



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

KZN DEPARTMENT OF EDUCATION

MATHEMATICAL LITERACY

JUST IN TIME MATERIAL

GRADE 10

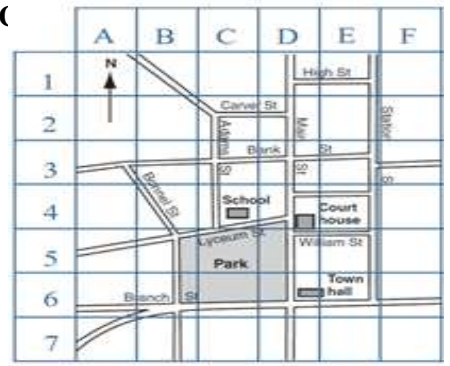
TERM 1 – 2020

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This document has been compiled by the FET Mathematical Literacy Subject Advisors together with Lead Teachers. It seeks to unpack the contents and to give more guidance to teachers

TOPIC	BASIC SKILLS TOPIC	
Section From ATP	NUMBER FORMAT AND CONVENTIONS <ul style="list-style-type: none"> • Decimal comma(,) and decimal point(.) • Positive and negative numbers as directional indicators • Number expressed in word format, including: <ul style="list-style-type: none"> 1 hundred thousand-100 000 1 million – 1 000 000 1 billion – 1 000 000 000 Interpret, understand and use different numbering conventions in contexts	
From CAPS(Cognitive levels)	No cognitive levels are provided for this topic. Rather, they will be assessed in an integrated way throughout the application topics.	
Weighting in examinations	No cognitive levels are provided for this topic. Rather, they will be assessed in an integrated way throughout the application topics.	
Related concepts/ terms/ vocabulary	Number formats: Word and Numerical. mil: million bn: billion Mathematical operations (+ and -) Number conventions- the way in which numbers are written to convey special information Eg: Apartment 1219 could mean the 19th apartment on the 12th floor(the first two numbers indicate the floor number and the last two numbers indicate the room or unit number)	
Prior- knowledge/ background knowledge	Thousand separators Knowledge of thousand,million, billion and trillion. Addition and subtraction Working with decimal numbers and fractions Working with negative numbers	
Resources	Textbooks, newspaper articles, weather tables/forecasts.	
Methodology	COMMA Comma is used as the thousand separator.	SPACE (Mostly widely used format) A space is used as the thousand separator

<p>1,000 → THOUSAND and 1'000</p> <p>10,000 → 10 THOUSAND and 10'000</p> <p>100,000 → 100 THOUSAND and 100'000</p> <p>1,000,000 → 1 MILLION and 1'000'000</p> <p>1,000,000,000 → 1 BILLION and 1'000'000'000</p> <p>Comma</p>	<p>1 000</p> <p>10 000</p> <p>Space ↙ 10 000 ↘</p> <p>1 000 000</p> <p>1 000 000 000</p> <p>1 000 000 000 000</p>
<p>Decimal point(./)Decimal comma(,) Separates the whole number part from the decimal/fraction part.</p> <p>12.43 or 12,43</p> <p>Whole number part Fraction part/decimal part</p> <p>Whole number Fraction part/decimal part</p>	
<p><u>In the context of buildings:</u> Room number 928 floor no 9 Room/unit number 28</p> <p><u>In the context of finance:</u> -R450 on a bank statement means that client owes the bank R450.</p> <p><u>In the context of temperature:</u> -10° C means the temperature is 10 degrees below freezing point (0° C).</p>	<p><u>In the context of maps:</u> Reference C shows the location of the School. When the place being located falls in more than one grid, like the Park, look for the reference point/symbol next to the name or the most central point.</p> 
<p>Errors, misconception/</p>	<p>Confusion of reading and understanding big numbers.</p>

<p>problem areas</p>	<p>Learners can't spell accurately. Learners can't identify the difference between million, and billion. Incorrect use of commas and decimal points. Wrong application of number operations (rules).</p>
<p>Recommendations</p>	<p>Educators must stress the thousand separator and the space separator that is most widely used. Emphasize that the decimal place value means the same as the decimal comma. Classwork and homework to be marked regularly. Make use of different practical resources. Lessons must be learner centred.</p>

NUMBER FORMAT AND CONVENTIONS		
	QUESTION 1	Marks
	1,000 → THOUSAND and 1 000	
	10,000 → 10 THOUSAND and 10 000	
	100,000 → 100 THOUSAND and 100 000	
	1,000,000 → 1 MILLION and 1 000 000	
	1,000,000,000 → 1 BILLION and 1 000 000 000	
1	Write the following numbers in words:	
1.1	100 200,3	(2)
1.2	1 023 045	(2)
1.3	1 682,45	(2)
1.4	132.342	(2)
1.5	Write the following in full as numbers:	
1.5.1	Twenty two thousand nine hundred	(2)
1.5.2	3,2 billion	(2)
1.2.3	One million thirty five thousand and twenty five	(2)
		[12]
QUESTION 2		
2	Explain the meaning of the following conventions	
2.1	You will be seated at G12 for a concert.	(2)
2.2	Pick up a ticket for the concert at flat no 505	(2)
2.3	The concert starts at 20:15	(2)
2.4	9/11	(2)
2.5	Thuli sat in row A5 for her final exams	(2)
		[10]

	QUESTION 3	Marks
3.1.	Write down how you would read, in words the following numbers using decimal number format. a) 3,1829 b) 17,89552	(2) (2)
3.2	Write down how you would read in words the following numbers using the decimal point number format. a) 3.1829 b) 17.89552	(2) (2)
		[8]

	QUESTION 4	Marks
4.1	a) What does a temperature of 30°C mean? b) What does a temperature of -20°C mean?	(2) (2)
4.2	In each case, write down the higher/bigger value: a) R2000 or -R5000 b) -8°C or -17°C c) -900 or -789	(2) (2) (2)
		[10]

TOPIC	NUMBERS AND CALCULATIONS WITH NUMBERS
Section From ATP	<ul style="list-style-type: none"> • Estimation • Perform calculations with whole numbers, fractions, decimals and percentages • Add, subtract, multiply and divide whole numbers and decimals both with and without using a calculator. • multiply and divide by 10, 100 and 1000 without a calculator • apply operations in the correct order (BODMAS) • Addition and multiplication facts (distributive/associative) • find the square, cube and square root () of a number with the use of a calculator • Specific operations on fractions • add, subtract, multiply and divide with and without the use of a calculator • convert between equivalent forms of fractions • Find the decimal equivalent of any fraction using a calculator. • Calculator Skills
From CAPS (Cognitive levels)	No cognitive levels are provided for this topic. Rather, they will be assessed in an integrated way throughout the Application topics.
Weighting In Examination	No weighting is provided for this topic. Rather, they will be assessed in an integrated way throughout the Application Topics.
Related concepts/ terms/ vocabulary	Estimation; whole numbers; BODMAS; Distributive/Associative; square; cube; square root; cube root; fractions
Prior- knowledge/ background knowledge	Calculations involving numbers without and with a calculator.
Resources	Textbooks activities with basic skills topics. Mind the gap activities.

Methodology**ESTIMATION**

Estimation is very useful as it gives one an idea of what the final answer should be.

In order to estimate, the numbers must be first converted to units that are easier to work with:

E.g.: units of 5's; 10's; 50's; 100's; etc., the calculations on the converted numbers become easier. However, take note of the following:

If the conversion scale is smaller, the closer the estimated answer will be to the calculated answer.

$1\ 236 + 82 - 573 \rightarrow$ converting to 10's (SMALLER CONVERSION SCALE)

$$1240 + 80 - 580 \approx 740$$

AND

If the conversion scale is bigger, the further the estimated answer will be to the calculated answer. But this also becomes easier to mentally calculate the estimated answer.

$1\ 236 + 82 - 573 \rightarrow$ converting to 100's (BIGGER CONVERSION SCALE)

$$1\ 200 + 100 - 600 \approx 700$$

THE CALCULATED ANSWER:

$$1\ 236 + 82 - 573$$

$$= 745 \quad \text{NOTE: The smaller conversion scale was more accurate, but the larger conversion scale was easier to calculate mentally.}$$

WORKED EXAMPLE 1

Mary is shopping at Shoprite Supermarket with a strict budget. As she walks through the aisles she is selecting the groceries that she needs, and is mentally estimating the total that her items will be. She picks the following items: Sanitary towels at R21,99; Fresh Milk at R28,99; Bread at R14,99; Drinking Yogurt at R9,95; and Cheese at R24,95

Estimated Answer: To the nearest 1 Rand:

$$R22 + R29 + R15 + 10 + 25 \approx R101$$

Estimated Answer to the nearest 5 Rands:

$$R20 + R30 + R15 + R10 + R25$$

$$\approx R100$$

Estimated Answer to the nearest 10 Rands:

$$R20 + R30 + R10 + R10 + R20$$

$$\approx R90$$

CALCULATED ANSWER:

$$\approx R100,87$$

BODMAS

The BODMAS rule is the order of operations and must be used at all times in calculations.

B – Brackets – simplify inside/within the brackets first, in other words, work from the inside out

O – Of – means apply of or \times (multiplication)

D & M – Divide & Multiply - as it appears from left to right - – the order of operations involving multiplication does not matter e.g. $7 \times 5 = 35$ and $5 \times 7 = 35$. The order of operations involving division must not be changed.

A & S – Addition & Subtraction - as it appears from left to right – the order of operations involving addition does not matter e.g. $8 + 3 = 11$ and $3 + 8 = 11$. The order of operations involving subtraction must not be changed.

WORKED EG 2.

$$3 + 6 \times 3 + 9$$

$$= 3 + 18 + 9$$

$$= 3 + 2$$

$$= 5$$

(Multiplication and division are done in order from left to right)

WORKED EG 3.

$$(3 + 6) \times 3 \div 9$$

$$= 27 \div 9$$

$$= 3$$

(Note the difference that the brackets make)

WORKED EG. 4.

$$R40 \div 2 \times 3 - \frac{1}{2} \text{ of } 26$$

$$= R40 \div 2 \times 3 - R13 \quad (\text{The "of" is calculated first and then division, } \div 2 \text{ as it comes before the } \times 3)$$

$$= R20 \times 3 - R13$$

$$= R60 - R13$$

$$= R47$$

MULTIPLYING BY 10, 100 AND 1000

- You can insert a decimal point/decimal comma at the end of the whole number without changing its value
Eg. $167 = 167,$

And then insert any number of zeros AFTER the decimal comma/decimal point and it will not change its value

$$167 = 167,0$$

$$\text{OR } 167 = 167,00$$

$$\text{OR } 167 = 167,00000000$$

- The number of zeros in the number you are multiplying by (10, 100 or 1000), will determine how many places to the RIGHT the decimal comma/point will move
i.e. 10 has 1 zero, therefore the decimal comma will move 1 place to the right,
100 has 2 zeros, therefore the decimal comma will move 2 places to the right, etc.

$$62 \times 10 = 620$$

$$62 \times 100 = 6\,200$$

$$62 \times 1000 = 62\,000$$

AND

$$2,44 \times 10 = 24,4$$

$$2,44 \times 100 = 244$$

$$2,44 \times 1000 = 2\,440$$

DIVIDING BY 10, 100 and 1000

- Remember that you can insert a comma at the end of any whole number without changing its value:
Eg. $167 = 167,$ and then insert any number of zeros BEFORE the first digit still without changing its value.

$$167 = 0167,$$

$$\text{OR } 167 = 00167,$$

$$\text{OR } 167 = 000000000167,$$

- The number of zeros in the number you are dividing by (10, 100 or 1000) will move i.e. 10 has 1 zero, therefore the comma will move 1 place to the LEFT, 100 has 2 zeros, so the decimal comma will move 2 places to the LEFT, etc.

$$3\,234 \div 10 = 323,4$$

$$3\,234 \div 100 = 32,34$$

$$3\,234 \div 1\,000 = 3,234$$

AND

$$89,34 \div 10 = 8,934$$

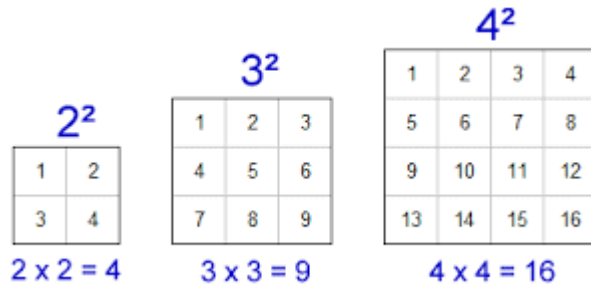
$$89,34 \div 100 = 0,8934$$

$$89,34 \div 1\,000 = 0,08934$$

SQUARE, CUBE AND SQUARE ROOT

A **square** (to the power of 2) of a number is a value that, when multiplied by itself, gives the number. The symbol for square is 2 . The number in the exponent in this case 2 indicate how many time you need to multiply the number.

Example: $4 \times 4 = 16$ or $4^2 = 16$



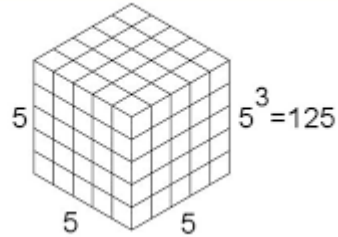
A **cube** number (to the power of 3) is a number multiplied by itself 3 times. This can also be called 'a number cubed'. The symbol for cubed is 3 . The number in the exponent in this case 3 indicate how many time you need to multiply the number.

Example: $4 \times 4 \times 4 = 64$ OR $4^3 = 64$

OR

$$5 \times 5 \times 5 = 125 = 5^3$$

Finding The Perfect Cube Of Numbers



Roots are the opposite of square (powers). To find the square root of a number you need to find which number multiplied by itself results in the number under the square root sign.

