Province of the
EASTERN CAPE
EDUCATION

OR TAMBO INLAND DISTRICT

NATIONAL SENIOR CERTIFICATE

AUGUST TEST

GRADE 10

Stanmorephysics.com

MATHEMATICS

MARKS: **50**

TIME: **1 Hour**

This question paper consists of 5 pages

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of FOUR questions.

2. Answer ALL the questions.

3. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determine your answers.

4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.

5. Answers only will NOT necessarily be awarded full marks.

6. If necessary, round off answers to TWO decimal places, unless stated otherwise.

7. Diagrams are NOT necessarily drawn to scale.

8. Number the answers correctly according to the numbering system used in this question paper.

9. Write neatly and legibly.

QUESTION 1

The table below represent mathematics marks in a Grade 10 class at school A

17	18	19	21	24	26	28	31	35	39	40	42	42	45	51	55	70	85	95

1.1 For the above data determine the following:

1.1.1 Mean (2)

1.1.2 Median (1)

1.1.3 Mode (1)

1.1.4 Interquartile Range (3)

1.1.5 5 number summaries for a box and a whisker. (3)

1.2 The following table represents the percentage of monthly income spent on petrol and car expenses by fifty people.

Percentage	Frequency	Midpoint	Midpoint × frequency
$12 \leq p < 18$	8	15	a
$18 \leq p < 24$	20	b	420
$24 \leq p < 30$	12	27	c
$30 \leq p < 36$	d	33	264
$36 \leq p \leq 42$	2	39	e

Stanmorephysics.com

1.2.1 Determine the values of a, b, c, d and e. (2)

1.2.2 Calculate the estimated mean. (2)

1.2.3 Modal class. (1)

1.2.4 The interval containing the median. (2)

[16]

QUESTION 2

Given the equation of a Hyperbolic function: $f(x)=\frac{2}{x}+2$

2.1 Write the equations of the vertical and horizontal asymptotes (2)

2.2 Determine the coordinates of the x – intercept. (2)

2.3 Sketch the graph on a set of axes. (3)

2.4 Write down the equation of the axis of symmetry with a negative gradient (2)

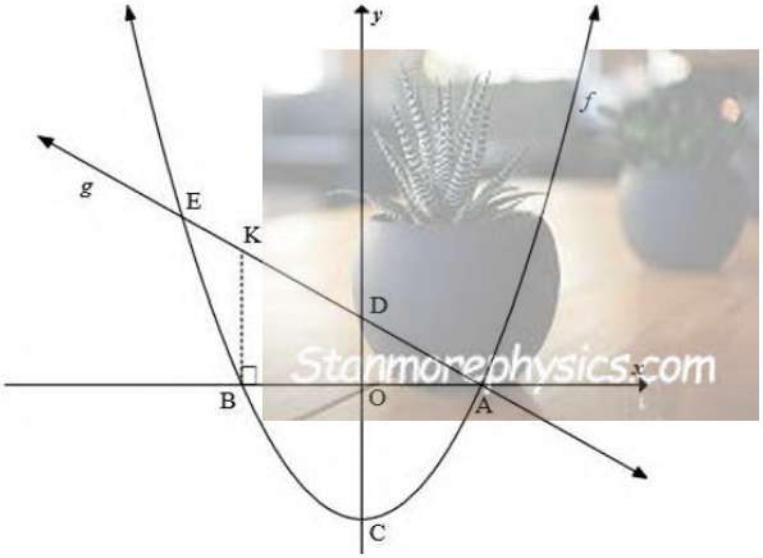
2.5 $g(x)$ is the new function formed if $f(x)$ is shifted 5 units down. (2)

Determine the equation of $g(x)$

[11]

QUESTION 3

The graphs of $f(x)=x^2-4$ and $g(x)=-x+2$ are sketched below. A and B are the x – intercepts of f. C and D are the y – intercepts of f and g respectively. K is a point on g such that KB is parallel to the y – axis. f and g cut at A and E.



3.1 Write down the coordinates of C. (1)

3.2 Write down the coordinates of D. (1)

3.3 Determine the coordinates of A and B. (3)

3.4 Determine the coordinates of E, a point of intersection of f and g. (4)

3.5 Determine the Length of AB. (2)

3.6 Determine the Length of BK. (3)

3.7 For which value(s) of x is:

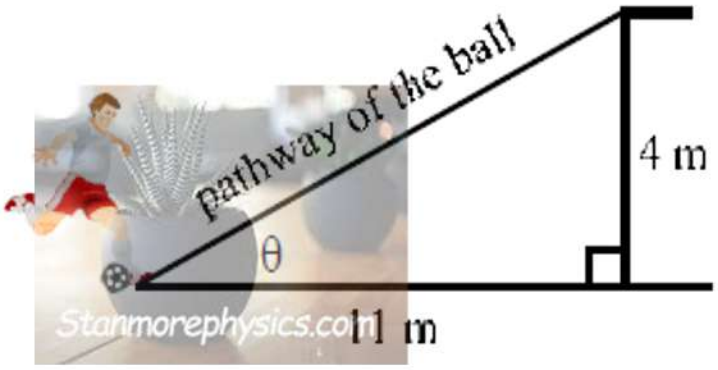
3.7.1 $f(x) > 0$ (1)

3.7.2 $g(x) < 0$ (1)

[16]

QUESTION 4

In a soccer tournament, a player kicked the ball from a distance of 11 metres from the goalposts (4 metres high) in order to score a goal for his team. The shortest distance travelled by the ball is in a straight line. The angle formed by the pathway of the ball and the ground is represented by θ



4.1 Calculate the largest angle θ for which the player will possibly score a goal. (3)

4.2 Calculate the distance travelled by the ball. (2)

4.3 Will the player score a goal if the angle θ is 22°? Justify your statement (2)

[7]

TOTAL: 50