



NQF Level: **3** US No: **9010**

Assessment Guide

Primary Agriculture

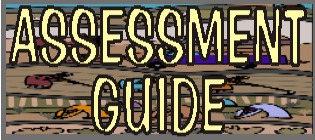
Different number bases and measurement units



Assessor:

Workplace / Company:

Commodity: Date:



Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations.

2

Primary Agriculture

NQF Level 3

Unit Standard No: 9010

Before we start...

This assessment guide contains all necessary activities and instructions that will enable the assessor and learner to gather evidence of the learner's competence as required by the unit standard. This guide was designed to be used by a trained and accredited assessor whom is registered to assess this specific unit standard as per the requirements of the AgriSETA ETQA.

Prior to the delivery of the program the facilitator and assessor must familiarise themselves with content of this guide, as well as the content of the relevant Learner Workbook.

The assessor, facilitator and learner must plan the assessment process together, in order to offer the learner the maximum support, and the opportunity to reflect competence.

The policies and procedures that are required during the application of this assessment are available on the website of the AgriSETA and should be strictly adhered to. The assessor must familiarise him/herself with this document before proceeding.

This guide provides step-by-step instructions for the assessment process of:

Title:	Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations.		
US No:	9010	NQF Level:	3
		Credits:	2

his unit standard is one of the building blocks in the qualification listed below. Please mark the qualification you are currently assessing, because that will be determined by the context of application:

Title	ID Number	NQF Level	Credits	Mark
National Certificate in Animal Production	49048	3	120	<input type="checkbox"/>
National Certificate in Plant Production	49052	3	120	<input type="checkbox"/>

Please mark the learning program you are enrolled in:

Are you enrolled in a:	Y	N
Learnership?	<input type="checkbox"/>	<input type="checkbox"/>
Skills Program?	<input type="checkbox"/>	<input type="checkbox"/>
Short Course?	<input type="checkbox"/>	<input type="checkbox"/>

Note to Assessor:

If you are assessing this module as part of a full qualification or learnership, please ensure that you have familiarized yourself with the content of the qualification.

Instructions to learner:

Individual assignment

Learner Guide: Page 10 Facilitator Guide: Page 12

Introduction to the binary number system

1. We mean the following when we use the term "binary number system":
2. The decimal system is based on powers of (the base to the power of):
3. In the binary system, only the digits _____ and _____ are used.
4. Write three even numbers (between zero and ten) in binary notation and give the decimal equivalent.
5. Write in binary notation the five first uneven numbers
6. The number 453 means (indicate what each position means – multiplied by 10 to the power of the position)
7. The decimal equivalent of a binary number can be calculated by adding together each digit (multiplied by 2 to its position power); for example, the binary number 1011011 corresponds to _____ in the decimal system.
8. Binary numbers are sometimes written with a subscript _____ or _____ to distinguish them from decimal numbers having the same digits.
9. As with the decimal system, fractions can be represented by digits to the right of the _____ (analogous to the decimal point).
10. A binary number is generally much longer than the decimal equivalent; e.g., 1011010_b , contains seven digits while its _____ counterpart which is _____ contains only two.
11. The number length is a disadvantage for most ordinary applications but is offset by the greater simplicity of the binary system in _____
12. Since only two digits are used, any binary digit, or bit, can be transmitted and recorded electronically simply by the _____ or _____ of an electrical pulse or current. The great speed of such devices more than compensates for the fact that a given number may contain a large number of digits.

