



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING CERTIFICATE

NQF LEVEL 1

ABET LEVEL 4 SITE-BASED ASSESSMENT

**LEARNING AREA : MATHEMATICS AND
MATHEMATICAL SCIENCES**

CODE : MMSC4

TASK : WORKSHEET

TIME : 2 HOURS

MARKS : 50

This assessment task consists of 9 pages.

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions on this WORKSHEET and hand in the completed task.
2. Write the NAME OF THE CENTRE and your NAME in the spaces provided.
3. Calculators may be used unless otherwise stated.
4. Show ALL calculations.
5. Write legibly and present your work clearly.

Name of Centre:

Name of Learner:

QUESTION1

Number pattern is defined as a list of numbers that follow a certain sequence or order or pattern. Number patterns are used for predictions. www.mathsisfun.com/definitions/number-pattern.html

- 1.1 Determine which number sentence best matches the function machine.
If each input is 'Q' which rule could the function machine be using to get the output?
Circle the correct answer.

1.1.1

In	Out
30	3
100	10
50	5
90	9
80	8

- A $Q \times 10$
B $Q \div 6$
C $Q \div 10$
D $Q \div 2$

(1)

1.1.2

In	Out
98	92
40	34
15	9
32	26
73	67

A $Q - 6$

B $Q \div 9$

C $Q \div 6$

D $Q \times 6$

(1)

1.1.3

In	Out
14	27
72	85
35	48
78	91
21	34

A $Q \times 7$

B $Q + 7$

C $Q + 13$

D $Q \times 13$

(1)

1.1.4

In	Out
2	16
8	64
10	80
5	40
3	24

A $Q \times 4$

B $Q \times 8$

C $Q + 7$

D $Q \times 3$

(1)

1.1.5

In	Out
50	37
28	15
69	56
109	96
61	48

A $Q - 13$

B $Q \div 3$

C $Q \div 5$

D $Q - 5$

(1)

1.2 Generate the patterns in the following statements.

Example: Start at 64 and create a pattern with the rule subtract 3.

What is the fourth number in the pattern? Underline the required number.

EXAMPLE: 64; 61; 58; 55

1.2.1 Start at 46 and create a pattern with the rule add 7.

What is the sixth number in the pattern?

(2)

1.2.2 Start at 3 and create a pattern with the rule subtract 2 and add 5.

What is the fifth number in the pattern?

(2)

1.2.3 Start at 23 and create a pattern with the rule subtract 2.

What is the sixth number in the pattern?

(2)

1.2.4 Start at 3 and create a pattern with the rule multiply by 2.

What is the fourth number in the pattern?

(2)

1.3 Determine which numbers best complete the patterns below. Circle the correct answer.

1.3.1 37; 46; 55; 64; 73; ?

A 81; 90

B 64; 55

C 82; 91

D 91; 100

(1)

1.3.2 93; 85; 77; 69; 61; ?

A 45; 37

B 53; 45

C 51; 44

D 53; 61

(1)

1.3.3 24; 33; 42; 51; 60; ?

A 67; 79

B 51; 42

C 69; 78

D 78; 87

(1)

1.4 Write down the rule on the following pattern in words.

EXAMPLE: 8; 24; 72; 216

Rule = Multiply by 3

1.4.1 52; 43; 34; 25; 16; 7

Rule= _____ (1)

1.4.2 1125; 225; 45; 9

Rule= _____ (1)

1.4.3 3; 9; 15; 21; 27

Rule= _____ (1)

1.5 Colour the blocks on the number charts below to complete the number pattern:

1.5.1

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	79	89	99	100

(2)

1.5.2

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	79	89	99	100

(3)

1.5.3

Write down the general term of the number pattern in QUESTION 1.5.2 in the form: $T_n = \dots$ [Show ALL your workings]

(3)

1.5.4

Determine which term number will have a value of 290.

(3)

[30]

QUESTION 2

In Algebra we work with different concepts including factorisation of algebraic expressions, solving equations and inequalities, etc. When given an expression like $2x + 7 + 3x = 5x + 7$ this statement is true for all values of x . Such an expression is called an **identity**.

$2x + 3 = 2x + 5$ cannot be true, whatever the value of x . Such an expression is **false**.

The expression $3x + 2 = 17$ can be true or false depending on the value of x . It is true if $x = 5$, and false for all other values of x . Such an expression is called an **equation**.

To solve an equation means to find the values for which it is true.

The main principle of solving equations is 'whatever you do to one side, you must do to the other side.'

EXAMPLE

Solve for x : $5x - 3 = 2x + 7$

$5x - 2x = 7 + 3$ [Add 3 to both sides and subtract $2x$ from both sides.]

$3x = 10$ [Collect like terms]

$x = \frac{10}{3}$ [Divide both sides by 3]

2.1 Without any calculations or workings, write down the values of x that make the following expressions true. If there are no values of x that make the expression true, write **false**; if the expression is true for all values of x , write **identity**; if there is one value or more that make the expression true, write them all down.

- | | | |
|-------|----------------------|-----|
| 2.1.1 | $5 + x = 7$ | (1) |
| <hr/> | | |
| 2.1.2 | $x + 3 = x + 2$ | (1) |
| <hr/> | | |
| 2.1.3 | $2x + 6 = 2(x + 3)$ | (1) |
| <hr/> | | |
| 2.1.4 | $x \times x = x + x$ | (2) |
| <hr/> | | |
| 2.1.5 | $(x + 1)^2 = 9$ | (2) |
| <hr/> | | |

2.2 Solve for x in the following equations and also write down what you are doing in every step as per given EXAMPLE:

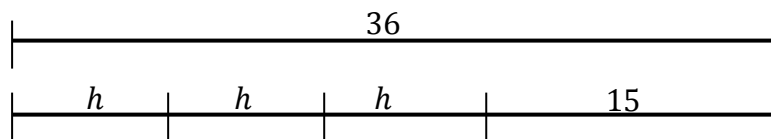
2.2.1 $5x - 3 + 2x - 7 = 4x - 1$

(3)

2.2.2 $x(3x - 1) - (3 - x) = 3x^2 - 5x + 2$

(4)

2.3 Write an equation that says that the length of the top line is equal to the length of the line below it:



Answer:

(2)

2.4 Determine the value of the variable 'e'. Circle the correct option.

2.4.1 $10e + 3 > 93$

- A 10
- B -10
- C 16
- D 5^2

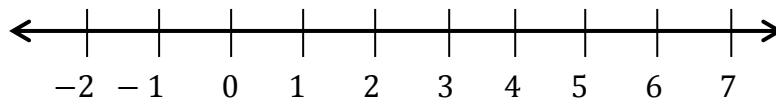
(1)

2.4.2 $107 \div e < 3$

- A 5
- B 8
- C 10
- D 63

(1)

2.5 Plot $-2 < x \leq 3$ on the number line below.



(2)
[20]

TOTAL: 50