education

Department of Education
FREE STATE PROVINCE

GRADE 8

MATHEMATICS

NOVEMBER 2022

MARKS: 50

TIME: 1 HOUR

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 8 questions.
2. Answer ALL the questions.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining your answers.
4. Answers only will not necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round answers off 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 legibly and present your work neatly.
10. Graph paper for QUESTION 6.3 is attached at the end of this question paper. Write your NAME and CLASS on this graph paper and insert them inside the answer sheet.

QUESTION 1

1.1 Calculate the following **WITHOUT USING A CALCULATOR.**
Show all your steps.

1.1.1 $8 + (-10) - (+14)$ (3)

1.1.2 $\left(1 + \frac{6}{9}\right) \div \left(1 - \frac{3}{18}\right)$ (4)

1.1.3 $\frac{\left(3 \times 2^2\right)^3}{3 \times 2^4}$ (2)

1.2 Determine the prime factors of 2744 and hence the $\sqrt[3]{2744}$ (4)

1.3 Increase 40 in the ratio 5:4. (2)

1.4 The first birds appeared on earth about 208 000 000 years ago. Write this number in scientific notation. (2)

[17]

QUESTION 2

Consider the geometric pattern below and answer the questions that follow:

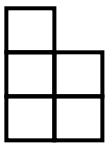


Figure 1

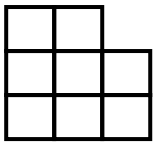


Figure 2

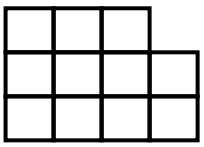


Figure 3

2.1 How many squares will be in Figure 4? (1)

2.2 How many squares are added to previous figure? (1)

2.3 Determine the general term of the pattern. (2)

2.4 Determine number of squares needed to create figure 76 (2)

[6]

QUESTION 3

3.1 Simplify the following:

3.1.1 $10x^2 + 12x - 17x - 9x^2$ (2)

3.1.2 $2a^2 + 2 - 3(5a - 8)$ (3)

3.1.3 $\frac{18a^3b - 12a^2b^2}{-3ab}$ (2)

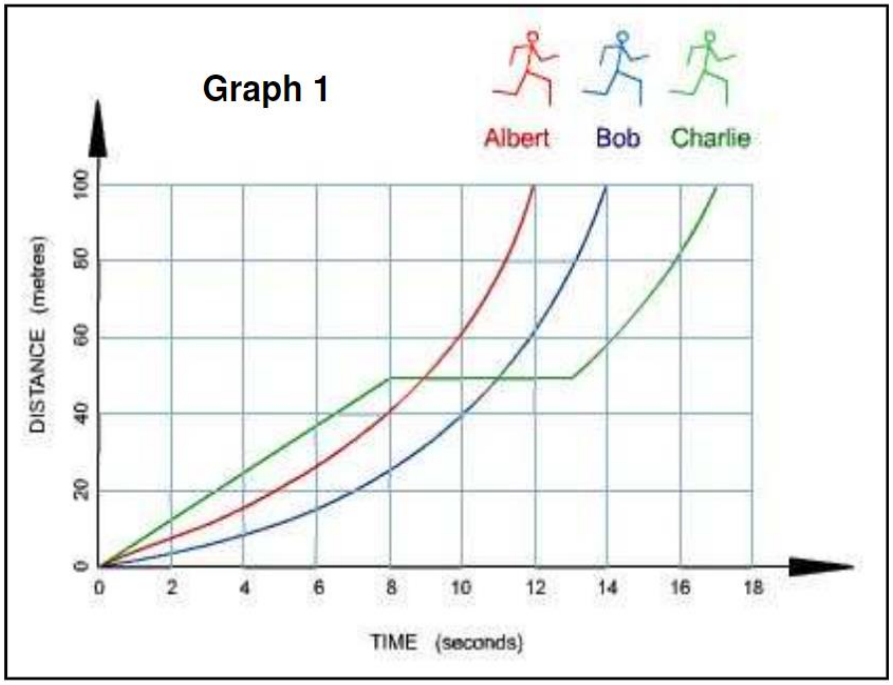
3.2 Evaluate $-3p^2q$ if $p = -1$ and $q = 4$ (2)

3.3 Solve the equations: $5^{x-2} = 125^{-x-6}$ (6)

[15]

QUESTION 4

4.1 Use the graph below to answer the questions that follow:



4.1.1 Which runner stopped for a while? (1)

4.1.2 How long did Bob take to finish? (1)

4.1.3 How much longer did it take for Charlie to reach 60 metres than it took Albert? (1)

4.1.4 Determine the total average speed of the THREE runners. (5)

4.2 Use the table below to plot the points on a Cartesian plane provided as **ANNEXTURE A** and draw the graph. (4)

x	-2	0	1
y	5	1	-1

[12]

ANNEXTURE A

SURNAME AND NAME: _____

GRADE AND CLASS: _____

SCHOOL NAME: _____

4.2