*

2	4	8	**16**	**32**	**64**	**128**	**256**
3	6	9	**12**	**15**	**18**	**21**	**24**
4	7	10	13	**16**	**19**	**22**	**25**
33	30	27	**24**	**21**	**18**	**15**	**12**
128	64	32	**16**	**8**	**4**	**2**	**1**

2. *Write down what you see as the constant difference or the constant ratio in each of the above sets of numbers.*
    a. Constant ratio: Multiply by 2
    b. Constant difference: Add 3
    c. Constant difference: Add 3
    d. Constant difference: Subtract 3
    e. Constant ratio: Divide by 2
3. *Order the numbers from smallest to biggest.*
    a. 10; 20; 30; 40; 50; 60; 70; 80; 90; 100
    b. 5; 15; 25; 35; 45; 55; 65; 75; 85
    c. 4; 8; 12; 16; 20; 24; 28; 32; 36; 40; 44
4. *A friend tells you that he will loan you money at a simple interest rate of 15% per annum i.e. 0,05 of the amount per year. What will one year's loan of the following amounts cost you?*

Loan amount	Cost of loan for one year	Cost of loan for two years	Cost of loan for three years	Constant difference
R700	0,05 x 700 x 1 = 35	0,05 x 700 x 2 =70	0,05 x 700 x 3 =105	**0,05 x 700= 35**
R1 000	50	100	150	**50**
R5 000	250	500	750	**250**
R10 000	500	1000	1500	**500**

5. *Fill in the missing numbers according to the pattern:*

a. 7	11	15	19	23	27	31	35
b. 25	30	35	40	45	50	55	60
c. 4	8	16	32	64	128	256	512
d. 3 600	360	36	3,6	0,36	0,036	0,0036	0,00036
e. 1,6	16	160	1 600	16000	160000	1600000	16000000

6. *Describe the above patterns in words.*
    a. Add four
    b. Subtract 5
    c. Multiply by 2

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d. Divide by 10
e. Multiply by 10

Activity 3:

1. *Evaluate the table on cash loans and answer the following questions:*

Cash loan amounts		R3 000	R4 000	R5 000	R6 000	R7 000
Monthly loan repayments	Within 12 months	361	467	573	680	786
	Within 24 months	226	291	357	422	487

a. Is there a constant difference or a constant ratio between the loan repayment amounts for 12 months?

A constant difference of approximately R61.

b. Is there a direct or indirect relationship between the loan repayment amounts for the two different payment options?

Indirect relationship – as the month-option increases, the payment amount decreases.

2. Look at the following table on a cash loan of R3 000.

Monthly repayment options dependent on repayment period.

Repayment period	**12 months**	**24 months**	**36 months**
R3 000 loan	R 361	R 226	R 184
Actual repayment amount = months times monthly repayment amount	R 4332	R 5424	R 6 624
Cost of the loan	R 1332	R 2424	R 3624

a. Is there a direct or an indirect relationship between the repayment period and the monthly repayment amounts?

Indirect relationship.

b. Complete the table with the actual repayment amount as well as the cost of the loan for the different time periods.

c. Is it better to repay within 12 months or within 36 months? Give a reason for your answer.

Better to repay in 12 months – the total cost is R 1332 compared to a cost of R3624 if repayment is over 36 months.

Activity 4

A student want to waiter at a local restaurant receives the following remuneration package from the restaurant owner. On his behalf, calculate the amount he will take home every month if the sales that he waiters on is R5000 per month. Tips are not part of this calculation, that is extra.

1st month: Fixed salary of R1 500 + 1% commission of sales

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2nd month: *Fixed salary of R1 500 + 2% commission of sales*

3rd month: *Fixed salary of R1 500 + 3% commission of sales*

First month:	R1 500 + (0.01 x R5 000)	= R 5 050
Second month:	R1 500 + (0.02 x R5 000)	= R5 100
Third month:	R1 500 + (0.03 x R5 000)	=R5 150

Activity 5:

For each table in this activity, identify the independent and dependent variables.