Model Answer(s):

- A method of representing numbers in which only the digits 0 and 1 are used. Place values of units are based on powers of 2 (two to the power of the place value). Also called the binary system.*
- 10*
- 0 and 1*
- | <i>Even (decimal)</i> | <i>Binary</i> |
|-----------------------|---------------|
| <i>2</i> | <i>10</i> |
| <i>4</i> | <i>100</i> |
| <i>6</i> | <i>110</i> |
| <i>8</i> | <i>1000</i> |
| <i>10</i> | <i>1010</i> |
- | <i>Uneven (decimal)</i> | <i>Binary</i> |
|-------------------------|---------------|
| <i>1</i> | <i>1</i> |
| <i>3</i> | <i>11</i> |
| <i>5</i> | <i>101</i> |
| <i>7</i> | <i>111</i> |
| <i>9</i> | <i>1001</i> |
- $(4 \times 10^2) + (5 \times 10^1) + (3 \times 10^0)$
- $(1 \times 2^6) + (0 \times 2^5) + (0 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (1 \times 2^0)$
 $= 64 + 0 + 0 + 8 + 0 + 2 + 1 = 75$
- "b" or "2"*
- Binary point*
- Decimal counterpart, 90*
 $(1 \times 2^6) + (0 \times 2^5) + (1 \times 2^4) + (1 \times 2^3) + (0 \times 2^2) + (1 \times 2^1) + (0 \times 2^0)$
 $= 64 + 0 + 16 + 8 + 0 + 2 + 0 = 90$
- Computer applications*
- Presence or absence*

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 11 Facilitator Guide: Page 12

Binary to decimal conversion

- Describe the steps you would follow to convert a binary number to its decimal value.
- To convert the binary number such as 10101_2 to decimal, one firstly
- Complete the table below - show all the position values in powers of 2 and also the decimal equivalent.

Position Values		2^3	2^2			.
	16		4			.
Binary Digits	1	0	1	0	1	.

- Note that 2^0 is located to the immediate left of the _____
- Any number to the power of zero equals _____
- As we move to the left, the power of the position value increases by _____ for each digit, and as we move to the right the power of the position value decreases by _____ for each digit.
- For each column, we multiply _____ by _____ in that column.
- Find the product for 10101_2 in the table below

Position Value	16		4			
Binary Digit	1	0	1	0	1	.
Product						

- Finally _____ to get the decimal answer.

Model Answer(s):

- Steps in converting a binary number to its decimal equivalent
- Calculate the position value for each binary digit and then sum these values.
- First, we write the position values above each digit
- The table below shows the position values in powers of 2 and decimal.

Position Values	Powers of 2	2^4	2^3	2^2	2^1	2^0	.
	Decimal	16	8	4	2	1	.
Binary Digits		1	0	1	0	1	.

- 4. *binary point*
- 5. *1*
- 6. *1 in each case*
- 7. *we complete the table and then multiply the position value of the column by the digit contained and sum the values we listed*
- 8. *1.21*
- 9. *$11101_2 = 16 + 0 + 4 + 0 + 1 = 21$*

My Notes ...

Dotted lines for writing notes.

Instructions to learner:

Individual assignment

Learner Guide: Page 12 Facilitator Guide: Page 12

Decimal to binary conversion

Convert the number eleven to binary notation.

Model Answer(s):

To convert the number eleven to binary notation we simply make use of repeated division; we then simply combine the remainders from right to left (from least significant to most significant)

The final answer is 1011_2 . Remember that the first division gives us the least significant digit of our answer, and the final division gives us the most significant digit of our answer. Also, the result of the final division is always 0.

This answer was derived at as follows:

First, we divide 11 by 2 to find the least significant digit (the rightmost digit). Since 1 is our remainder, the least significant digit in our answer is 1.

$$11 / 2 = 5 R 1$$

Answer: ?? ? 1

Next, we take the result of the previous division (5) and divide by 2 again. Since 5 divided by 2 leaves a remainder of 1, the next digit of our answer is 1.

$$5 / 2 = 2 R 1$$

Answer: ?? 1 1

Again we take the result of the previous division (2) and divide by 2. This time our division does not have a remainder, so we write a 0 as the next digit of our answer.

$$2 / 2 = 1 R 0$$

Answer: ? 0 1 1

One more division by 2 gives us the most significant digit (the leftmost digit) of our answer. Since 2 will not divide 1, our result is 0 with a remainder of 1. We know we are done when we get 0 as the result of our division.

$$1 / 2 = 0 R 1$$

Answer: 1 0 1 1

$11 / 2 = 5 R \text{ of } 1$ (rightmost digit)
 $5 / 2 = 2 R \text{ of } 1$
 $2 / 2 = 1 R \text{ of } 0$
 $1 / 2 = 0 R \text{ of } 1$ (leftmost digit)

My Notes ...