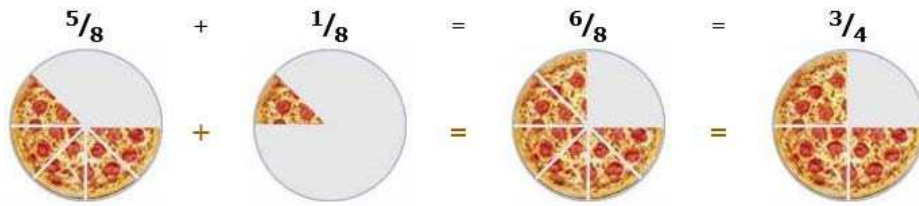
$$(\sqrt{16} = \sqrt[2]{16} = 4 \quad \text{because } 4 \times 4 = 16$$

- **OPERATIONS ON FRACTIONS**

In order **to add and subtract fraction**, the denominators need to be the same. If they are not the same, we use equivalent fractions in each individual fraction to create equal denominators.

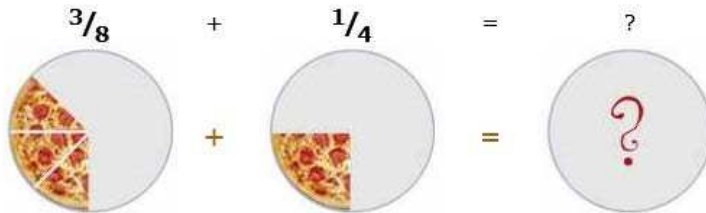
The denominator used must be the lowest common multiple (LCM) of all the denominators present in the question, also referred to as the lowest common denominator (LCD).

e.g. $\frac{5}{8} + \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$ (since the denominators are the same we add the numerators)



e.g. denominators not the same

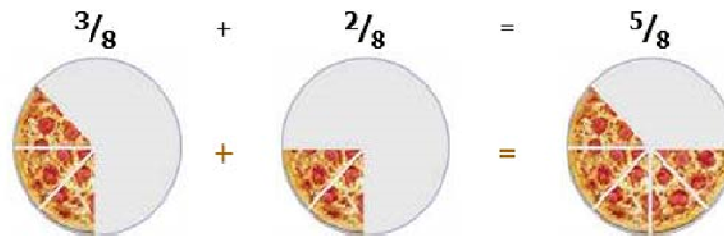
$$\frac{3}{8} + \frac{1}{4}$$



$$= \frac{1 \times 2}{4 \times 2} + \frac{3}{8}$$

$$= \frac{2}{8} + \frac{3}{8} \quad \text{LCD} = 8$$

$$= \frac{5}{8}$$



Multiply and dividing with fractions

When we **multiply two fractions**, you can go ahead and multiply the numerators and denominators:

$$\frac{1}{2} \times \frac{20}{18} = \frac{20}{36}$$

Just remember to *simplify* when you are finished (get an equivalent fraction):

$$\frac{20}{36} \div 4 = \frac{5}{9}$$

To **divide two fractions**, take the reciprocal (invert the fraction) of the divisor and multiply the dividend.

e.g. $\frac{4}{5} \div \frac{2}{3}$

invert the fraction you are diving by $= \frac{4}{5} \times \frac{3}{2}$

multiply the numerator and denominator $= \frac{4}{5} \times \frac{3}{2} = \frac{12}{10}$

simplify the fraction if necessary $= 1\frac{1}{5}$

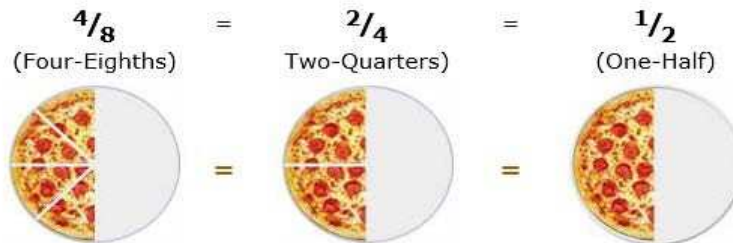
- **Equivalent fraction**

Equivalent fraction are fractions with different numerators and denominators that represent the same value or proportion of the whole.

The numerator and the denominator of a **fraction** must be multiplied by the same nonzero whole number in order to have **equivalent fractions**.

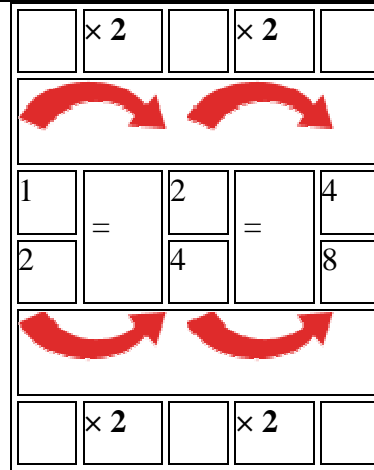
The rule to remember is:

*"Change the bottom using multiply or divide,
And the same to the top must be applied"*



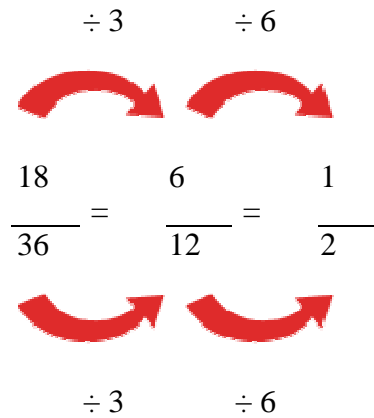
Multiplying

Here are why those fractions are really the same:



Dividing

Here are some more equivalent fractions, this time by dividing:



Choose the number you divide by carefully, so that the results (both top and bottom) stay [whole numbers](#).
 If we keep dividing until we can't go any further, then we have [simplified](#) the fraction (made it as simple as possible).

	<p>Summary:</p> <ul style="list-style-type: none"> You can make equivalent fractions by multiplying or dividing both top and bottom by the same amount. You only multiply or divide, never add or subtract, to get an equivalent fraction. Only divide when the top and bottom stay as whole numbers. <p>DECIMAL FRACTIONS</p> <p>A fraction where the denominator (the bottom number) is a power of ten (such as 10, 100, 1000, etc). You can write decimal fractions with a decimal point (and no denominator), which make it easier to do calculations like addition and multiplication on fractions.</p> <p>Convert from common fraction to decimal fraction.</p> <p>To convert a fraction to a decimal, we divide the numerator by the denominator.</p> <p>If we have a mixed number, the whole number stays to the left of the decimal.</p> <p>Example 1) $\frac{2}{5} = 2 \text{ divide by } 5 = 0,4$</p> <p>2) $3\frac{3}{5} = 3 \text{ stays left of decimal then } 3 \div 5 = 0,6 = 3,6$</p>
<p>Errors, misconception/ problem areas</p>	<ul style="list-style-type: none"> Lack of conceptual understanding of the basic skills, such as BODMAS and simple mental arithmetic. Failing to use the simplest between conversion scale for estimation. Learners do not understand how to use their calculators. Lack of calculators.
<p>Recommendations</p>	<ul style="list-style-type: none"> Learners must make a note of the concepts in the basic skills topics and refer to it regularly. Educators must give meaningful informal assessment tasks on a regular basis and mark these activities to provide feedback to learners.

NUMBERS AND CALCULATIONS WITH NUMBERS		
Ques No	QUESTION 1	Marks
1.1	A plane ticket from Bloemfontein to Johannesburg costs R1 253.00. What would a return flight cost?	(2)
1.2	The distance board on the side of the road, showed that the distance to the Mooi river Plaza was 85km and to Estcourt, was 119km. What is the distance from the Toll Plaza to Estcourt?	(2)
1.3	At birth, Joan's baby weighed 2,95kg. Report this weight in gram.	(2)
1.4	The 5 litre tin of paint which John bought, had a spread rate of 3,5m ² per litre. How many square metres will he be able to paint with this tin?	(2)
1.5	The time from low tide to high tide, is 6 hours 15 minutes. If the tide was low at 23:50, at what time would the tide be high?	(2)
1.6	The cost of photocopying is 40c per page and 60c if copied on both sides of the page. What will the least amount be to paid to copy 21 pages?	(2)
1.7	Write 9 176 040 fully in words.	(2)
1.8	If you buy 30 eggs for R64.99, what is the cost per dozen eggs?	(2)
1.9	A business wants to make 10% profit on the products it sell, calculate how much profit a business will make on a product that cost R29.50.	(2)
1.10	The percentage deposit required on the sale of a bedroom suite, costing R18 599.00, was 10%, how much deposit was required?	(2)
1.11	Thabiso earns R450 in 5 days. What is his daily rate?	(2)
1.12	Peter ate a third of a pizza and then another one six of the pizza. a) What is the total part of the pizza Ann ate? b) What part of the pizza is left?	(3) (2)
1.13	John gives a third of a packet of sweets to Thabo and then a quarter to Julia. a) What is the total fraction of sweets John gave to his friends? b) If there were 24 sweets in the packet, how many sweets did each get? c) How many sweets are left?	(2) (4) (2)
1.14	John gives a third of a packet of sweets to Thabo and then a quarter of what is left to Julia. How many sweets are left over?	(5)
TOTAL		[38]

SECTION	ROUNDING & RATIOS
From the ATP	<p>Rounding:</p> <ul style="list-style-type: none"> • Off to a specified number, decimal number or integer • To round to the nearest 5 or (10 in supermarket) • Up or Down <p>Ratios</p> <ul style="list-style-type: none"> • Perform the following calculations involving ratios convert between different forms of a ratio. • Determine missing numbers in ratios. • divide or share an amount in a given ratio. • Write a ratio in a unit form
From the CAPS	No cognitive levels are provided for this topic , rather they will be assessed in an integrated way through the application topics .
Weighting in Examination	No weighting were are provided for this topic , rather they will be assessed in an integrated way through the application topics .
Terminology	<p>A ratio is a relationship between two or more quantities that allows you to compare the quantities. This is a ratio: 20 : 8 : 1. We do not use units when we write a ratio.</p> <p>Rounding means making a number simpler but keeping its value close to what it was. The result is less accurate, but easier to use. Example: 73 rounded to the nearest ten is 70, because 73 is closer to 70 than to 80.</p>
Background & knowledge	<p>What you will learn in this chapter</p> <p>A ratio is in its simplest form when there are no common factors between the quantities.</p> <p>A ratio is in unit form when one of its terms is 1.</p> <p>learn to use the different functions on a basic calculator</p> <p>round numbers up, down, or off (to an appropriate number of decimal places) depending on the requirements of the context</p> <p>recognise that a small change in rounding can make a large difference to an answer if the error or change is compounded over many calculations or through a large multiplication</p> <p>A ratio is a relationship that allows you to compare quantities of the same kind and of the same units.</p> <p>In ratio notation we do not use units.</p> <p>We simplify a ratio by dividing each quantity by the same number (factor).</p>
Resources	Statements, Bills, Textbooks.

<p>Errors & misconceptions</p>	<p>Learners turn to just cut the numbers when they are asked to of founding up or down i.e. Rounding the 22,3478 number to 2 decimal places. The learner will give 22,34 instead of 22,35. Learners have a challenge with rounding according to the context given, where they have to decide whether to round up, down or off. Learners just round up or down to the nearest 1 decimal places when they are asked to round to the nearest 5 or 10.</p>		
<p>Methodology & Work examples</p>	<p>Rounding Looking at the following examples, how do we round off? Identify the last significant digit, e.g. if you are rounding off to 1 decimal place, check the second digit. Round up if it is ≥ 5 (greater than or equal to 5). Don't change the last significant digit of the rounded answer if the next digit is <5 (less than 5).</p> <p>When we round off numbers, we need to be aware of the context of the problem. This will determine whether we round off, up or down. When we round off to the nearest 5 or 10, we follow the simple rule that numbers with unit's digit from 1 to 4 are rounded down to the lower 5 or 10, while numbers with unit's digits from 5 to 9 are rounded up to the higher 5 or 10</p> <table border="1" data-bbox="721 568 1476 644" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Round down to 5 or 10 1 to 4</td> <td style="text-align: center;">Round up to 5 or 10 5 to 9</td> </tr> </table>	Round down to 5 or 10 1 to 4	Round up to 5 or 10 5 to 9
Round down to 5 or 10 1 to 4	Round up to 5 or 10 5 to 9		