1. Complete the flow diagrams:

Independent variable				Dependent variable
2	X 7	+8	=	22
5				43
7				57
12				92
24				176

1	X 8	+12	=	20
3				36
5				52
27				228
30				252

2. Complete the following tables according to the given formula's or written instructions:

y = 5x + 7

a. Do the calculation below

Input value (x-value)	1	2	3	4	5	6	7	8	9
Output value (y-value)	12	17	22	27	32	37	42	47	52

b. Write this instruction in words

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The output value is five times the input value to which 7 is added.

a. *To get the y-value multiply the x-value by three and then add 4.*

b. *Write the formula for this instruction and use it to complete the table*

Y = 3*x* + 4

x-value	5	10	15	20	25	30	35	40	45
y-value	19	34	49	64	79	94	109	124	139

To get the y-value, divide the x-value by two and add 9 to the answer.

$y = \frac{x}{2} + 9$

x-value	2	4	6	8	10	12	14	16	18
y-value	10	11	12	13	14	15	16	17	18

3. *Complete the operating instructions, give the correct formula and then complete the tables :*

Multiply the x-value by ***3*** and subtract ***2*** from the answer.

Formula: ***y = 3x - 2***

x-value	3	6	9	12	15	18	21	24	27
y-value	7	16	25	34	43	52	61	70	79

4. *Choose the correct formula (equation) for the table, and then complete the table using the pattern of the y-values:*

y = 5x + 8

x	2	4	6	8	10	12	14	16	18
y	18	28	38	48	58	68	78	88	98

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$y = 8x + 7$

x	5	6	7	8	9	10	11	12	13
y	47	55	63	71	79	87	95	103	111

Activity 6:

1. A ticket on Metrorail costs 80c per ticket plus 40c per kilometre.

   Formula: $y = 40x + 80$

km travelled (x)	3	5	8	9
cost of ticket (y)	200c	280c	400c	440c

2. A long distance bus company charges R1,50 per kilometre plus a fixed amount of R50,00 per ticket.

   Formula: $y = 1{,}5x + 50$

km travelled (x)	185	200	750	1500
cost of ticket (y)	R327,50	R350	R1175	R2300

Activity 7:

1. *From the pie chart, answer the following questions:*
   a. *What is the subject of the pie chart?*

      Chocolate Brand Popularity

   b. *Which brand has the largest recognition?*

      Cadbury Dairy Milk

   c. *Which brand has the smallest recognition?*

      Flake

   d. *How many brands are represented in this pie chart?*

      10 different brands

2. *From the table, answer the questions:*
   a. *What does the table tell you?*

      The table gives the monthly payment amounts for different loan amounts at different payback time periods.

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b. *Sammy takes a loan of R6000 from his bank and decides to repay within 24 months. His reason is that the monthly repayment is much less for a 24-month period than for a 12 month period. Do you think Sammy is wise to do this? Explain your answer.*

To pay back the R6000 over 12 months will amount to 12 x R723,18 = R8678,16. However, if Sammy pays back over 24 months, the final amount paid will be 24 x R471,87 = R11324,88. Therefore, the sooner a loan is repaid, the better.

c. *What is your monthly repayment if you take out a loan of R2 000 and repay it within 12 months?*

R293,79

d. *How much more than R2 000 will you have repaid at the end of 12 months?*

12 x 293,79 = R3525,48 which means that he pays R1525,48 more than the R2000 loaned

e. *If you repay this R2 000 loan within 24 months, how much will you have repaid at the end of 24 months?*

24 x R191,70 = R4600,80

f. *How much more is this than the original R2 000 loan that you made?*

This is R2600,80 more than the original amount loaned

3. *From the bar graph, answer the following questions:*

a. *Which was the most popular brand in 2007?*

Coca-Cola

b. *Was this the case in 2006 as well?*

No, Nike was the most popular brand in 2006

c. *Which brand is no longer one of the top 10 coolest brands and who is the newcomer?*

LG is no longer on the top 10 list in 2007. It has been replaced by Reebok.

d. *Which cell phone service provider is the most popular amongst 16-19 year olds?*