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SO 1

Instructions to learner:

Individual assignment

Learner Guide: Page 13 Facilitator Guide: Page 12

Binary addition

1. State the four basic rules in order to perform binary addition.
2. State the additional derived rule.

Model Answer(s):

1. Here the rules are:

Rule 1	Rule 2	Rule 3	Rule 4
$\begin{array}{r} 0 \\ + 0 \\ \hline 0 \end{array}$	$\begin{array}{r} 0 \\ + 1 \\ \hline 1 \end{array}$	$\begin{array}{r} 1 \\ + 0 \\ \hline 1 \end{array}$	$\begin{array}{r} 1 \\ + 1 \\ \hline 10 \end{array}$

2. Rule 5
carry one!

$$\begin{array}{r} 1 \\ 1 \\ + 1 \\ \hline 11 \end{array}$$

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 14 Facilitator Guide: Page 12

Adding two binary numbers

1. Add the binary numbers 1110_2 and 111_2
2. What are the above numbers in decimal numbers and what is the total

Model Answer(s):

1. Here it is:

First, we add the numbers in the rightmost column. One plus zero adds to 1.

$$\begin{array}{r} 01110 \\ + 00111 \\ \hline 1 \end{array}$$

Now we add the next column. One plus one adds to 10_2 , so we carry the one to the next column and write the zero under this column.

$$\begin{array}{r} 1 \\ 01110 \\ + 00111 \\ \hline 01 \end{array}$$

Notice that the third column now contains three ones. Adding the first two ones gives us 10_2 . Adding this sum to the remaining one gives us a total of 11_2 , so we carry a one to the next column and write one under this column.

$$\begin{array}{r} 11 \\ 01110 \\ + 00111 \\ \hline 101 \end{array}$$

The two ones in the fourth column add to 10_2 , so we carry a one to the final column, and write zero below this column.

$$\begin{array}{r} 111 \\ 01110 \\ + 00111 \\ \hline 0101 \end{array}$$

Finally, the carry from the previous column plus the two zeros from this column add to 1.

$$\begin{array}{r} 111 \\ 01110 \\ + 00111 \\ \hline 10101 \end{array}$$

This gives us a final answer of 10101_2 .

$$\begin{array}{r} 111 \\ 01110 \\ + 00111 \\ \hline 10101 \end{array}$$

2. Decimal numbers = 15_{10} (1111_2) and 6_{10} (110_2) Total = 21_{10} (10101_2)

My Notes ...

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SO 1

Instructions to learner:

Individual assignment

Learner Guide: Page 16 Facilitator Guide: Page 12

Adding multiple binary numbers

1. An easy way to calculate the correct number of carries is to _____ and marks a carry in the next column for each pair.
2. Demonstrate how to add the numbers 111_2 , 110_2 , 1100_2 , 101_2 , and 1111_2 . Check your answer by calculating the decimal numbers for the above.

Model Answer(s):

1. Cross out pairs of 1s in the current column
2. Here we go:

1. First, we add the numbers in the rightmost column. Recall that 1 plus 1 adds to 10_2 , so we can add the first pair of 1s together, and mark a carry in the next column.

$$\begin{array}{r}
 1 \\
 11 \\
 0110 \\
 1100 \\
 0101 \\
 + 1111 \\
 \hline
 \end{array}$$

2. Now we cross out these 1s since their value is represented by the carry. The sum of the remaining digits in the first column is 1, so we write 1 below this column.

$$\begin{array}{r}
 1 \\
 011\cancel{1} \\
 0110 \\
 1100 \\
 0101 \\
 + 111\cancel{1} \\
 \hline
 1
 \end{array}$$