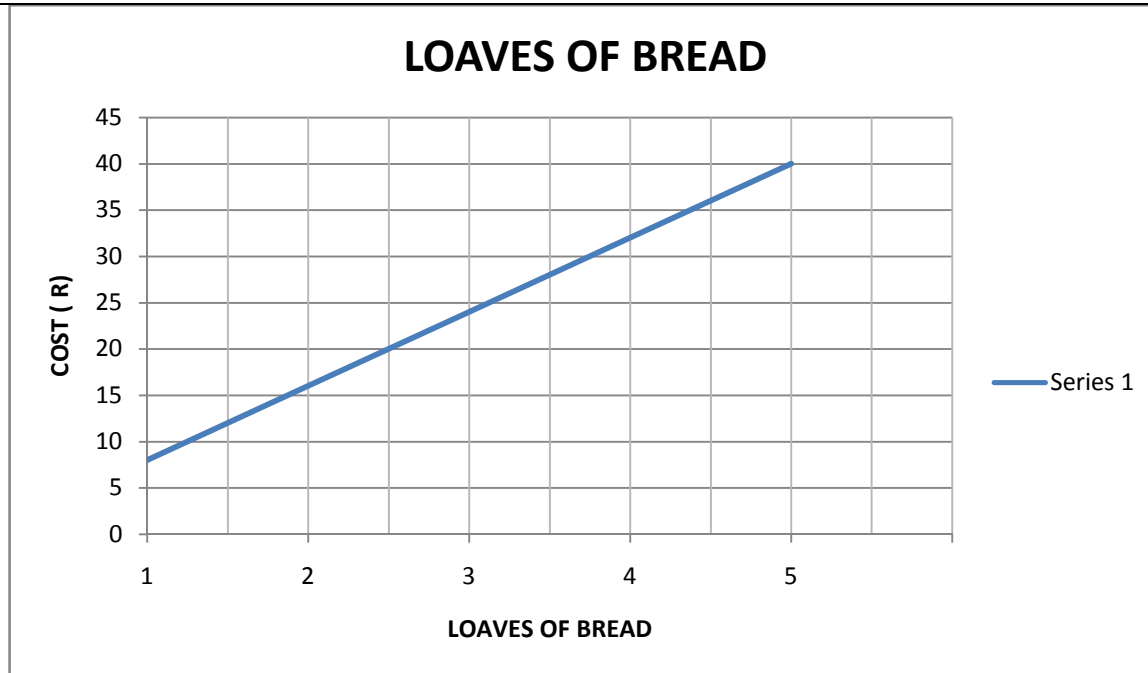
ROUNDING & RATIOS		
	QUESTION 1	Marks
1.1	Round off the following values as indicated. a) 789,346 (round to the nearest ten). b) 789,344 (round to the nearest whole number). c) 49,795 (TWO dec. places).	(2) (2) (2)
	QUESTION 2	
2.1	Round these up or down, depending on the situation. In each case, explain why you rounded up or down. a) Arnold is packing peaches. There are 6 peaches in a punnet. He has 170 peaches to pack. How many punnets does he need? b) A hotel has to transport 86 tourists to the airport. Each shuttle can take 12 passengers. How many shuttles should the hotel send to the airport? c) Nontobeko collects stamps. Each page of his stamp collection book holds 15 stamps. How many pages would he use if he has 87 stamps?	(2) (2) (2)
	QUESTION 3	
3.1	a) 500 ml of fertiliser = 1 liters water. What is the ratio of fertiliser to water? Write your answer in the form 1 : ____. b) Mix 10 ml of fertiliser with 1 litres of water. How much fertiliser must be added to 5 litres of water?	(2) (2)
	QUESTION 4	
4.1	Write each of these ratios in unit form. a) 18 : 8 : 28 b) 24 : 5 c) 85 : 17	(2) (2) (2)
	QUESTION 5	
5.1	An artist mixes green and yellow paint in the ratio 3 : 7. Calculate how many millilitres of green and yellow paint she needs for: a) 360 ml of the mixture	(4)
	QUESTION 6	
6.1	Write a ratio for each of the following in its simplest form. a) There are 5 blue sweets for every 3 pink sweets in a packet. b) There are 30 blue sweets and 18 red sweets in the bowl. c) There are 60 boys and 44 girls in Grade 12 at Mondlo Secondary. d) The cook used 6 onions and 27 tomatoes.	(2) (2) (2) (2)
	QUESTION 7	

Literacy - Grade 10 – JIT 2020 – Term 1

7.1	<p>Philani gets R60 per week for pocket money, while Thuli gets R70 a week.</p> <p>a) Express the ratio of Philani's pocket money to Thuli's pocket money in its simplest form. (2)</p> <p>b) If Philani and Thuli save all their pocket money for 4 weeks, how much money would they have altogether? (2)</p> <p>c) Philani and Thuli decide to buy sweets and sell them at school. If they each put in one week's worth of pocket money, and earn R250, how much should each of them get if they split the money in the same ratio as the amount that they put in? (2)(2)</p> <p>d) Philani's parents give him an extra R5 every week for his pocket money.</p> <p>i) What is the new ratio of Philani's pocket money to Thuli's pocket money? (2)</p> <p>ii) Philani and Thuli decide to sell sweets again the following week and earn R161. How much should Philani and Thuli get if they split the money in the ratio from question d (i)? (2)</p>	
QUESTION 8		
8.1	<p>Mr Buthelezi, Mr Mthembu and Mr Ramafole want to sell their T.V. for R5000. When they bought the T.V. for R6500, Mr Buthelezi put in R812.50, Mr Mthembu put in R2 437.50 and Mr Ramafole put in R3 250.</p> <p>How much should each of them get from the sale of their T.V. if they split the money in the same ratio in which they contributed?</p>	(6)

TOPIC	NUMBERS AND CALCULATIONS WITH NUMBERS
Section	PROPORTION
Related concepts/ terms/ vocabulary	<ul style="list-style-type: none"> • Proportion is a part, share or number considered in comparative relation to a whole. • Ratio is the relationship between two quantities or terms. • Constant Ratio between consecutive terms means that the ratio remains the same or is common between dependent variables. • Direct proportion means that as one quantity increases the other quantity also increases in the same ratio or vice versa. • Indirect/ Inverse proportion means that as one quantity decreases the other one increase or vice versa and their product remains the same. • Independent variable is on the top row of the table and should be on the horizontal axis. • Dependent variable depends on the other variable (independent variable). • Dependent variable is in the bottom row of the table and should be on the vertical axis.
Prior- knowledge/ background knowledge	<p>Learners should be able to:</p> <ul style="list-style-type: none"> • Define (explain) the meaning of direct and indirect/inverse proportions. • Understand ratio and how it is used and expressed e.g. 1 : 100 or $\frac{1}{200}$ or 3 : 8 • Perform calculations involving direct proportion e.g. If the cost of a trip is R5,00 per km, then an 85km trip will cost R5,00/km x 85km= R425,00. • Perform calculations involving indirect/ inverse proportion e.g. A soccer season ticket costs R800,00. If you watch only one game it's R800,00; for two games the effective cost per game is R400,00 and so on. • Interpret graphs representing situations involving direct and indirect/ inverse proportions. • Illustrate the difference between the two types of proportions. • Interpret with content/ skills and contexts related to graphs outlined in the topic patterns, relationships and representations. • Draw graphs representing each scenario. • Investigate, describe and explain shapes of the graphs in relation to each scenario. • Compare direct and indirect/ inverse proportions.

Resources	<ul style="list-style-type: none"> Graph papers, Calculators; Pen, pencil, paper, ruler, Textbooks, Chalkboard, chalk, duster, Data projector, computer, Newspapers and magazines and internet 												
	<ul style="list-style-type: none"> Ask learners to give examples of ratio e.g. equivalent ratio, unit form, and simplified form. Show learners the meaning of concepts i.e. understanding of direct and indirect/ inverse proportion. Assist learners in interpreting the table. Take learners through understanding of terms increasing or decreasing. Teach learners the Cartesian plane i.e. the X- axis (horizontal axis) and Y- axis (vertical axis). <p>Worked example 1 Direct proportion One loaf of brown bread costs R8,00, two loaves cost R16,00, three loaves cost R24,00.</p> <ol style="list-style-type: none"> How much will five loaves of brown bread cost? (2) Calculate the ratio between the number of loaves and the total price and describe the pattern. (4) Draw a fully labelled graph of number of loaves of bread and total price. (4) <p style="text-align: right;">[10]</p> <p>Solution: 1.</p> <table border="1" data-bbox="398 853 1171 1091"> <thead> <tr> <th>Number of loaves of brown bread</th> <th>Total price</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>R8,00</td> </tr> <tr> <td>2</td> <td>R16,00</td> </tr> <tr> <td>3</td> <td>R24,00</td> </tr> <tr> <td>4</td> <td>R32,00</td> </tr> <tr> <td>5</td> <td>R40,00</td> </tr> </tbody> </table> <p>Therefore 5 loaves of brown bread will cost R40,00</p> <p style="text-align: center;">OR</p> <p>1 loaf = R8,00 5 loaves = B cross multiply 1 x B = 5 x R8,00 B = R40,00</p> <p>2. Ratio: $\frac{2}{16} = \frac{1}{8}$ The pattern is direct proportion.</p>	Number of loaves of brown bread	Total price	1	R8,00	2	R16,00	3	R24,00	4	R32,00	5	R40,00
Number of loaves of brown bread	Total price												
1	R8,00												
2	R16,00												
3	R24,00												
4	R32,00												
5	R40,00												



Worked example 2

Indirect/ inverse proportion

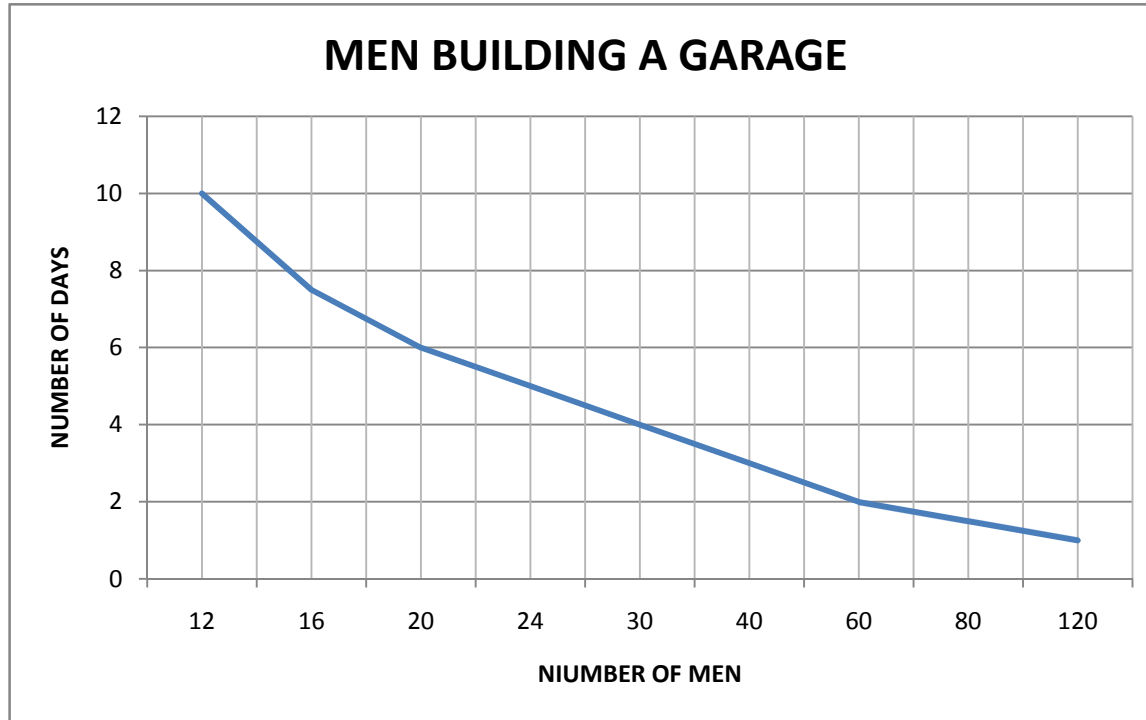
Suppose that 20 men build a single car garage in 6 days. Consider the table below and answer the questions that follow.

Number of men	Number of days
	10
16	7.5
20	6
24	5
30	4
40	3
60	
80	1.5
120	1

1. Determine how many days it will take 60 men to build the garage. (2)
2. Estimate how many men are required to complete building the garage in 10 days. (2)
3. Draw a fully labelled graph of number of men and number of days. (4)

Solution:

1. $(20 \times 6) \div 60 = 2$ days.
2. $(20 \times 6) \div 10 = 12$ men.
- 3.



Assessment	ASSIGNMENT/ INVESTIGATION and CONTROL TEST (covering numbers and calculations with numbers, patterns, relationships and representations)
Errors, misconception/ problem areas	<ul style="list-style-type: none"> • Learners wrongly interpret indirect/ inverse proportion as direct proportion. • Learners cannot identify indirect/ inverse or direct proportion graph. • Learners do not understand the word indirect/ inverse. • Learners cannot differentiate between dependent variables and independent variables. • Learners are unable to identify dependent and independent variable values.
Recommendations	<ul style="list-style-type: none"> • Learners must make notes at the back of their workbooks and refer to it regularly. • Educators must give meaningful informal assessment tasks on a regular basis and mark these activities to provide feedback to learners.

Literacy - Grade 10 – JIT 2020 – Term 1

PROPORTION**QUESTION 1**

- 1.1 The cost of a pack of teabags packet is directly proportional to the cost of one packet of teabags. If a pack of twelve teabags packets costs R150.00, what is the cost of thirty-six packets? (3)

QUESTION 2

TABLE 1 below shows the time (in minutes) and the distance (in kilometres) travelled by a taxi from a township to town daily:

TABLE 1: DISTANCE AND TIME

Time(in minutes)	0	10	20	30	40	50	A	70	80	90
Distance(in kilometres)	0	12	24	36	48	60	72	84	B	108

Use the **TABLE 1** to answer the following questions:

- 2.1 Calculate the values of **A** and **B**. (4)
- 2.2 Are the quantities time and distance directly proportional or indirectly(inversely) proportional, give a reason for your choice. (2)
- 2.3 Determine how far will the taxi travel in 100 minutes. (2)
- 2.4 How long will it take a taxi to cover a distance of 54km? (2)
- 2.5 Draw the graph showing the relationship between time and distance travelled by this taxi.(3)

QUESTION 3

The table below shows the journey from Pretoria to Pietermaritzburg travelling at different speeds by a VW golf car.