Vodacom

e. *What do you think is represented on the horizontal axis and why does the newspaper find it not necessary to show this on the graphs?*

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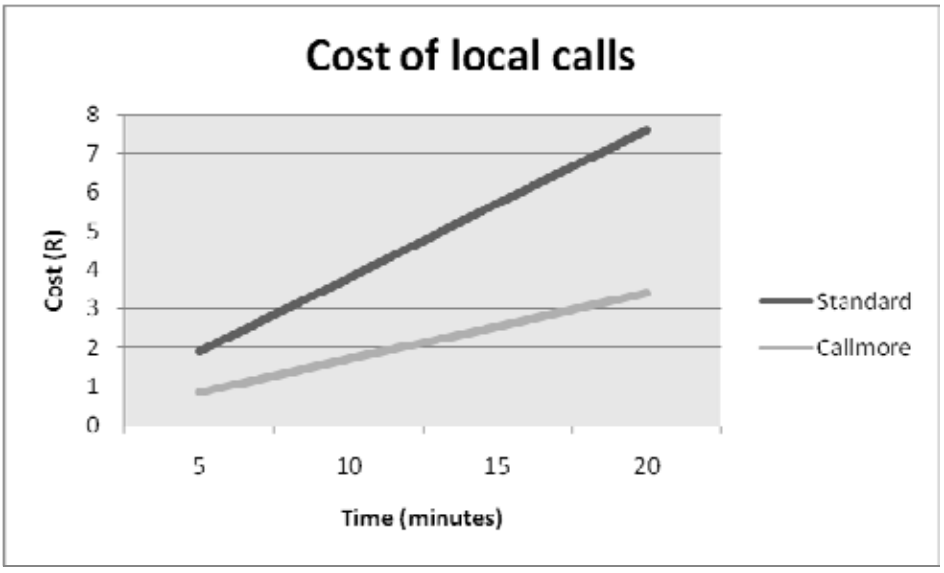
Percentages. Not indicated by the newspaper as it has been stated directly beneath the title of the bar graphs.

Activity 8

Study the table, follow instructions and answer the questions

a. *What is the subject of the table?*
   Postpaid call charges
b. *How much will it cost to make a call during "callmore" time if the call lasts 5 minutes?*
   85c
c. *How much will the same call cost during standard time?*
   R1,90
d. *How many more minutes can you speak during callmore time at the same cost?*
   2,2 minutes
e. *Draw a line graph showing the cost of the call for both packages if the call lasts for the following times: 5 min; 10 min; 15 min; 20 min*



f. *Write the formula for the above graph.*
   Cost at standard rates = R0,38 x time in minutes
   Cost at callmore time rates = 0,17 x time in minutes

Activity 9:

a. Complete the table of values by using the formula

˚C	0	10	20	30	40	50	60	70	80	90	100
˚F	32	50	68	86	104	122	140	158	176	194	212

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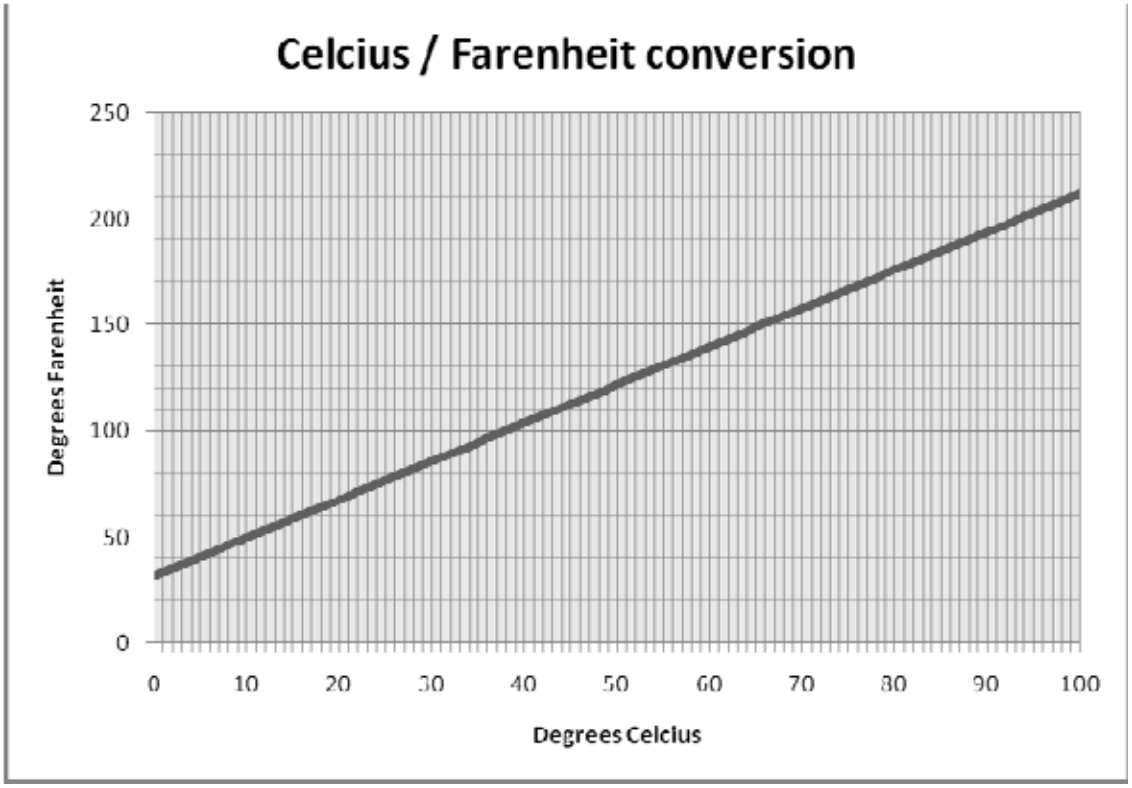
b. Draw a straight line graph of the table that you have set up. (Degrees Celsius on the horizontal axis and degrees Fahrenheit on the vertical axis)



c. Read from the graph to fill in the following table – approximate answers:

˚C	2	12	35	52	66	75	85	95
˚F	36	53	95	126	150	167	185	203

Activity 10:

Investigate the following situations and decide on one or two good ways to represent the information.

1. *Budget of Rosie*

   Pie chart which always represents the sections of a whole. Bar chart also possible.

2. *Rainfall figures*

   Bar chart or broken line graph.

3. *Aids statistics*

   Bar chart of broken line graph.

4. Crime statistics

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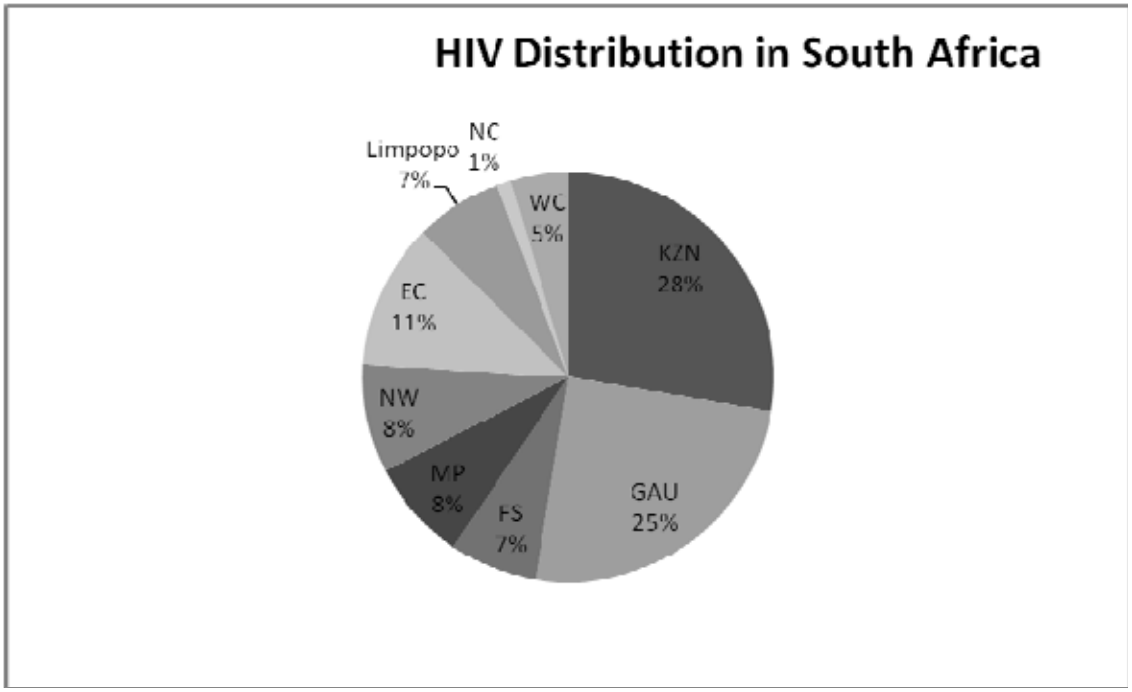
Table