3. The second column has two pairs of 1s, so we cross out the first pair of 1s and mark a carry in the next column to represent these values.

$$\begin{array}{r}
 1 \\
 1\cancel{1} \\
 011\cancel{1} \\
 0110 \\
 1100 \\
 0101 \\
 + 111\cancel{1} \\
 \hline
 1
 \end{array}$$

4. Then we cross out the second pair of 1s and mark another carry in the next column. Now only zeros remain in this column, so we write 0 below it.

$$\begin{array}{r}
 1 \\
 1\cancel{1} \\
 011\cancel{1} \\
 01\cancel{1}0 \\
 1100 \\
 0101 \\
 + 111\cancel{1} \\
 \hline
 01
 \end{array}$$

5. The third column has seven 1s, so we cross out three pairs of 1s, and mark three carries in the next column to represent them. An unpaired 1 remains, so we write it below this column.

6. Adding the fourth column generates two carries. Since there is no fifth column, we will create one with all zeros and mark the carries above it. Next we write the unpaired 1 below the fourth column.

7. Finally, adding the two carries in the last column gives us 10_2 , so we write this below the column, and we have our answer of 101101_2 .

111_2	=	7
110_2	=	6
1101_2	=	12
101_2	=	5
1111_2	=	15
1101101_2	=	45

1
~~11~~
~~111~~
~~0111~~
~~0110~~
~~1100~~
~~0101~~
+ 1111
101

~~1~~
~~111~~
~~1111~~
~~00111~~
~~00110~~
~~01100~~
~~00101~~
+ 01111
1101

~~1~~
~~111~~
~~1111~~
~~00111~~
~~00110~~
~~01101~~
~~00101~~
+ 01110
101101

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 18 Facilitator Guide: Page 12

Binary subtraction

- To do subtraction in the decimal system we normally use the borrow method. Use one example to show how it is done
- List the basic rules for binary subtraction in a table – explain the borrow rule.
- Subtract the binary numbers 1110_2 from 10101_2 .

Model Answer(s):

- Consider the example problem below. Here we must borrow a 10 from the tens column in order to complete the subtraction in the ones column. We move 10 to the ones column and subtract 7. Then we copy down the remaining 20 from the tens column to get our answer of 23

$$\begin{array}{r} 2(10) \\ 30 \\ - 7 \\ \hline 23 \end{array}$$

-

Rule 1	Rule 2	Rule 3	Rule 4
0	1	1	0
- 0	- 1	- 0	- 1
0	0	1	1

Again we see that the first three rules are similar to their decimal counterparts. The fourth rule, however, needs a little more explanation since it defines how we borrow from another column. Let's look at a simple example to see where this rule comes from. Consider the problem of subtracting 1_2 from 10_2 .

- To compute the first column, we need to borrow a 1 from the next column. Recall that two 1s generated a carry in addition. If we reverse this process, we can borrow a 1 from the second column and mark two 1s in the first column.

10
- 1
- Once we borrow from the second column, we cross out the 1 and write 0 above it to show this column is now empty. The 1 from the second column is now represented by the two 1s above the crossed out 0 in the first column.

1
01
10
- 1
- To solve our subtraction problem, we take 1 away from our group of two new 1s. This leaves us with a single 1 which we write in the