TABLE 2: SPEED AND TIME

Speed(km/h)	15	20	30	40	50	60	80	120	B
Time(hours)	40	30	20	15	12	A	7,5	5	4

Use the **TABLE 2** to answer the following questions:

- 3.1 Determine the values of **A** and **B**. (4)
- 3.2 Is the relationship between speed and time direct proportion or indirect proportion? Give a reason for your choice. (2)
- 3.3 If a car is travelling at an average speed of 90km/h, calculate how long the journey will take from Pretoria to Pietermaritzburg. (Round off your answer correct to one decimal place.) (3)
- 3.4 If the driver wants to reach Pietermaritzburg in 4,5 hours, at what speed should the he drive his car? (Round off your answer correct to one decimal place.) (3)
- 3.5 Is the driver allowed by law to travel at the speed calculated in 3.4 above in our country? Give a reason for your answer. (2)
- 3.6 Draw a fully labelled graph showing the relationship between speed and time. (3)

SECTION	RATES		
From ATP	SECTION/CONTENT/SKILLS	CONTEXT	APPLICATION
	<p>Rates: Calculate the following types of rates:</p> <ul style="list-style-type: none"> • cost rates • consumption rates-- time recording formats. • distance, time and speed rates. • more complex rates (fuel consumptions) <p>with an awareness of:</p> <ul style="list-style-type: none"> • <i>the meaning of “/” as per and the relevance of this term in relation to the values in the rate,</i> • <i>the difference between constant and average rates</i> • how to write rates in unit form • how to simplify and compare rates. 	Personal and household: Cost - Rand/kg petrol consumption rate- litres/km average speed - km/h	Costs, tariffs, consumption, estimated travelling times, speed and distance using maps, conversions, etc
From CAPS (Cognitive levels)			
Terminology/vocabulary	Constant rate, average rate, meaning of “/” as “per”, cost effective, cost rate, consumption rate, unit rate.		
Background knowledge	Ratios, proportions		
Resources	Supermarket advertisements, worksheets, maps		
Errors and misconceptions/problematic areas	<ul style="list-style-type: none"> • Incorrect substitution into a formula • Inability to differentiate between average rate and constant rate • Failure to calculate the unit rate • Failure to determine the cost-effective rate 		
Methodology and worked examples	<ul style="list-style-type: none"> • Understand the meaning of “/” as “per” • Work with cost rates, consumption rates and speed 		

- Differentiate between constant rate and average rate
- Write rates in unit form
- Simplify and compare rates
- Calculate estimated travelling times, distance and speed

WORKED EXAMPLES:

1. A car travels 320 km in 4 hours. At what speed (rate) is the car travelling?

SOLUTION:

Distance travelled : time taken to travel that distance

320 km : 4 hours

$$\begin{aligned}\text{Rate} &= \frac{320 \text{ km}}{4 \text{ hours}} \\ &= \frac{80 \text{ km}}{1 \text{ hour}} \\ &= 80 \text{ km/h}\end{aligned}$$

The car is traveling at a rate/speed of 80 km/h.

2. Robin drives from Durban to Johannesburg (566 km), He fills his tank before the trip. When he arrives in Johannesburg, he puts 53 ℓ of petrol in the tank in order to fill it up again. What is the petrol consumption of his car in ℓ/km?

SOLUTION:

Over a distance of 566 km, the engine consumes 53 ℓ of petrol

Litres : Kilometres

53 : 566

Rate = litres per kilometre

$$= 53 \div 566$$

$$= 0,0936\dots$$

$$= 0,094 \text{ l/km}$$

Petrol assumption is 0,094 ℓ/km

RATES		
	QUESTION 1	Marks
	A teller in a shop earns R6 056 for 4 weeks' work 1.1 What is the teller's weekly rate of pay? 1.2 If the teller works for 6 days a week, what is the teller's daily rate of pay? 1.3 If the teller works for 8 hours a day, what is the hourly rate of pay?	 (2) (2) (2)
	QUESTION 2	
	2.1 A dozen rolls costs R8,45. How much would it cost to buy 5 rolls?	(2)
	QUESTION 3	
	Jimmy is able to drive 518 km on a full tank petrol before having to refuel. The petrol tank on Jimmy's car can hold 70 litres of petrol. 3.1 Write down the fuel consumption rate of Jimmy's car in km per litre 3.2 How many litres of petrol will Jimmy's car use to travel 285 km? 3.3 If Jimmy sets out on a trip with 28 litres of petrol in his car, how far will he be able to travel before he has to stop for petrol?	 (2) (2) (2)
	QUESTION 4	
	Sandile buys a R50 phone card that allows him to speak for 62 minutes. 4.1 Calculate the cost per minute of using the phone card to make a call. 4.2 If Sandile speaks for 27 minutes, how much money is left on the card?	 (2) (2)
	QUESTION 5	
5.1	Two cars leave Durban at the same time. Car A travels 530 km in 5 hours and car B travels 895 km in 7,5 hours. Which car is travelling the fastest? Show all your working.	(4)

SECTION	PERCENTAGES
From ATP	Perform the percentages calculations: <ul style="list-style-type: none"> • Calculate percentage of a value • Increase a value by a percentage • Decrease a value by a percentage • Express a part of a whole as a percentage • Determine the percentage increase and /decrease • Determine the original value when given a value to which a percentage has been added or subtracted • Understand and work with equivalence of the different formats: $50\% = \frac{50}{100}$ and 0.5 • How to move interchangeable from fractions to Percentage • How to convert from a percentage to decimals with the use of a calculator
From CAPS cognitive levels:	No cognitive levels provided for this topic, rather they will be assessed in an integrated way throughout the application topics.
Weighting in Examinations.	No weighting is provided.
Terms/vocabulary	<ul style="list-style-type: none"> • Percentage means out of one hundred where 100% means a whole. • A fraction is a part of a whole. • Common / proper fraction has a small numerator and big denominator. • Decimal fractions include a whole and a fraction part where a number before a comma denotes a whole number and a number after a comma denotes a fraction part. • Mark –up percentage means the percentage by which the price is going to increase. • Percentage increase/decrease means the difference in percentage by which an amount is going to increase or decrease. • Equivalent fractions are the fractions with equal values
Background and Knowledge	<ul style="list-style-type: none"> • Knowledge of different fractions • Knowledge of operations. • Simplification of fractions. • Usage of the calculator. • Knowledge of multiplying or dividing by 10, 100,1000 ,10 000 etc

Resources	<ul style="list-style-type: none"> • Charts • Calculators. • Real objects
Errors and misconceptions/Problematic areas	<ul style="list-style-type: none"> • Sometimes learners take a percentage as a number e.g. 15% as 15 instead of $\frac{15}{100}$ • Some learners do not understand that the percentage can be more than 100% where it indicates an increase. • If a learner is asked to write for example 3,45% as a decimal fraction they just remove the unit and leave the answer as it is. • Sometimes learners lack the knowledge of using BODMAS correctly. e.g. Percentage change = $70 - 65 \div 65 \times 100$ they punch the operations as they appear instead of inserting the brackets $(70 - 65) \div 65 \times 100$ • Some learners forget to write the unit that indicates that the answer is in the percentage. • Sometimes other learners forget to add a zero if the answer is in one decimal place and it is the money. • In the case of a decimal number where rounding off is involved, learners just write the rounded off answer. • When calculating the percentage change and the value working with has units, sometimes learners give the answer in both units.(i.e the unit and % unit e.g.R12,5% • When calculating the amount that was added, learners calculate the percentage amount on the increased amount.
Methodology	<ul style="list-style-type: none"> • Learners should be taught how to divide a whole into equal parts • Learners should round off the final answer. • If the percentage is more than 100% ,it means the amount has been increased. • Learners should know how to multiply or divide by 100 without using a calculator • Learners should know that if you write a fraction part in a decimal number like 4.467 it is 0,467 meaning that there is no whole number. • Round off using a calculator.

WORKED EXAMPLES

1. It is expected that the cost of a shirt will increase by 4,5%. What will be the cost of a shirt after an increase if it costs R 275.00?

$$\frac{4.5}{100} \times R 275.00$$

$$R 12.375$$

$$\text{New amount} = R 275.00 + R 12.375$$

$$= R 287.375$$

$$= R 287.38$$

2. The cost of a packet of soap is R 54.60 including VAT. How much VAT was added?

$$100\% + 15\% = 115\%$$

$$\frac{15}{115} \times R54.60$$

$$R7.12173913$$

$$R7.12$$

3. Thabiso's salary is R 13 450.00 after an increase of 9.5%.How much was his salary before an increase?

$$100\% + 9.5\% = 109.5\%$$

$$\text{Salary before increase} = \frac{100}{109.5} \times R13450.00$$

$$= R 12 283.105..$$

$$= R 12 283. 11$$


OR

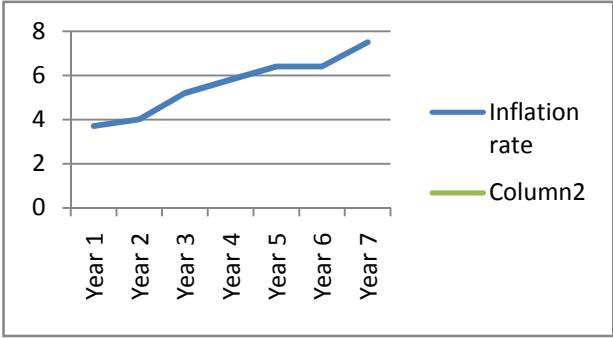
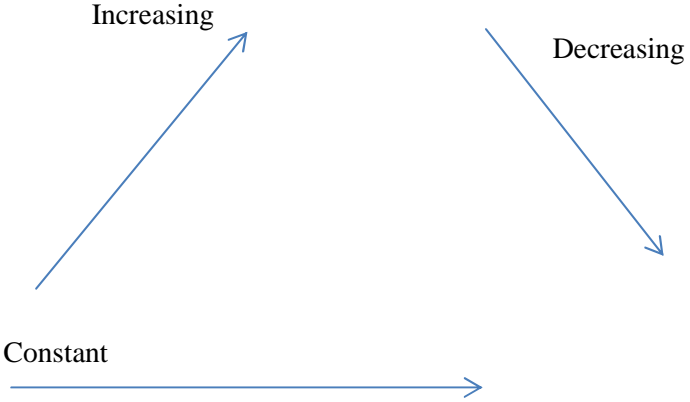
$$\text{Salary before increase} = \frac{R13450.00}{1.095}$$

$$= R 12 283.1050$$

$$= R 12 283.11$$

PERCENTAGES																	
	QUESTIONS	Marks															
1.1.	Nomusa wrote a Mathematical Literacy test that was out of 60 marks and she scored 55%. How many marks did she score?	(2)															
1.2.	Mrs Nzama earns a basic salary of R 12 500.00 per month. The employer is going to increase her salary by 6,5%. How much will her salary be after an increase?	(3)															
1.3.	The cost of a loaf of bread decreased by 5%. How much will be the cost of bread after a decrease if the cost is R 14.50?	(4)															
1.4.	Your mother has R 4390,00 in her purse and she gives you R 550.00. What percentage did your mother give you? Round off the answer to ONE DECIMAL PLACE.	(3)															
1.5.	There were 80 learners in grade 10 during 2019 academic year. In 2020 there are 140 learners. Calculate the percentage change	(3)															
1.6.	The girl weighs 60kg before she takes some exercises and her weight decreased to 58 kg after one week. Calculate the percentage decrease. The answer must be rounded off to the nearest percentage.	(4)															
1.7.	Themba got 25 out of 75 marks and Thembeke got 15 out of 45 and Themba claims that he got more than Thembeke in terms of the percentage. Verify whether his claim is correct.	(5)															
1.8.	The cost of a shirt is R 189, 45 after the VAT (15%) was added. Calculate How much was the cost before VAT	(3)															
1.9.	The bed costs R 18 750.00 after the interest rate of 24% was added. Calculate how much interest was added.	(4)															
1.10	Use the table provided below to calculate in the missing values. The answers must be simplified where possible.	(12)															
	<table border="1"> <thead> <tr> <th>PERCENTAGE</th> <th>COMMON FRACTION</th> <th>DECIMAL FRACTION</th> </tr> </thead> <tbody> <tr> <td>70%</td> <td>(a)</td> <td>0,7</td> </tr> <tr> <td>(b)</td> <td>$\frac{45}{100}$</td> <td>0.45</td> </tr> <tr> <td>(c)</td> <td>$\frac{13}{100}$</td> <td>(d)</td> </tr> <tr> <td>(f)</td> <td>(e)</td> <td>0,635</td> </tr> </tbody> </table>		PERCENTAGE	COMMON FRACTION	DECIMAL FRACTION	70%	(a)	0,7	(b)	$\frac{45}{100}$	0.45	(c)	$\frac{13}{100}$	(d)	(f)	(e)	0,635
PERCENTAGE	COMMON FRACTION		DECIMAL FRACTION														
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(b)	$\frac{45}{100}$		0.45														
(c)	$\frac{13}{100}$		(d)														
(f)	(e)	0,635															
TOTAL		[43]															

TOPIC	Patterns, Relationships and representations																									
Section	Making sense of graphs that tell a story /Patterns and relationships																									
Related concepts/ terms/ vocabulary	<table border="1"> <thead> <tr> <th data-bbox="360 185 678 220">Types of relationships</th> <th data-bbox="689 185 1016 220">Category</th> <th data-bbox="1016 185 1346 220">Variables</th> </tr> </thead> <tbody> <tr> <td data-bbox="360 220 678 464" rowspan="3">Linear (direct proportion)</td> <td data-bbox="689 220 1016 288">Constant(fixed) relationship</td> <td data-bbox="1016 220 1346 288">Dependent variables</td> </tr> <tr> <td data-bbox="689 288 1016 357">Constant difference relationships</td> <td data-bbox="1016 288 1346 357">Independent variables</td> </tr> <tr> <td data-bbox="689 357 1016 464">Combination of relationship</td> <td data-bbox="1016 357 1346 464">Read and interpreting statements to formulate equations</td> </tr> <tr> <td data-bbox="360 464 678 499">Types of relationships</td> <td data-bbox="689 464 1016 499">Category</td> <td data-bbox="1016 464 1346 499">Slope of a graph</td> </tr> <tr> <td data-bbox="360 499 678 568">Inverse(indirect proportion)</td> <td data-bbox="689 499 1016 568">Inverse relationships</td> <td data-bbox="1016 499 1346 568">Increasing</td> </tr> <tr> <td data-bbox="360 568 678 603"></td> <td data-bbox="689 568 1016 603"></td> <td data-bbox="1016 568 1346 603">Decreasing</td> </tr> <tr> <td data-bbox="360 603 678 639"></td> <td data-bbox="689 603 1016 639"></td> <td data-bbox="1016 603 1346 639">Constant</td> </tr> </tbody> </table>	Types of relationships	Category	Variables	Linear (direct proportion)	Constant(fixed) relationship	Dependent variables	Constant difference relationships	Independent variables	Combination of relationship	Read and interpreting statements to formulate equations	Types of relationships	Category	Slope of a graph	Inverse(indirect proportion)	Inverse relationships	Increasing			Decreasing			Constant			
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Annual Teaching Plan	<p>Making sense of graphs that tell a story:</p> <ul style="list-style-type: none"> Working with variety of graphs found in newspapers, magazines and other resources for which there are no obvious or available equations and/or patterns between the variables represented in the graphs. <u>Recognize that:</u> graphs tell a story is able to explain the story identify relationship between two or more items/ quantities. <u>Recognize and describe</u> shape and direction of a graph the meaning of different points on the graph Fixed/constant Relationships Direct proportion relationships Inverse proportion relationships Determine formulae and/or equations to describe relationships represented in tables and/or graphs constant(fixed) relationships, Direct, linear relationships, inverse proportion relationship. Know, understand and use terminology: dependent and independent variables discrete and continuous variables increasing and decreasing relationships, critical values: minimum, maximum and zero values. 																									
Cognitive Levels	No cognitive levels allocated to basic schools topics																									
Weightings	No weightings for basic skills topics																									
Prior- knowledge/ background knowledge	Plotting points on the system of axes, joining points to create a straight line graph. Labelling graphs																									
Resources	Graph paper, rulers, adverts from papers with different cellphone contract options. Worksheets with different patterns e.g. layout plans																									

