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MARITZBURG
COLLEGE

JUNE EXAMINATIONS

GRADE 8

MATHEMATICS

JUNE 2019

EXAMINER: MRS MOFFATT **MODERATOR: MRS DEYZEL**
MARKS: 120 **TIME:2 HOURS**

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Write your name and your mathematics teacher's name on your answer booklet.
2. This question paper consists of 9 questions.
3. Answer **ALL** the questions.
4. Clearly show **ALL** calculations, diagrams, graphs et cetera that you have used in determining your answers.
5. Answers only will not necessarily be awarded full marks.
6. **NO CALCULATORS ARE ALLOWED.**
7. Number the answers correctly according to the numbering system used in this question paper.
8. Write legibly and present your work neatly.

QUESTION 1

1.1 From the set of whole numbers {2; 4; 5; 7; 12; 15; 16; 17; 19; 20; 21; 23; 27; 29 30} write down:

1.1.1 the prime numbers (2)

1.1.2 the composite numbers (2)

1.1.3 the even prime numbers (1)

1.1.4 the perfect square numbers (2)

1.1.5 the perfect cube numbers (1)

1.2 Write 54; 36; 60 as a product of prime factors and determine the HCF. (4)

1.3 Arrange the following in ascending order:

1.3.1 -12; 3; -8; 7; -4 (1)

1.3.2 -30; -50; 20; 0; -10 (1)

1.4 Replace the * by >, < or = to make the sentence true:

1.4.1 $-7 * 2$ (1)

1.4.2 $9 * -1$ (1)

[16]

QUESTION 2

2.1 Answer the questions without the use of a calculator and show all working out:

2.1.1 $-8+5$ (1)

2.1.2 $10-(-4)$ (2)

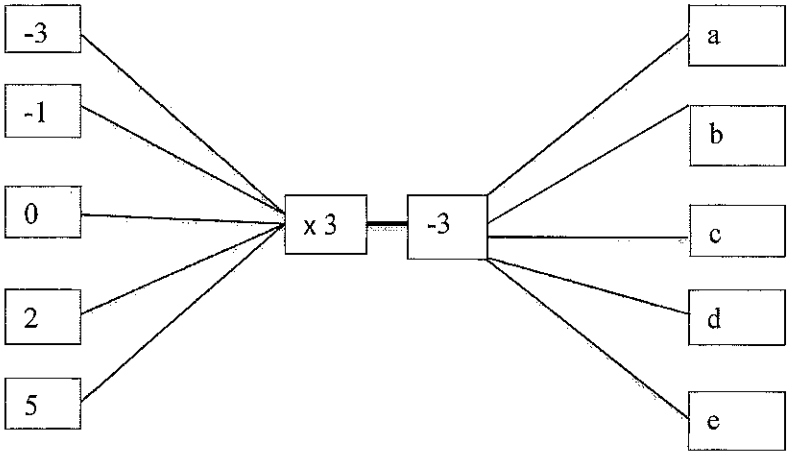
2.1.3 $2^2+\sqrt{9}$ (2)

2.1.4 $\sqrt[3]{-1}+\sqrt{36}$ (3)

2.1.5 $\sqrt[3]{2^4+11}$ (3)

2.1.6 $\sqrt{\frac{-27}{-48}}$ (3)

2.2 Complete the flow diagram, list the letters in your answer book and write down the answer next to the letter.



(5)

[19]

QUESTION 3

3.1 Simplify the following:

3.1.1 $\frac{1}{6}-\frac{8}{3}$ (3)

3.1.2 $\frac{3}{10}\times\frac{5}{2}$ (1)

3.1.3 $\frac{14}{4}\div\frac{21}{10}$ (2)

3.1.4 $0,01\times 0,05$ (1)

3.1.5 $\sqrt{0,0036}$ (1)

3.2 Express $3\frac{1}{5}$ as a decimal fraction. (2)

[10]

QUESTION 4

4.1 Examine the following algebraic expression:

$$-3x^2+x+5$$

4.1.1 how many terms are there in the expression? (1)

4.1.2 how many variables are there in the expression? (1)

4.1.3 write down the coefficient of x (1)

4.1.4 write down the constant term. (1)

4.1.5 what is the exponent of x in the second term? (1)

4.2 Write an algebraic expression for each of the following:

4.2.1 the sum of a number and 6 (1)

4.2.2 the number of kids present in a class of 40 where x are absent today. (1)

4.2.3 the difference between 8 and a number (1)

4.2.4 James is n years old.Tim is four years older than James. How old is Tim? (1)

4.3 Determine the value of each of the following expressions if $x=4$, $y=-2$ and $w=-1$.

4.3.1 $x+y+w$ (2)

4.3.2 $y-x$ (2)

4.3.3 $\sqrt{-(x)(w)}$ (3)

[16]

QUESTION 5

Simpify the following

5.1 $x+x+x$ (1)

5.2 $5a^2+4a^3-2a^2-6a^3$ (2)

5.3 $4m^2\times 2-3m^2$ (2)

5.4 $4a^2b\times 2a^4b^3$ (3)

5.5 $2a^2bc+3ab^2c-6ba^2c$ (2)

5.6 Add $4x+3xy-2y$; $3x+6xy+y$; $4x-4xy-y$ (3)

5.7 Subtract $5x^2+3x-8$ from $3x^2-6x^2+4$ (3)

5.8 From the sum of $5a+7b+c$ and $9a-4a-6$ subtract $8a-2b+c$. (4)

[20]

QUESTION 6

Simplify the following showing full working:

6.1 $-4m^2\times 3m^3$ (2)

6.2 $\dfrac{9a^2b^3}{3a^4b^2}$ (3)

6.3 $\left(2a^5\right)^3$ (2)

6.4 $\dfrac{\left(a^2b^4\right)^5\times ab^4}{\left(a^3b^8\right)^3}$ (4)

6.5 $\sqrt[3]{-8a^6b^9}\times\sqrt{9a^6b^{10}}$ (3)

6.6 $\left(x^6y^9\right)^{\frac{2}{3}}$ (2)

[16]

QUESTION 7

Simplify fully:

7.1 $2(x-3y)$ (2)

7.2 $-2(2m+n)$ (2)

7.3 $(g+2h)-5$ (1)

7.4 $(-2)(x-y)(-4)$ (3)

7.5 $2x(-x+y)+3y(x-y)$ (3)

7.6 $-3n^2+2n(n+1)-(n^2-n)$ (4)

7.7 $\dfrac{3x^2-6xy+12x^2y^2}{-3x}$ (3)

[18]

QUESTION 8

Simplify fully:

$$\frac{3x^3y^3}{20a^2b^2xy} \div \left[\frac{3xy}{5ab^3}\right]^2$$ [5]