1
01
10

	1 1
4. After cleaning up our work, we can see that the first column of our answer is identical to Rule 4. Since we must borrow a 1 from the next column, $0 - 1 = 1$.	10 1 1
4. Subtracting the binary number 10101_2 from 1110_2 using the borrow method.	
1. First, we subtract the rightmost column. 1 minus 0 equals 1.	10101 - 01110 1
2. In order to subtract the second column, we need to borrow a 1. So we cross out the 1 in the third column, and represent it as two 1s in the second column.	1 01 10101 - 01110 1
3. We can now subtract 1 from the group of two borrowed 1s. This leaves us with 1, so we write it below the second column.	1 01 10101 - 01110 11
4. Now we subtract the next column. Since we borrowed from this column, the subtraction is 0 minus 1 and we must borrow again. However, our next column has no 1 for us to borrow. So, we must first borrow from the last column.	1 1 0101 10101 - 01110 11
5. Then borrow a 1 from the fourth column into our current column.	1 111 0101 10101 - 01110 11
6. We can now perform the subtraction for the current column. We take 1 away from our group of two new ones (in the third column from the right). This leaves us with a single 1 which we write below the column.	1 111 0101 10101 - 01110 111
7. In the fourth column, we subtract 1 from 1 for a result of 0.	1 111 0101 10101 - 01110 0111
8. Our last column contains all zeros, so we write 0 below it. This gives us our answer of 00111_2 .	1 111 0101 10101 - 01110 00111

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SO 2

Instructions to learner:

Individual assignment

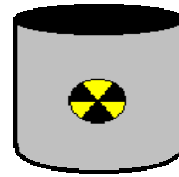
Learner Guide: Page 21 Facilitator Guide: Page 13

Use scientific notation for small and large numbers

1. At the end of 1994 the US Department of Energy's (DOE) inventory of high level radioactive waste was approximately 378,400 cubic meters.

Write this number in scientific notation.

2. A bacterium affecting a farmer's crop is 0,000005m in diameter. Write this size in scientific notation.



3. The total yield of mealies in a particular farming area was 176 543 000 kg. Write this number in scientific notation:

Model Answer(s):

3.784×10^5

5×10^{-6}

$1,76543 \times 10^8 \text{ kg}$

My Notes ...

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ASSESSMENT GUIDE

Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations.

15

Primary Agriculture

NQF Level 3

Unit Standard No: 9010

Activity Answers

9

SO 2

Instructions to learner:

Individual assignment

Learner Guide: Page 23 Facilitator Guide: Page 13

In computing giga can mean two things, what are these?

Model Answer(s):

Information units

- *Gigabyte— hard disk capacity, e.g. 120 Gb; DVD capacity, e.g. 5 Gb = $5 \times 1\ 073\ 741\ 824$ bytes.*

Transfer rate

- *Gigahertz — clock rate of a CPU, e.g. 3 GHz = 3 000 000 000 Hz*

My Notes ...

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SO 2

Instructions to learner:

Individual assignment

Learner Guide: Page 24 Facilitator Guide: Page 13

Convert the following

1. $-10\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$
2. $0\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$
3. $10\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$
4. $5,6\text{ g} = ?\text{ ounces}$
5. $1000\text{ pounds} = ?\text{ kg}$

Model Answer(s):

- a. $-10\text{ }^{\circ}\text{C} = 14\text{ }^{\circ}\text{F}$
Ten degrees Celcius below 0 degrees equals $10 \times 9/5 = 18$ degrees Farhenheit below freezing point. We know that 32 degrees F is freezing point – therefore 18 degrees F below that is 14.
- b. $0\text{ }^{\circ}\text{C} = 32\text{ }^{\circ}\text{F}$
- c. $10\text{ }^{\circ}\text{C} = 50\text{ }^{\circ}\text{F}$
*10 degrees c $\times 9/5 = 18$
PLUS 32 = 50 F
(The 32 that we add or subtract is in degrees Fahrenheit, so we always add or subtract to the temperature in Fahrenheit sized degrees).
One way to remember is that F is a "finer" scale than C; $9/5 = 1,8$ or there are 1,8 F in 1 C.*
- d. $5,6\text{g} = 1,96\text{ ounces}$
- e. $1000\text{ pounds} = 453\text{kg}$

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 29 Facilitator Guide: Page 15

- Identify the rational numbers by saying the name of each number: Say whether the number is rational or irrational.
 - $\sqrt{3}$
 - $\sqrt{5}$
 - $\sqrt{4}$
 - $\sqrt{3/5}$
 - $\sqrt{4/9}$
- Convert the following repeating decimal to the common fraction form
0.090909
- Convert 0,123123123... to a common fraction