<p>Methodology</p>	<p>Introduction and key concepts You may have seen diagrams in a newspaper or magazine displaying information such as how the price of petrol changes over time, or how banking fees have increased. These diagrams show us the relationship between two things (e.g. price of petrol and time). They often follow particular patterns and there are, in fact, rules about how those relationships work and how they can be represented.</p> <ul style="list-style-type: none"> • How graphs that we see around us in newspapers tell a story, which we can interpret by looking at features of the graphs. • Relationships between quantities that follow particular patterns. • Number patterns that are linear and form straight lines when we plot them on graphs. • Number patterns that are inverse proportions and that form curved graphs. • How to find rules or formulae for patterns in tables and graphs. 																	
	<p>Increasing and decreasing graphs Examples 1 Jabu sees the following in a newspaper article:</p>  <p>What information can Jabu extract from the graph?</p> <p><i>NOTE: Inflation is the increase in the price of goods in the country</i></p>	<p>Solution</p> <ul style="list-style-type: none"> • The graph shows the inflation rate for each year for seven years. • Following the line of the graph, you can see that inflation increases in general. • The Graph is steepest in the last year. This means that inflation increased the most during that time 																
	<p align="center"><u>Linear Patterns, relationships and graphs</u></p> <p align="center"><u>Constant difference relationship</u></p> <p><i>A constant ratio relationship occurs when a value is increased by a factor (i.e. is multiplied by an amount) or a percentage, and then</i></p>	<p>By continuing in this way we could construct the following table of values:</p> <table border="1" data-bbox="1191 1295 1984 1445"> <thead> <tr> <th>Year</th> <th>2011</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>...</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Monthly food cost</td> <td>R3 000,00</td> <td>R3 222,00</td> <td>R3 460,43</td> <td>R3 716,50</td> <td>R3 991,52</td> <td>...</td> <td>R 5 703,74</td> </tr> </tbody> </table>	Year	2011	2012	2013	2014	2015	...	2021	Monthly food cost	R3 000,00	R3 222,00	R3 460,43	R3 716,50	R3 991,52	...	R 5 703,74
Year	2011	2012	2013	2014	2015	...	2021											
Monthly food cost	R3 000,00	R3 222,00	R3 460,43	R3 716,50	R3 991,52	...	R 5 703,74											

this new increased value is again increased by the factor or percentage, and so the process is repeated. This happened in the calculations on the previous page where every year a bigger amount was multiplied and increased by the factor of 7,4%.

Example 2

Consider a scenario where the monthly cost of food purchases in a household is predicted to increase at a rate of 7,4% per year.

$$\text{Monthly food cost in 2011} = R3\ 000,00$$

$$\begin{aligned} \text{Monthly food cost in 2012} &= R3\ 000,00 + (7,4\% \times R3\ 000,00) \\ &= R3\ 000,00 + R222,00 \\ &= R3\ 222,00 \end{aligned}$$

$$\begin{aligned} \text{Monthly food cost in 2013} &= R3\ 222,00 + (7,4\% \times R3\ 222,00) \\ &= R3\ 222,00 + R238,43 \\ &= R3\ 460,43 \end{aligned}$$

And from this table of values the following graph could be constructed:

Importantly, notice that this graph of the constant ratio relationship is not a straight line but, rather, is getting steeper at a faster and faster rate. As such, for every time period or every change, the new value is always being calculated on a bigger and bigger value. We say that the graph is *increasing at an increasing rate*.

Constant (fixed) Relationship

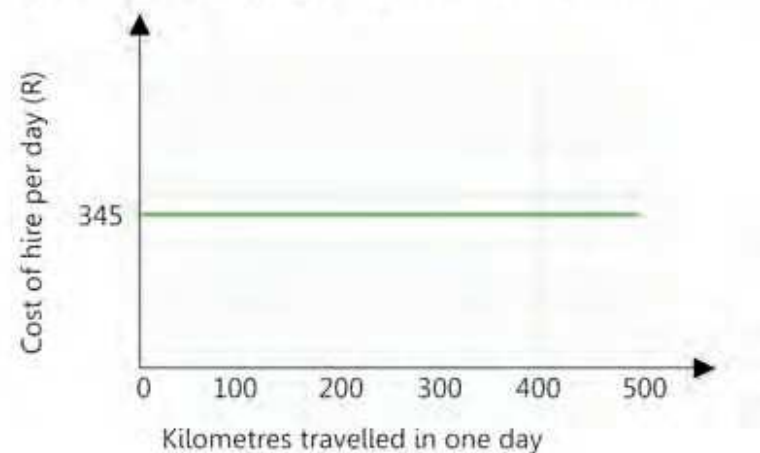
In this type of relationship, the value on the vertical axis remains the same when the value on the horizontal axis changes.

Example

A bus hire company charges R345 per day for renting a vehicle. There is no extra cost for the number of kilometres travelled. The relationship between the cost and the number of kilometres is constant at R345 per day.

Kilometres driven per day 100; 200; 300; 400

Cost of bus hire against kilometres travelled



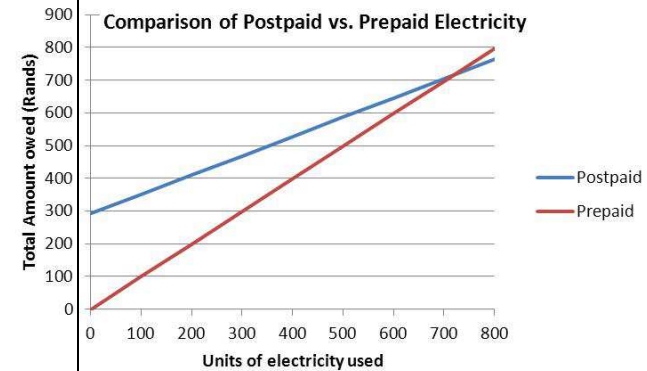
Cost of hire per day (R) 345; 345

Combination of relationships

- identifying the point of intersection of two graphs;
- understanding the significance of the point of intersection in specific relation to the context represented in the graphs;
- Understanding the significance of the regions on either side of the point of intersection in relation to the context represented in the graphs.

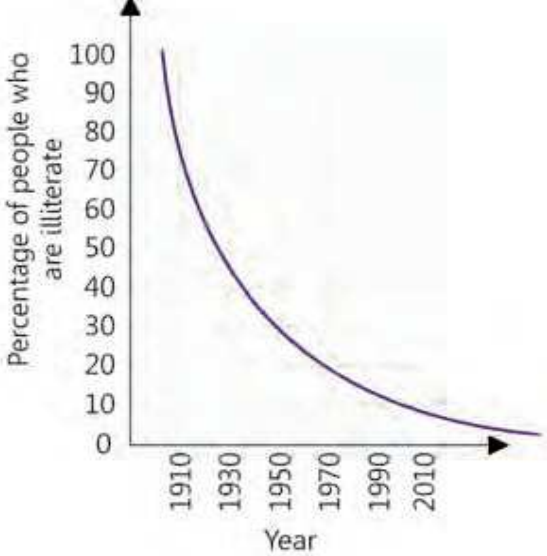
Apart from identifying the point of intersection of two graphs from the graphs, it is also important to be able to estimate the point of intersection of two relationships using the process of trial and improvement (and not accurate algebraic manipulation) with the equations for the relationships.

The graph below shows the cost of electricity on two different types of electricity tariff systems.



The place where the two graphs cut (labelled A) is called the „point of intersection“ of the two graphs. At this point the two graphs are exactly equal. As such, in relation to the comparison of the cost of electricity on the different electricity systems, this „point of intersection“ indicates the point at which the cost of electricity on the two different systems is the same.

Example

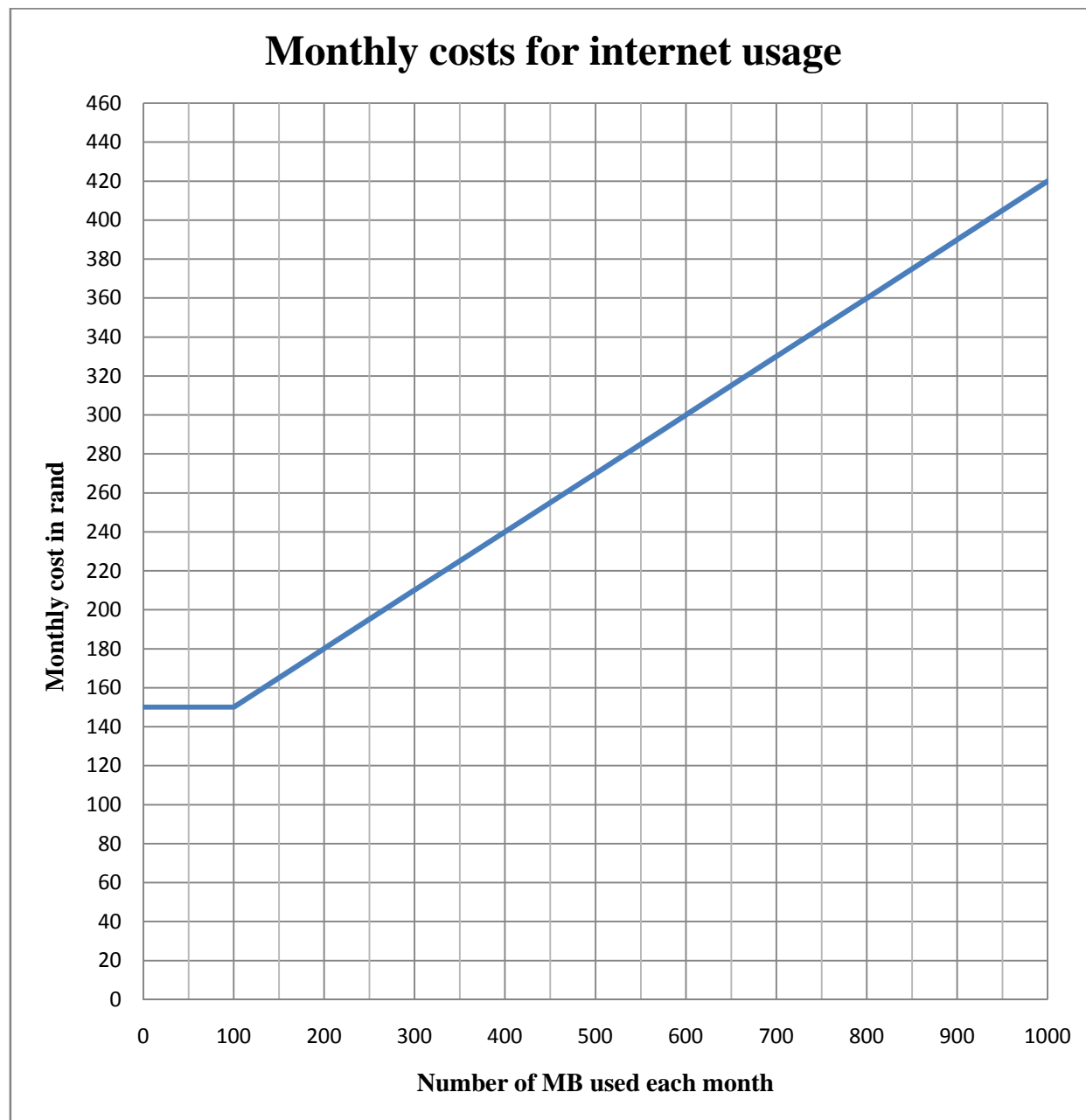
	<p style="text-align: center;"><u>Indirect (inverse) proportion relationship</u></p> <p>As values on one axis increase, values on the other axis decrease.</p> <p><u>Example 1</u> The graph shows how the percentage of illiterate people decreased over time in a particular town. In 1910, approximately 68% of people in the town were illiterate. By 2010, approximately 8% were illiterate. As the candle burns, its length decreases at a rate of 2 cm every 20 minutes. The graph does not touch the axes, because, for various reasons, there will always be people who can and cannot read or write.</p>	
<p>Assessment</p>	<p>Assignment & Activities.</p>	
<p>Errors, misconception/ problem areas</p>	<ul style="list-style-type: none"> • Lack of conceptual understanding of increasing and decreasing graphs. • Lack of graph plotting skills • Fail to reading and interpreting information from graphs 	
<p>Recommendations</p>	<ul style="list-style-type: none"> • Give learners graphs to read and interpret • They must use the equation to fill a table of values then use the values in the table to draw a graph • Teachers need to expose learners to a variety of resources. • Basic skills need to be taught well in grade 10 and should be reinforced in Grade 11 & 12. • Remedial classes should be effective to ensure that remedial work is done. • Teachers should mark and correct learners work in the classroom. • Short informal class tests should be given to learners and it should be marked immediately so that learners can correct themselves. • English across the curriculum should be implemented by testing terminology/vocabulary eg: UIF, Break-even point. • Lessons should be learner centred. • Inform learners about current issues. 	

