Mathematics Gr.8 June Exam Question paper (0001)

Time: 2H **Total: 100 marks**

Section A (Algebra): [75]

Question 1: [10]

1.1 Write down the factors of 18 which are also prime numbers. (2)

1.2 Is 4 015 divisible by 11? Motivate your answer. (2)

1.3 (a) Determine the prime factors of 3 375. (2)

(b) Calculate, without using a calculator: $\sqrt[3]{3\ 375}$ (3)
Show all calculations.

1.4 Find the LCM of 8 and 12. (1)

Question 2: [10]

2.1 If p = -2 and t = 5, calculate, without using a calculator:
[Show all calculations.]

(a) $t^2 - p^3$ (3)

(b) $\sqrt{-p} \times \sqrt{(t + 3)}$ (3)

2.2 Are the following statements true or false? (4)
If false, write down the correct statement.

(a) $(5^2)^4 = 5^6$

(b) $(-3)^3 = -3^3$

Question 3: [10]

3.1 Simplify the following by using exponential laws:
[Write your answers as positive exponents.]

(a) $5x^0y^2$ (2)

(b) $\dfrac{x^6y^{10} \div x^2y^5}{x^2y}$ (3)

(c) $(mn^{-2})^{-3}$ (3)

3.2 Write the following in scientific notation: 18 million (2)

Question 4: [15]

4.1 Consider the following sequence: -3 ; - 9 ; -15 ; -21 ; …….

(a) Write the pattern of the sequence in words. (1)

(b) Determine the general term of the sequence in the format T_n = …… (3)

(c) Determine the 85th term. (2)

(d) Which term in the sequence is equal -75? (2)

4.2 Fill in the missing numbers: (2)

____ ; ____ ; 18 ; 54 ; 162 ; ____ ; ____

4.3 (a) Complete the following table: (2)

n	1	3	4	5	8		
T_n		7	9	11		21	199

(b) Write a rule for the relation between n and T_n in the format T_n = …… (3)

Question 5: [16]

5.1 Consider the following expression: $5x + 7y - 3 + 4(x + y^2)$

(a) How many terms does the expressions have? (1)

(b) Write down the coefficient of *y*. (1)

(c) Write down the constant term. (1)

5.2 Simplify:

(a) $4m + 3mn - 2m^2 + 5m - 8m^2$ (1)

(b) $2(3x^2 - 7xy) - 3x(y - 2x)$ (4)

(c) $\frac{15ab^{12} + 3ab^2}{3ab^2}$ (2)

(c) $\sqrt{64p^{16} + 36p^{16}}$ (3)

5.3 How much is $(6k + 3)$ greater than $(17k - k^2 - 5)$? (3)

Question 6: [14]

6.1 Solve the following equations:

(a) $5k + 3 = 7k - 3$ (1)

(b) $\frac{y}{3} + 1 = 4$ (2)

(c) $8 + 2(x - 1) + x^2 = x(3 + x)$ (5)

6.2 Check whether $x = -2$ is a possible solution for: $\frac{3}{x^2} - 2 = \frac{-5}{2x}$ (3)

6.3 In a class of 31 learners, there are 5 more boys than girls. (3)
Calculate the number of boys in the class.

Section B (Geometry): [25]

Question 7: [4]

7.1 Use a compass, pencil, ruler and protractor and construct $A\hat{B}C = 70°$. (2)

7.2 Use a compass, ruler and pencil to bisect $A\hat{B}C$. (2)

Question 8: [15]

8.1 Complete the following:

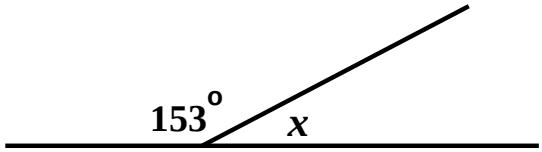
(a) The supplement of 25° is……. (1)

(b) The complement of 25° is……. (1)

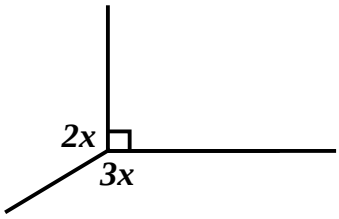
(c) Adjacent angles on a straight line ……. (1)

8.2 Find the value(s) of x and / or y in each of the following sketches. (9)
Give reasons.

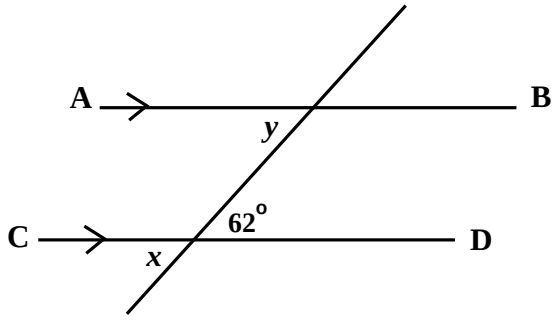
(a)



(b)



(c)



8.3 Each of the following statements are faulty. Write down the correct statement.

(a) Alternate angles are always equal. (1)

(b) Halve of a right angle is equal to 90°. (1)

(c) A reflex angle is smaller than 360°. (1)

Question 9: [6]

9.1 Give two properties of an isosceles triangle. (2)

9.2 Find the value of x in the following sketch. (4)
Give reasons.