Model Answer(s):

- $\sqrt{3}$ "Square root of 3." - irrational
 - $\sqrt{5}$ "Square root of 5." - irrational
 - $\sqrt{4}$ "2." This is a rational - nameable - number.
 - $\sqrt{3/5}$ "Square root of 3/5." - irrational
 - $\sqrt{4/9}$ "2/3" This is a rational - nameable - number.
- If $x = .0909\dots$,
I hope you can see that we get $100x = 9 + x$, or
 $99x = 9$,
or $x = 9/99 = 1/11$.
- Let $x = 0,123123123\dots$
Then $1000x = 123,123123\dots$
 $999x = 123$
 $x = 123/999 = 41/333$

13

SO 3

Instructions to learner:

Individual assignment

Learner Guide: Page 32 Facilitator Guide: Page 15

Descriptions are provided of the effect of rounding prematurely in calculations

If you need 36 m of copper wire to wind an alternator and you have to produce 19 500 of these – what will happen if you round off prematurely by saying 40 m for 20 000 alternators (at R 17 per meter)

Model Answer(s):

You will budget R 34 000 more for the job than you have to!

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 33 Facilitator Guide: Page 15

The desired degree of accuracy is determined in relation to the practical context:

- a. If you were a nurse and the doctor said you have to insert the needle deep into the person's thigh – would you want to be accurate to the nearest mm, cm, or dm? _____
- b. If you are recording the mass of maize produced by your farm would you record your answer to the nearest ton, kg or g? _____
- c. If you have bollworm infecting your cotton crop, would you want to know the approximate size of the worm in km, m cm or mm? _____

Model Answer(s):

- a) *If you were a nurse and the doctor said you have to insert the needle deep into the person's thigh – would you want to be accurate to the nearest mm, cm, or dm? **mm***
- b) *If you are recording the mass of maize produced by your farm would you record your answer to the nearest ton, kg or g? **ton***
- c) *If you have bollworm infecting your cotton crop, would you want to know the approximate size of the worm in km, m cm or mm? **mm***

My Notes ...

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Instructions to learner:

Individual assignment

Learner Guide: Page 33 Facilitator Guide: Page 15

The final value of a calculation is expressed in terms of the required unit:

- a. Given the following formula "1cc for every 50kg's of body mass (or pro rata)" plus 0,1cc for men and 0.85cc for women, for every 5 years the person is over 40. How many cc's would you administer in each of the following cases:

A 35 year old male	B 200 kg	4cc
A 60 year old women	80kg	$1,6cc + (4 \times .85cc) = 5cc$
A 15 year old boy	60 kg	

- b. Add 1m; 1cm and 1 mm – express your answer in cm

Model Answer(s):

a.

A 35 year old male	B 200 kg	4cc
A 60 year old women	80kg	$1,6cc + (4 \times .85cc) = 5cc$
A 15 year old boy	60 kg	1.2cc

b.

$$1m = 100 \text{ cm}$$

$$1cm = 1cm$$

$$1mm = 0,1cm$$

Total = 101,1cm

My Notes ...

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Summative Test and Attitude & Attribute Evaluation

Before the knowledge test is undertaken, the learner must be reminded of what is expected from him / her in terms of summative and reflexive competence. Read and explain to the learner, the **Preparation for Your Final Assessment** section in the learner workbook. Learners and assessor should sign off this section to acknowledge that this step was completed.

Please set up a knowledge test from the questions given as a guideline to learners and supply each learner with a test sheet.