Literacy - Grade 10 – JIT 2020 – Term 1

PATTERNS, RELATIONSHIPS AND REPRESENTATIONS

QUESTION 1

Mpho needs to use the internet in order to gather information for his research on mathematical literacy assignment. He uses his cell phone data to do his research. At the end of the month he received graphs of his usage of data from his cell phone company.

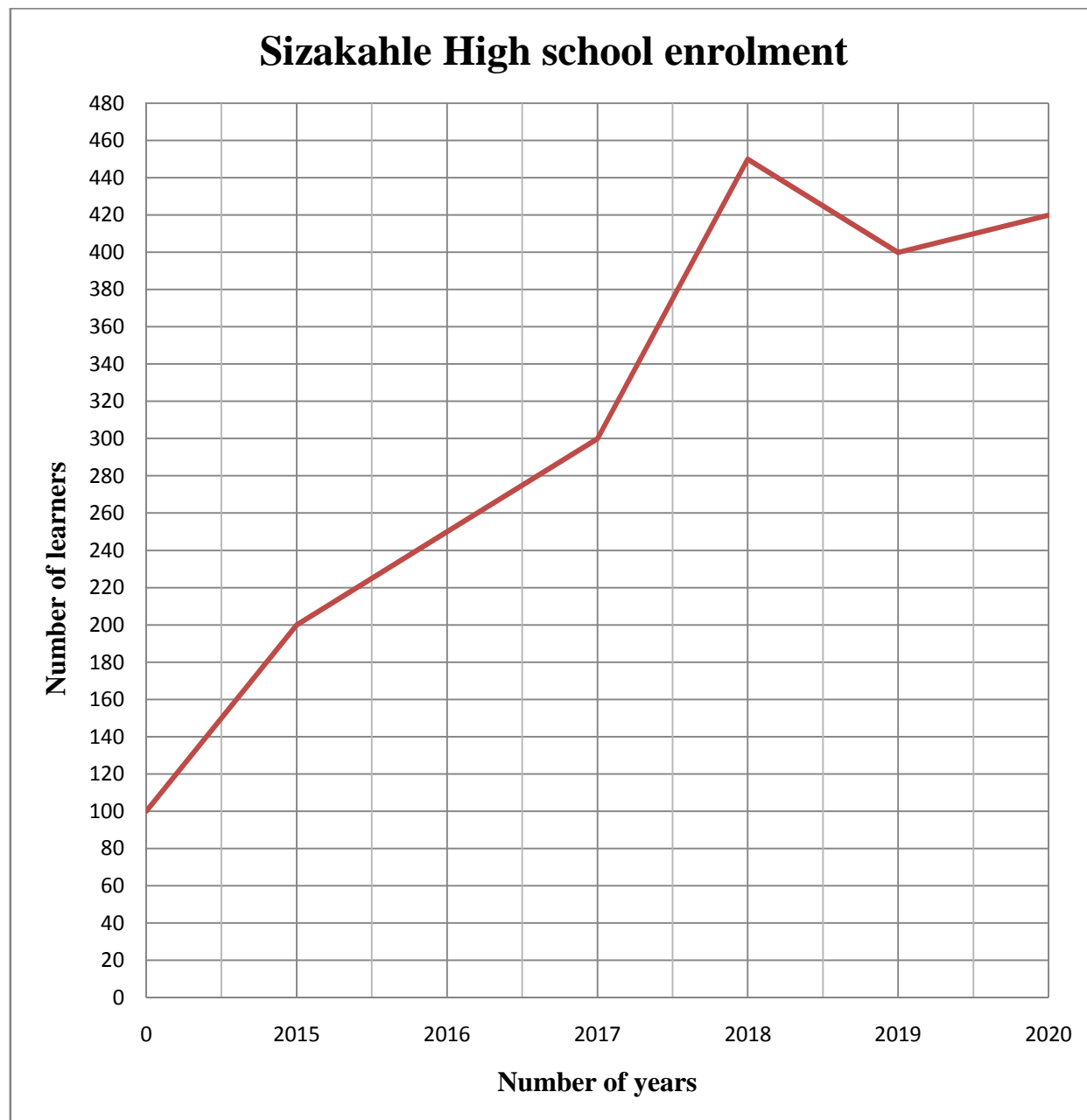


	Question 1	Marks
1.1	How many MB that is constant?	(2)
1.2	What happens between 100 MB to 1000 MB?	(2)
1.3	How much to pay for 350 MB	(2)

QUESTION 2

Literacy - Grade 10 – JIT 2020 – Term 1

For the past five years Sizakahle High school had following enrolment:



Question 2		Marks
2.1	By reading off the graph Determine the year in which the enrolment was 250 learners	(2)
2.2	By Reading off the graph describe trend of learner enrolment between year 2015 and 2017	(2)
2.3	What happens in number of learners in 2019	(2)
2.4	Determine the increase in learner enrolment between year 2017 and 2019	(3)
TOTAL		[9]
QUESTION 3		
3.1	Naledi makes and sells beaded necklaces. Look at the graph below and answer the questions.	

Sales of necklaces		
<p>The graph shows the daily sales of necklaces. The vertical axis represents the number of necklaces sold, ranging from 0 to 18 in increments of 4. The horizontal axis represents the days of the week from Monday to Sunday. The sales are as follows: Monday (8), Tuesday (17), Wednesday (8), Thursday (10), Friday (10), Saturday (14), and Sunday (0).</p>		
3.1.1	On which day are the most necklaces sold?	(2)
3.1.2	How many necklaces were sold on this day?	(2)
3.2	On which day were there no sales? Give possible reason for this.	(3)
3.3	Between which two days is the biggest increase in sales? Show by calculations.	(3)
3.4	Between which two days do the sales stay the same?	(2)
3.5	Describe what happens to the sales between Wednesday and Thursday.	(2)
3.6	Why is the graph drawn with a dotted line?	(3)
TOTAL		[17]

TOPIC	PATTERNS, RELATIONSHIPS AND REPRESENTATIONS			
Section	Representations of relationships in tables, equations and graphs.			
From ATP	<ul style="list-style-type: none"> • Working with relationships represented in tables, equations and graphs. • completing a table of values by reading values from a graph • plotting a graph from values in table • using a given formula and/or description of relationship to construct a table of values • matching formulae/equations to graphs and/or tables of values of the relationships. 			
Cognitive levels from CAPs document	Level 1	Level 2	Level 3	Level 4
	<ul style="list-style-type: none"> • Completing a table of values by reading values from a graph. 	<ul style="list-style-type: none"> • Plotting a graph from values in the table. • Using a given formula and/or description of relationship to construct a table of values. 	<ul style="list-style-type: none"> • matching formulae/equations to graphs and/or tables of values. 	<ul style="list-style-type: none"> • working with relationships represented in tables, equations and graphs.
Weighting in November exam	No weighting as the topic is integrated into other application topics.			
Related concepts/terms/ vocabulary	<ul style="list-style-type: none"> • Proportions (direct and inverse) • dependent variable and independent variable • Time calculations (in graphs that tell a story) 			
Prior- knowledge/ background knowledge	Plotting points from given table values on a set of axes. (mathematics grade 8 and 9) Completing y values when given x values in a table.			
Resources	<ul style="list-style-type: none"> • Graph papers • Rulers • Textbook • Previous exam papers with questions on patterns 			
Errors, misconception/ problem areas	<ul style="list-style-type: none"> • Wrong calculation of values when dealing with indirect proportion. • Failure to identify the kind of proportion from the question. • Inability to construct a formula or an equation from a given statement or table. • Incorrect plotting of points on a set of axes. 			

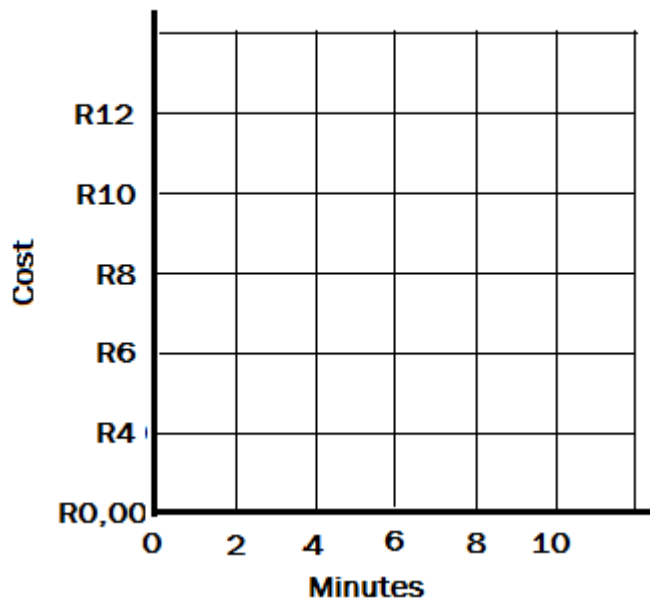
<p>Methodology</p>	<ul style="list-style-type: none"> • Equation → missing values on the table → graph (s) • Demonstrate how to determine the equation in a direct or indirect proportion scenario. • Ensuring learners understand how to determine that a variable is dependant to the other. • Demonstrate how to determine that a relationship is direct or indirect • Explain through example the use of <i>constant product</i> and <i>constant quotient</i> to find missing values • Demonstrate plotting values from the table on the set of axes. • After plotting a graph, analysis of the graph should be done. • Analyse graphs that tell a story, this will interact with time calculations when dealing with trips. 																			
<p>Worked examples</p>	<p>QUESTION 1:</p> <table border="1" data-bbox="497 576 2078 647"> <tr> <td data-bbox="497 576 694 647">1.</td> <td data-bbox="694 576 1883 647">Complete the table by finding the values of (a), (b), (c), and (d)</td> <td data-bbox="1883 576 2078 647">(8)</td> </tr> </table> <div data-bbox="497 683 1182 1107"> </div> <table border="1" data-bbox="400 1174 1561 1377"> <tr> <td data-bbox="400 1174 656 1262">Number of litres</td> <td data-bbox="656 1174 788 1262">0</td> <td data-bbox="788 1174 902 1262">1</td> <td data-bbox="902 1174 1032 1262">2</td> <td data-bbox="1032 1174 1164 1262">3</td> <td data-bbox="1164 1174 1294 1262">4</td> <td data-bbox="1294 1174 1426 1262">.....(c)</td> <td data-bbox="1426 1174 1561 1262">.....(d)</td> </tr> <tr> <td data-bbox="400 1262 656 1377">Cost</td> <td data-bbox="656 1262 788 1377">R0,00</td> <td data-bbox="788 1262 902 1377">R7,50</td> <td data-bbox="902 1262 1032 1377">R15,00</td> <td data-bbox="1032 1262 1164 1377">.....(a)</td> <td data-bbox="1164 1262 1294 1377">.....(b)</td> <td data-bbox="1294 1262 1426 1377">R52,50</td> <td data-bbox="1426 1262 1561 1377">R60</td> </tr> </table>	1.	Complete the table by finding the values of (a), (b), (c), and (d)	(8)	Number of litres	0	1	2	3	4(c)(d)	Cost	R0,00	R7,50	R15,00(a)(b)	R52,50	R60
1.	Complete the table by finding the values of (a), (b), (c), and (d)	(8)																		
Number of litres	0	1	2	3	4(c)(d)													
Cost	R0,00	R7,50	R15,00(a)(b)	R52,50	R60													

QUESTION 2

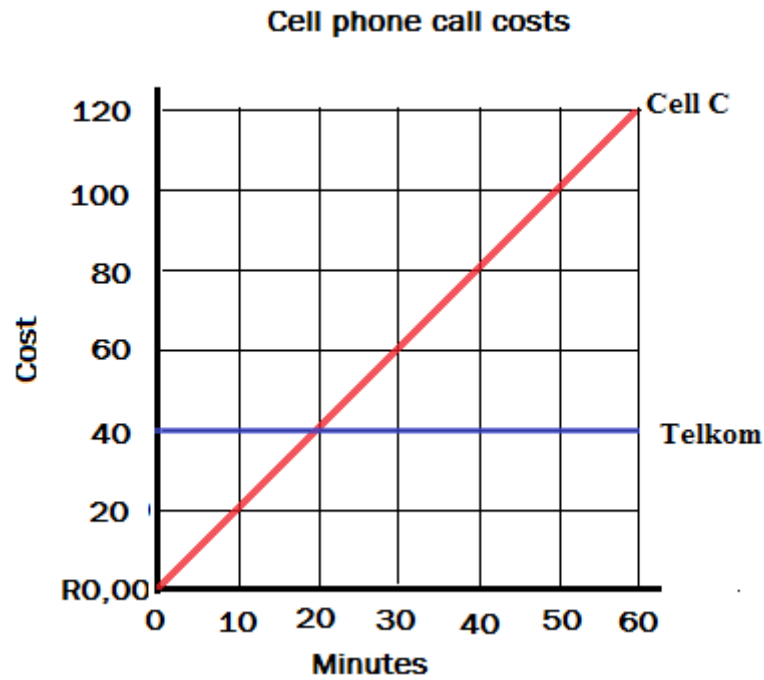
2. Use the table given below to draw a graph. Use the set of axes provided. (3)

Minutes	0	2	4	6	8	10
Cost in Rands	R0,00	R4	R8	R12	R16	R20

Cost of making a call



QUESTION 3: Matching an equation to a graph. The graph below shows cell phone costs per month charged by two companies.



Assessment/Activities

3.1	Which cell phone company charges a fixed cost per month?	(2)	1
3.2	Which graph matches the equation below? Total cost = R2 x Number of minutes	(2)	1

QUESTION 4: Direct and Inverse proportion

4.1 Sweetco Ltd is a sweets company and need to wrap 500 sweets per day.

It takes 1 machine 10 hours to wrap 500 sweets. The table below shows what happens when the number of people painting increases.

Number of machines	1	2	3	A
Number of hours	10	5	3.3	2

4.1.1	What kind of proportion is represented by the table above?	(2)	1
4.1.2	Determine the missing value A.	(2)	2
4.1.3	Draw a graph on Annexure A to represent the information on the table above.	(5)	3

4.2 A business man is staying at a hotel and the hotel is charging him R4500 per night. The table below shows the relationship between the number of nights spent at the hotel and the cost of stay.

