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GRADE 10 · FUNCTIONS AND GRAPHS

What a Function Really Is: Words, Tables, Formulae & Graphs (Grade 10)

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
29	45 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 29

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 A relationship is a function when every input has ... (1)

A) at least one output
B) two outputs
C) exactly one output
D) a positive output

1.2 If $f(x) = 2x^2 - 3$, then $f(-2) = \ldots$ (1)

A) -11
B) 5
C) 13
D) -7

1.3 If $f(x) = 3x - 5$ and $f(x) = 10$, then $x = \ldots$ (1)

A) 5
B) 25
C) 15
D) $1{,}67$

1.4 The domain of $f(x) = x^2$ is ... (1)

A) $x \geq 0$
B) $y \geq 0$
C) $x > 0$
D) $x \in \mathbb{R}$

1.5 The range of $f(x) = x^2 + 3$ is ... (1)

A) $y \in \mathbb{R}$
B) $y \geq 0$
C) $y \geq 3$
D) $y \leq 3$

1.6 Which one of these does NOT represent a function? (1)

A) a non-vertical straight line
B) a circle
C) a parabola that opens upwards
D) an exponential graph

1.7 The table x: 1 ; 2 ; 3 ; 4 $\longrightarrow$ y: 7 ; 11 ; 15 ; 19 has the rule ... (1)

A) $y = 4x + 3$
B) $y = 4x$
C) $y = x + 6$
D) $y = 3x + 4$

1.8 For $f(x) = 5 - 2x$, $f(3) - f(1) =$ ... (1)

A) 4
B) -2
C) 2
D) -4

1.9 For $f(x) = x^2$, which input gives the same output as $x = 3$? (1)

A) $x = 9$
B) $x = 0$
C) $x = -3$
D) $x = \frac{1}{3}$

1.10 A taxi charges R15 plus R8 per kilometre. The cost C of a trip of k km is ... (1)

A) $C = 15k + 8$
B) $C = 8k + 15$
C) $C = 23k$
D) $C = 8(k + 15)$

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [10 MARKS]

The function f is given by $f(x) = -2x + 6$.

2.1 Calculate $f(-3)$ and $f(4)$. (3)

2.2 Determine the value of x for which $f(x) = -10$. **(3)**

2.3 Write down the domain and the range of f, and explain, using the definition of a function, why f is a function. **(4)**

QUESTION 3 [9 MARKS]

A cellphone contract costs R99 per month plus R1,50 per minute of calls. $C(m)$ is the monthly cost in rand when m minutes are used.

3.1 Write down a formula for $C(m)$, and explain why its domain is $m \geq 0$. **(3)**

3.2 Calculate $C(120)$, and explain what your answer means. **(3)**

3.3 Determine how many minutes can be used for R249 in a month. **(3)**

TOTAL: 29 marks

This question paper consists of 3 questions.

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