Supply each report with the following heading:

Unit Standard:	9010	NQF Level:	3
Learner Name:			

Questions	Model Answers
1. Convert the following binary numbers to decimals. Make sure that you show all your working. 11 110011 10101010	<p>a) 11 $1 \times 2^0 = 1$ $1 \times 2^1 = 2$ $Total = 3$ (2)</p> <p>b) 110011 $1 \times 2^0 = 1$ $1 \times 2^1 = 2$ $1 \times 2^4 = 16$ $1 \times 2^5 = 32$ $Total = 50$ (2)</p> <p>c) 10101010 $1 \times 2^1 = 2$ $1 \times 2^3 = 8$ $1 \times 2^5 = 32$ $1 \times 2^7 = 126$ $Total = 170$ (2)</p> <p>[6]</p>

<p>2. Convert the following numbers to the binary format.</p> <p>52 25</p>	<p>52 $52 / 2 = 26 R 0$ $26 / 2 = 13 R 0$ $13 / 2 = 6 R 1$ $6 / 2 = 3 R 0$ $3 / 2 = 1 R 1$ $1 / 2 = 0 R 1$ 110100_2 (2)</p> <p>25 $25 / 2 = 12 R 1$ $12 / 2 = 6 R 0$ $6 / 2 = 3 R 0$ $3 / 2 = 1 R 1$ $1 / 2 = 0 R 1$ 11001 (2)</p> <p>[4]</p>
<p>3. Add the binary numbers 1110_2 and 111_2 Subtract the binary numbers 1110_2 from 10101_2</p>	<p>Add the binary numbers 1110_2 and 111_2 (3)</p> <p style="text-align: center;"> $\begin{array}{r} 111 \\ 01110 \\ + 00111 \\ \hline 10101 \end{array}$ </p> <p>Subtract the binary numbers 1110_2 from 10101_2 (3)</p> <p style="text-align: center;"> $\begin{array}{r} 1 \\ \cancel{+}11 \\ 0\cancel{1}0\cancel{1} \\ \cancel{+}10\cancel{1}0\cancel{1} \\ - 0\cancel{1}1\cancel{1}0 \\ \hline 00111 \end{array}$ </p> <p>[6]</p>
<p>4. Write the following numbers in scientific notation: 5701000 0,000023 Write the following as normal numbers: $2,45 \times 10^{-5}$ $7,912 \times 10^7$</p>	<p>Write the following numbers in scientific notation:</p> <p style="text-align: center;"> $\begin{array}{ll} 5701000 & 5,701 \times 10^6 \\ 0,000023 & 2,3 \times 10^{-5} \end{array}$ </p> <p>Write the following as normal numbers:</p> <p style="text-align: center;"> $\begin{array}{ll} 2,45 \times 10^{-5} & 0,0000245 \\ 7,912 \times 10^7 & 79\,120\,000 \end{array}$ </p> <p>[4]</p>

<p>5. $10\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$ $0\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$ $100\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$</p>	<p>$10\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$ $10^0 \times 9/5 + 32 = 50\text{F}$</p> <p>$0\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$ $0^0 \times 9/5 + 32 = 32\text{F}$</p> <p>$100\text{ }^{\circ}\text{C} = ?\text{ }^{\circ}\text{F}$ $100^0 \times 9/5 + 32 = 212\text{F}$</p> <p style="text-align: right;">[3]</p>
<p>6. Explain carefully why you do not round off in the middle of a calculation.</p>	<p><i>If you round off in the middle of a sum, then you introduce an error. With each step of the calculation the error becomes bigger. You need to work at a level of accuracy appropriate to the situation.</i></p> <p style="text-align: right;">[2]</p> <p style="text-align: right;">[Total = 25]</p>

Assessment Feedback Form

Comments / Remarks	
<p>Feedback to learner on assessment and / or overall recommendations and action plan for competence:</p> 	
<p>Feedback from learner to assessor:</p> 	
<p>Assessment Judgement You have been found:</p> <p><input type="radio"/> Competent</p> <p><input type="radio"/> Not yet competent in this unit standard</p>	<p>Actions to follow:</p> <p><input type="radio"/> Assessor report to ETQA</p> <p><input type="radio"/> Learner results and attendance certification issued</p>
<p>Learner's Signature:</p> 	<p>Date:</p>
<p>Assessor's Signature:</p> 	<p>Date:</p>
<p>Moderator's Signature:</p> 	<p>Date:</p>