Number of nights stayed	1	2	3	B
Cost of stay (in Rands)	4500	9000	A	31500

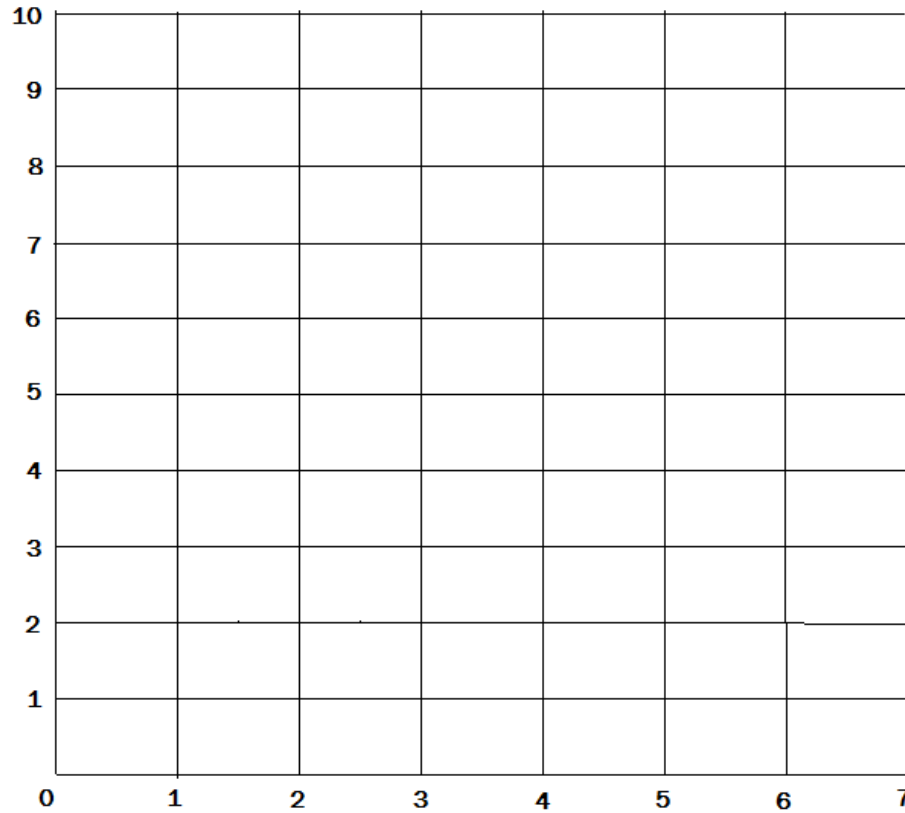
4.2.1	What kind of proportion is represented by the table above?	(2)	1
4.2.2	Determine the missing values A and B .	(4)	2
4.2.3	Draw a graph representing the data in the table. Use Annexure B	(4)	2

For question 4.3
ANNEXURE A

LEARNER NAME:

Time taken by a machine to wrap 500 sweets

Number of hours

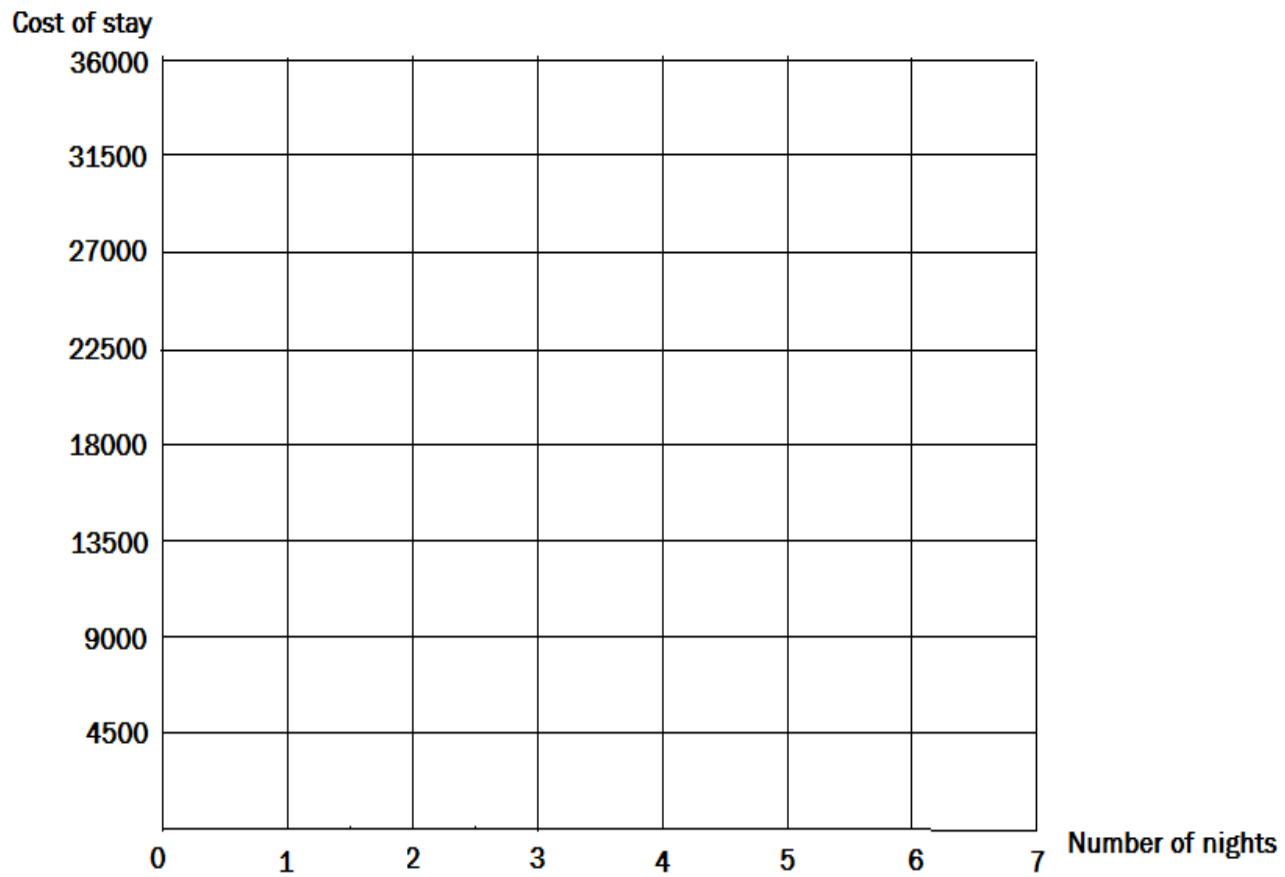


Number of machines

For question 4.3

Annexure B

Costs of staying in a hotel

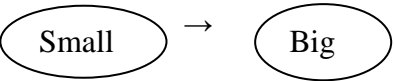
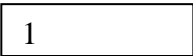
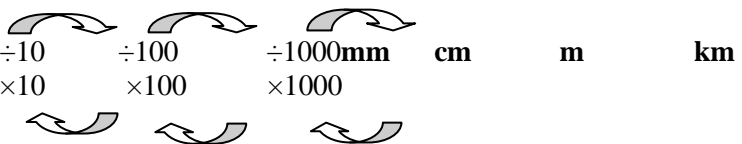


Recommendations

- More supervised class activities.
- Let learners to start from an equation and build a table, then draw a graph.

TOPIC	MEASUREMENT
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Section	Conversions		
Related concepts/ terms/ vocabulary	<i>System</i>	<i>Category</i>	<i>Name of unit</i>
	Metric	<i>Distance</i>	<i>mm, cm, m, km</i>
		<i>Mass</i>	<i>mg, g, kg,</i>
		<i>Capacity</i>	<i>ml, l, kl</i>
	<i>System</i>	<i>Category</i>	<i>Name of Unit</i>
	Imperial	<i>Length</i>	<i>Inch, foot, yard, mile, nautical mile</i>
		<i>Volume</i>	<i>pint, gallon</i>
		<i>Weight</i>	<i>ounce, pound, stone, ton</i>
Prior- knowledge/ background knowledge	<ul style="list-style-type: none"> • Metric to metric conversions, conversion factors. • Learners should know that when converting from a smaller unit to a bigger unit, we divide. • Converting from a bigger unit to a smaller unit, we multiply. 		
Resources	<ul style="list-style-type: none"> • Imperial and metric conversion tables, rulers, containers, bathroom scales, the immediate classroom (dimensions etc.) 		
Methodology	<ul style="list-style-type: none"> • List the units (metric and imperial) from big to small, show practical application, depending on the context. • Make use of PROMPTS e.g: King Henry Died of a Miserable Disease Called Measles. (refer 2015 maths lit revision guide) 		

	<table border="1" style="margin-bottom: 10px;"> <tr><td>km</td><td>km²</td><td>km³</td></tr> <tr><td>1000</td><td>1000 000</td><td>1000 000 000</td></tr> <tr><td>m</td><td>m²</td><td>m³</td></tr> <tr><td>100</td><td>10 000</td><td>1 000 000</td></tr> <tr><td>cm</td><td>cm²</td><td>cm³</td></tr> <tr><td>10</td><td>100</td><td>1 000</td></tr> <tr><td>mm</td><td>mm²</td><td>mm³</td></tr> </table> <p style="margin-bottom: 10px;">  </p> <p style="margin-bottom: 10px;">  </p> <p style="margin-bottom: 10px;"> PERIMETER </p> <p style="margin-bottom: 10px;">  </p>	km	km ²	km ³	1000	1000 000	1000 000 000	m	m ²	m ³	100	10 000	1 000 000	cm	cm ²	cm ³	10	100	1 000	mm	mm ²	mm ³
km	km ²	km ³																				
1000	1000 000	1000 000 000																				
m	m ²	m ³																				
100	10 000	1 000 000																				
cm	cm ²	cm ³																				
10	100	1 000																				
mm	mm ²	mm ³																				
Assessment	Assignment (calculate BMI for fellow learners in class, measure rainfall, RDP house (pg62-63 CAPS doc)). Activities e.g. baking recipes <u>measurement units</u> . Investigations																					
Errors, misconception/ problem areas	Failing to convert between units by using the conversion factor. Learners do not understand how to convert to square and cubic units. Lack of calculators.																					
Recommendations	Learners must make a note of the conversion tables and conversion factors at the back of their workbooks and refer to it regularly. Educators must give meaningful informal assessment tasks on a regular basis and mark these activities to provide feedback to learners.																					
WORKED EXAMPLES	<p>Example 1</p> <p>The complete ruler has a length of 30cm. Write the length in mm.</p> <p>Solution: 30cm mm → (big to small)</p> <p style="text-align: center;">$30 \times 10 = 300\text{mm}$</p>																					
	<p>Example 2</p> <p>Mother bought 500g pork sausages, convert grams to kg.</p> <p>Solution: 500g → *g (small to big)</p> <p style="text-align: center;">$500 \div 1000 = 0.5\text{kg}$</p>																					

	<p>Example 3. If a learner knows the above flow diagram, it will be easy when converting area. The structure is still the same but we square the conversion factor. Same with volume, we cube the conversion factor.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>1 Inch = 2,54cm 1mile = 1,609km</p> </div> <p>Example 4 The distance from Newcastle to Johannesburg is 350km. Convert this distance to mile using the conversion table above. Solution: 1 mile =1,609km ? =350km ? = 350km ÷ 1.609 = 217,53 miles</p> <p>Time conversion The factor when converting time is 60.</p> <div style="text-align: center;"> </div>
	<div style="text-align: center;"> </div> <p>Time formats: 24hr formats eg. 15:30 : 12hr formats eg. 3:30pm</p>

QUESTION 1 CONVERSIONS

John a learner in Gr10 had an assignment on conversions to do. He used the table below.

Length				
Imperial to Metric			Metric to Imperial	
1 mile	1.609 km	1 609 m	1 km	0.6215 miles
1 yard	91.44 cm	0.9144 m	1 m	3.2808 feet
1 foot	30.48 cm	304.8 mm	1 cm	0.3937 inches
1 inch	2.54 cm	25.4 mm		
Mass				
1 ton	0.907 metric tonnes		1 metric tonne	1.102 ton
1 pound	0.4536 kg	453,6 g	1 kg	2.204 pounds
1 ounce	28.4 g		1 g	0.035 ounces
Capacity				
1 gallon	4.5461 litres		1 litre	0.22 gallons
1 pint	0.5682 litres	568.2 ml	1 litre	1.76 pints

Use the table above to answer the following questions.