Activity 11:

a. *What would be a good way to represent the data in the first column?*

Pie chart or bar chart. Learner must notice that the total of the first column is not 5 200 but 5 500.



b. What would be a good way to represent the data in the second column?

A pie chart or a bar chart

c. *In which province is life expectancy the highest?*

The Western Cape.

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Assessment Questions

Self Assessment:

1. *State whether the following tables show a direct or an indirect relationship. Complete the tables.*

   a. *Weight of baby = 650 (Age of baby in months) + 3200*

   Direct

   b. *Cost of bricks vs. Number of bricks*

   Direct

   c. *Amount in Rands vs. Amount in Pounds*

   Direct

   d. *Price of car vs. Number of cars sold*

   Indirect

Summative Assessment:

1. *Complete the following tables according to the formulae or written instructions:*

   a. $y = 5x - 2$

   The output value is five times the input value from which two has been subtracted.

Input value (x-value)	1	2	3	4	5	6	7	8	9
Output value (y-value)	3	8	13	18	23	28	33	38	43

   b. Divide the x-value by 5 and add 8 to the answer:

   Formula: $y = \frac{x}{5} + 8$

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x-value	5	15	25	35	45	55	65	75	85
y-value	9	11	13	15	17	19	21	23	25

2. *Investigate the following situations and decide on one or two good ways to represent the information:*
   a. *Average percentage of a student through the year*
      Line graph
   b. *Article: AIDS affect 5,2 million South Africans*
      Bar graph, tables, with more information, perhaps a line graph.

Answers to Case Studies:

Case Study (pg 172)

1. Within the same zone, compare prices of the different types of tickets with each other. Calculate the differences in prices between the tickets.

Zone 1	R0,40	R0,30	R0,34	R0,17	-R0,03	R0,34
Zone 2	R0,50	R1,02	R0,46	R0,23	-R0,51	R0,49
Zone 3	R0,70	R1,00	R0,62	R0,30	-R0,46	R0,63
Zone 4	R0,80	R1,69	R0,76	R0,39	-R0,65	R0,77
Zone 5	R1,00	R2,26	R0,92	R0,45	-R0,72	R0,91
Zone 6	R1,30	R2,72	R1,04	R0,54	-R0,51	R0,91
Zone 7	R1,40	R3,04	-R0,36	-R0,21	R0,87	R0,29
Zone 8	R1,40	R3,04	-R0,32	-R0,31	R0,96	R0,33

2. *Did the Johannesburg Bus Company use a constant variable to determine the*
   a. *Overall fares?*
      No
   b. Between the monthlies
      No
3. *Which is the option is the cheapest irrespective of an individual's specific circumstances?*
   A monthly 52 in Zone 1
4. *Which is the most expensive?*
   A once off to zone 8

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5. *Which "ticket options" and for which zones do not make sense or should be avoided altogether? Give reasons for your answers.*
   In zones 1-6, the monthly 44 should be avoided; In zones 7-8 the weekly 12 and monthly 14 should be avoided.
6. *Compile a more consistent formula for the Johannesburg Metro.*

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