- | | | |
|-----|--|-----|
| 1.1 | The length of a room is 3m, convert the length of the room in Feet. | (2) |
| 1.2 | A bag of sugar is 20kg, change kg to pounds | (2) |
| 1.3 | The capacity of a full tank of petrol of a car is 50ℓ, calculate the capacity in gallons. | (2) |
| 1.4 | The distance between Dundee and Ladysmith is 68,6km. Calculate the distance in miles. | (2) |
| 1.5 | A tank of water of 3519,887 pints was bought by Mr Nkabinde. Calculate the pint to litres. | (2) |

TOTAL [10]

Question 2

- | | | |
|----|--|--|
| 2. | Sibusiso is a High School learner who attends every weekday. He writes the hours | |
|----|--|--|

Literacy - Grade 10 – JIT 2020 – Term 1

	and minutes spent each day.													
	<table border="1"> <thead> <tr> <th>Day</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>Monday</td> <td>8 hours 20 minutes</td> </tr> <tr> <td>Tuesday</td> <td>8 hours 42 minutes</td> </tr> <tr> <td>Wednesday</td> <td>7 hours 18 minutes</td> </tr> <tr> <td>Thursday</td> <td>9 hours 06 minutes</td> </tr> <tr> <td>Friday</td> <td>6 hours 37 minutes</td> </tr> </tbody> </table>	Day	Time	Monday	8 hours 20 minutes	Tuesday	8 hours 42 minutes	Wednesday	7 hours 18 minutes	Thursday	9 hours 06 minutes	Friday	6 hours 37 minutes	
Day	Time													
Monday	8 hours 20 minutes													
Tuesday	8 hours 42 minutes													
Wednesday	7 hours 18 minutes													
Thursday	9 hours 06 minutes													
Friday	6 hours 37 minutes													
2.1.1	Convert the time spent on Tuesday to minutes	(4)												
2.1.2	Change the time spent on Wednesday to seconds.	(5)												
2.1.3	Write the time spent on Monday in hours.	(3)												
2.1.4	Sibusiso claims that the time spent on Friday is shorter than Wednesday. Calculate the difference in time between the 2 days.	(2)												
2.1.5	Calculate the total time spent on Thursday, Tuesday and Friday	(2)												
TOTAL		[16]												

TOPIC	FINANCE			
Section	Financial documents			
Section from ATP	SECTION/CONTECT/SKILLS		CONTEXT	APPLICATION
	Personal and/or household finance, including: <ul style="list-style-type: none"> • Household bills • Shopping documents • Banking documents Household budget 		<ul style="list-style-type: none"> • Personal and / or household finance electricity, water, telephone, cell phone, till slips, bank statements, household budgets. 	<ul style="list-style-type: none"> • Explain and demonstrate how the values in documents were determined. • Understand household financial documents. • Understand terminology
Section from CAPS	Level 1	Level 2	Level 3	Level 4
	<ul style="list-style-type: none"> • Read information directly from an electricity bill(e.g. date; name of account holder; electricity consumption for the month; etc. • Show how the “Total Due” on the electricity bill has been calculated by adding together all items listed on the bill. 	<ul style="list-style-type: none"> • Use a given formula to show how the amount charged for electricity consumption shown on the bill has been determined. • Use the table of values to construct a graph to represent the cost of electricity consumption. 	<ul style="list-style-type: none"> • Without any scaffolder or guiding question, draw a graph to represent the cost of electricity on a particular electricity system. 	<ul style="list-style-type: none"> • No level 4
Weighting in Examinations	60% Tested in Paper 1			
Related concepts/terms/ vocabulary	Billing, Tariff, Municipal Bills, Transport fares (Daily, weekly and monthly), Peak/ off peak, cell phone or telephone, rates, per minute billing, bank fees (withdrawal and deposit), part-thereof, parking tariffs Opening balance: the opening balance is the amount due to the account before the current month’s expenses have been added. Closing balance: it is the total amount due after all current month’s expenses has been added together. Credit: it refers to the money paid into the account. Debit: Money paid from an account.			


	<p>Debt: it refers to the money being owed.</p> <p>Bill: is a document detailing what items or services you have brought, how much you payed for them or the amount you still need to pay.</p>								
Prior- knowledge/ background knowledge	<p>Network charges, Different rates/ packages, Procedures and reasons (opening accounts at different banks), understanding/ reading bank statements, fees charged/ rates (withdrawing at different banks), understanding municipal bills, fixed charges, terminology associated with it, Reading or drawing and understanding graphic representation.</p>								
Resources	<p>Statements, Bills, Tariff charges, Bank pamphlets, Textbooks, Siyavula.</p>								
Methodology	<p>Financial documents and tariff systems often occur in the context of personal and household finance. For example, you may pay a monthly amount of money for your electricity bill, or any other household bill. You should receive a till slip with every store account, you may well receive monthly accounts that you need to pay off. Understanding how these documents and systems work, and how to manage them is an important part of being able to manage your personal finances.</p> <p>In this chapter we will learn about:</p> <ul style="list-style-type: none"> • Financial documents relating to personal and household finance, including electricity and water bills, phone bills, till slips and account statements. • What different items and amounts on these bills and statements represent, and how different values have been determined. • Tariff systems, including municipal tariffs for electricity, water and transport tariffs for busses, taxis and trains. • Learners need to be exposed in the way in which the different types of tariffs are calculated i.e. Electricity tariffs are given in cents where conversions must firstly be done. • Emphasize to learners that water tariffs have free kilolitres (0-6kl) and that the remaining charges must be calculated as per the table. 								
Worked example	<ul style="list-style-type: none"> • Use table and sketch to show the stepped tariffs • Calculate different steps • Can sketch the steps <p>For 33kl of water</p> <table border="1"> <thead> <tr> <th>Water usage in kilolitres</th> <th>Tariff(per kilolitre)</th> </tr> </thead> <tbody> <tr> <td>0kl to 9kl</td> <td>Nil</td> </tr> <tr> <td>From 9kl to 25kl</td> <td>R9,27</td> </tr> <tr> <td>From 26kl to 30 kl</td> <td>R12,36</td> </tr> </tbody> </table>	Water usage in kilolitres	Tariff(per kilolitre)	0kl to 9kl	Nil	From 9kl to 25kl	R9,27	From 26kl to 30 kl	R12,36
Water usage in kilolitres	Tariff(per kilolitre)								
0kl to 9kl	Nil								
From 9kl to 25kl	R9,27								
From 26kl to 30 kl	R12,36								

	From 31kl to 45 kl	R19,06
	More than 45 kl	R20,96
	<p>For 33kl First 9kl will be free For the next 16 kl(from 25kl – 9kl): cost = $16kl \times R9,27$ $= R148,32$ For the next 5kl(from 30kl – 25kl): cost = $5kl \times R12,36$ $= R61,80$ For the last 3kl(from 33-30kl): cost = $3kl \times R19,06$ $= R57,18$</p>	
Assessment	<ul style="list-style-type: none"> • Use calculations and graphs to compare the options presented in cell phone packages. • Discuss non-mathematical considerations that affect a customer’s decision to opt for a particular cell phone contract. 	
Errors, misconception/ problem areas	<ul style="list-style-type: none"> • Use of mathematical symbols. (greater to a certain value) • Definitions/Terminology not able to describe/explain. 	
Recommendations	<ul style="list-style-type: none"> • Learners must do several activities to deepen conceptual understanding 	

FINANCE

QUESTION 1: ELECTRICITY BILL

Mr Jonas receives his electricity bill. Unfortunately, some glue seems to have dribbled onto the page and as he opens the bill, it rips some of the figures away. Use it to answer the following questions:



The Msunduzi Municipality

TAX INVOICE

VAT REGISTRATION NO. 4. 07835

A.S. Chetty Centre, 333 Church Street, Pietermaritzburg, 3201

201, Pietermaritzburg, 3200

(033) - 392 3000 Fax (033) - 392 2517

ACCOUNT NO. 02818666	ACCOUNT DATE 29/10/2009	ENQUIRIES-CALL CENTRE 033 3922980	
STREET ADDRESS / STAND Mr. Jonas 15 Smith Street Hilton		VAT REGISTRATION NUMBER	TAX INVOICE NUMBER 20091002818666
LOCATION 22 HIL - HILTON TOWNSHIP		CASH 800.00	DEPOSIT GUARANTEE 0.00
PROPERTY DESCRIPTION DUMMY STAND - HILTON		VALUATION	
		MARKET VALUE	IMPERMISSIBLE RATE
		ASSESSMENT RATES	
		AREA m² n2	RATEABLE VALUE 0.00

DATE	DETAILS	TARIFF	CHARGE	VAT	AMOUNT
29/09	BALANCE BROUGHT FORWARD				0.00
DEPOSIT:					
05/10	CONSUMER DEPOSIT	0.000000	800.00	0.00	800.00
05/10	PAYMENT THANK YOU				800.00
ELECTRICITY - FIXED CHARGES:					
05/10	ACCOUNTING FEE	103.880000	103.88	14.54	118.42
ELECTRICITY BASIC:					
29/10	DOMESTIC SINGLE PHASE AMPS -A4 40.00AMP	4.426000	1A	24.79	201.83
ELECTRICITY CONSUMPTION:					
29/10	DOMESTIC SINGLE PHASE - KWH-A4 ReadDt=29/10/2009 Curr=0 Prev=0 Est=504.00 504.00kWh	0.346230	1B		198.93

90 DAYS + 0.00	60 DAYS 0.00	30 DAYS 0.00	CURRENT 519.18	VAT TOTAL 63.76	TOTAL DUE 519.18
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1. PAY BY DUE DATE TO AVOID DISCONNECTION. 2. FINAL DATE FOR PAYMENT REFERS TO CURRENT AMOUNT ONLY. BALANCE BROUGHT FORWARD NOW OVERDUE AND SUBJECT TO DISCONNECTION. 3. STATEMENT INCLUDES RECEIPTS UP TO 28 OCTOBER 2009 (INCLUSIVE). 4. REPORT CRIME (SIB) BEFORE IT HAPPENS TO SAFE CITY: 800 903 767 TOLLFREE. 5. WE RESERVE THE RIGHT TO CHARGE AT 10% PER ANNUM ON ALL ARREAR BALANCES.

6. VALUATION ENQUIRIES - 033-3922980. 7. METER READING - 033-3922162. 8. LANDFILL ENQUIRIES - 033-3922534.

9. IF ACCESS TO YOUR PROPERTY IS RESTRICTED, PLEASE TELEPHONE (033) 3922911/3922534/3922535 AND SUPPLY A CONTACT NUMBER, PHONE NUMBER & OTHER CONTACT DETAILS THAT WE CAN USE TO REACH YOU.

FINAL DATE FOR PAYMENT
30/11/2009

QUESTION 1		MARKS
1.1	What date was this electricity bill issued?	(2)
1.2	What date is the final date for payment of this bill?	(2)
1.3	What is the total owed by Mr Jonas on this bill?	(2)
1.4	Mr Jonas had to pay a deposit to get his electricity connected for the first time. What was the amount of the deposit?	(2)
TOTAL		[8]
QUESTION 2: CELL PHONE		
<p>A man is trying to decide between two cell phone packages to use for making his work calls. He only works from Monday to Friday and has his own private phone for use after hours and during weekends.</p> <p><u>Prepaid Option</u></p> <p>6c per second (during work hours)</p> <p><u>Contract Option</u></p> <p>R381,90 per month, which includes 200 minutes (charged per minute or part thereof). Thereafter, calls are charged at R1,37 per minute (during work hours).</p> <p>Here is a list of the calls that he made in a day:</p>		
2.1	For how many seconds did he talk in total during the day?	(2)
2.2	Using the prepaid option, he would pay per second. Using your answer to question 2.1, Calculate how much he would have to pay for the calls that he made. (Express your answer in Rands.)	(2)
2.3	How many minutes does he get as part of the Contract option?	(2)
2.4	The Contract option bills him “per minute or part thereof”. This means that a call lasting 2 min 12 seconds is charged as a 3 minute call. How many minutes would he use up on his contract to make the above calls?	(3)
2.5	He calculates that he will use up all of his “free” minutes on the contract option in 8 working days. This means that he has to pay for the extra 14 working days per month.	(2)
2.5.1	Why does he say that he only has 22 working days in a month. (14 + 8 days = 22 days)	(2)
2.5.2	He calculates that he will have to pay for an extra 350 minutes of calls per month. How much extra will he have to pay for calls?	(2)
2.5.3	Using your answer from question 2.5.2, calculate the total that he would pay per month for the Contract option.	(2)
2.6	Using your answer to question 2.2, how much would he pay per month for his calls if he used the Prepaid option for his work calls?	(3)
2.7	Using your previous answers, which option would you advise him to choose? Give a reason for your answer.	(2)
TOTAL		[22]



QUESTION 3: FAMILY HOLIDAY TRIP												
The Zungu family are planning a holiday at the sea. They want to drive down to the coast. They make a list of their possible expenditures.												
<table border="1"> <thead> <tr> <th>Expenditure</th> <th>Amount</th> </tr> </thead> <tbody> <tr> <td>Holiday cottage</td> <td>R3 920</td> </tr> <tr> <td>Petrol</td> <td>R0,74 per km</td> </tr> <tr> <td>Food</td> <td>R120 per person per day</td> </tr> <tr> <td>Other expenses (entrance fees to aquarium, etc.)</td> <td>Approximately R1 400</td> </tr> </tbody> </table>			Expenditure	Amount	Holiday cottage	R3 920	Petrol	R0,74 per km	Food	R120 per person per day	Other expenses (entrance fees to aquarium, etc.)	Approximately R1 400
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Petrol	R0,74 per km											
Food	R120 per person per day											
Other expenses (entrance fees to aquarium, etc.)	Approximately R1 400											
3.1	Why is it important for the Zungu family to plan before going on holiday?	(2)										
3.2	They always stay for 7 nights when they go on holiday. How much is the holiday Cottage costing them per night?	(2)										
3.3	They live in Johannesburg and they plan to spend their holiday at Pennington on the KwaZulu –Natal South Coast. This is a distance of 526km											
3.3.1	How much should petrol cost them to travel from their home to Pennington?	(2)										
3.3.2	If Mr. Zungu estimates that he would use R500 worth of petrol while they are at the coast for driving, how many kilometres would he be able to drive with that amount of money? Round your answer to the nearest 100 km.	(3)										
3.3.3	Using your answers to the two previous questions, approximately how much will be spent on petrol during the Zungu family holiday at the coast?	(3)										
3.4	They always stay for 7 nights when they go on holiday.											
3.4.1	For how many days will they be on holiday?	(2)										
3.4.2	The Zungu family consists of Mom, Dad and 3 children. Using your answer to question 3.4.1, calculate how much money they will spend on food during their holiday	(3)										
3.5	Using your previous answers, calculate the total amount that the Zungu family will need to save for their holiday.	(3)										
3.6	Mr Zungu works out that he can save R1 500 of his salary every month.											
3.6.1	If he starts saving in June, will he have saved enough for his family to go On holiday in December (using your answer to question 4.5)?	(3)										
3.6.2	If they do not save enough money, give TWO suggestions of what can they do to still be able to go on holiday.	(2)										

REFERENCES:

1. Mind the Gap
2. Answer Series
3. Platinum – Grade 10
4. NSC – past exam papers.
5. Exam Fever
6. Various Internet Sources.