This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Stage Exam 03
FEB2023

Do NOT write in this box. Your MARK will be placed here.

Subject :	Maths
Class :	7A, 7B, 7C and 7E
Teacher :	Mrs. Nancy Abdul Khalek
Duration :	1 hour

1. Write your solutions neatly on a separate paper unless stated otherwise.
2. Show all of your work.
3. Draw with the pencil.
4. Calculators are not allowed.

Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

Write all of your solutions neatly on a separate paper unless stated otherwise.

Show all of your work. **Calculators** are **not allowed.**

I. Evaluate the following expressions following the order of operations. [6 marks]

a. $3^2 \times 2 - (2^4 - 3 \times 5)^{100} + 10^0$

b. $\left(\frac{5}{2} - \frac{3}{14}\right) \div \left(1 + \frac{1}{7}\right)$

II. Simplify the following fraction. Write your answer in the simplest form. [2 marks]

$$A = \frac{3^2 \times 5^2 \times 7^3}{35^2 \times 3^3}$$

III. Simplify. Your answer should contain **positive** exponents only. [7 marks]

a. $2a^{-3}b \times a^{-3}b^4$

b. $(3x^{-1}y^3)^2$

c. $\frac{4x^5y^{-3}}{3x^2y}$

d. $\frac{p^2}{3p^3}$

IV. Write the following expression in the form of a product of powers of 2 and 11. [3 marks]

$A = 4 \times (11^3 \times 2)^2 \times 22^3$

V. Write the following numbers in scientific notation. [2 marks]

a. 19980

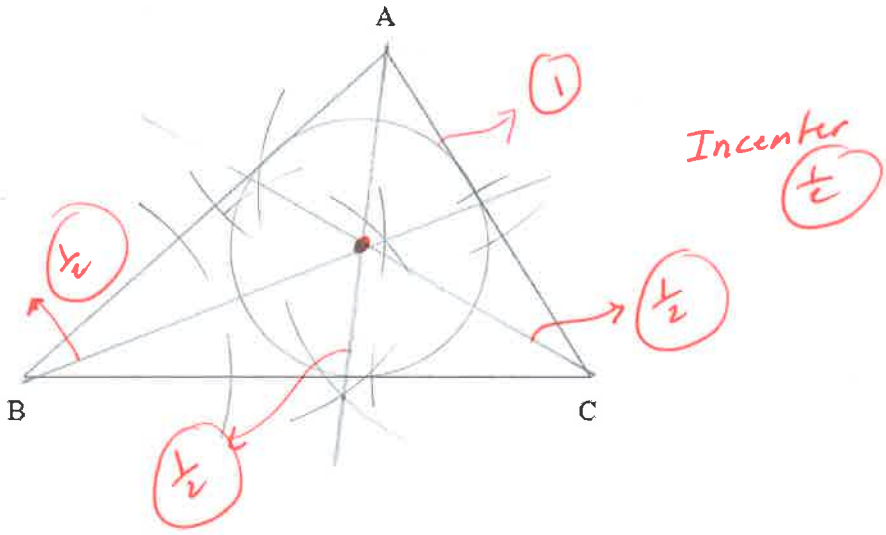
b. 378.252×10^4

VI. a. Construct the three angle bisectors in triangle ABC. [3 marks]

b. Construct the inscribed circle of triangle ABC

c. Name the point of intersection of the three angle bisectors.

Note: Do all of the constructions on the exam sheet.



VII. In the figure below, ABC is a traingle such that $BC = 6cm, AC = 3cm$ *and* $A\hat{C}B = 60^0$.

I is the midpoint of [BC]. [14 marks]

a. Give a particular name for the segment [AI] in triangle ABC. Justify. (1 mark)

b. Calculate the measure of the segment [CI] and then deduce that $[CA] = [CI]$. (2 marks)

c. Prove that ACI is an equilateral triangle. (3.5 marks)

d. Find the measure of the angle $A\hat{I}B$. (1.5 marks)

e. Find the nature of triangle AIB. (2.5 marks)

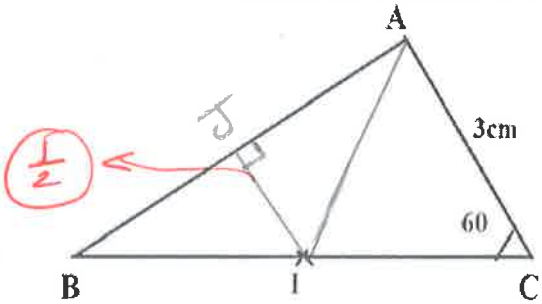
f. Find the measure of the two angles

$I\hat{A}B$ *and* $I\hat{B}A$. (2 marks)

g. Draw the height [IJ] relative to [AB]. (0.5 mark)

(draw the height on the question sheet)

Figure not accurately drawn



What does [IJ] represent in triangle AIB? Justify. (1 mark)

Note: Don't redraw the figure on the answer sheet

Solution of SE03 — Class 1

7ABCE_Maths_20222023

I. a. $3^2 \times 2 - (2^4 - 3 \times 5)^{100} + 10^0$

$= 9 \times 2 - (16 - 15)^{100} + 1$

$= 18 - 1^{100} + 1$

$= 18 - 1 + 1$

$= 18$ (3)

b. $\left(\frac{5}{2} - \frac{3}{14}\right) \div \left(\frac{1}{1} + \frac{1}{7}\right)$

$= \left(\frac{35}{14} - \frac{3}{14}\right) \div \left(\frac{7}{7} - \frac{1}{7}\right)$

$= \frac{32}{14} \div \frac{8}{7}$ (3)

$= \frac{32}{14} \times \frac{7}{8} = \frac{4}{2} = 2$ (2)

II. $A = \frac{3^2 \times 5^2 \times 7^3}{35^2 \times 3^3} = \frac{3^2 \times 5^2 \times 7^3}{5^2 \times 7^2 \times 3^3} = \frac{7}{3}$

III. a. $2a^{-3}b \times a^{-3}b^4 = 2a^{-6}b^5 = \frac{2b^5}{a^6}$ (2)

b. $(3x^{-1}y^3)^2 = 3^2 x^{-2} y^6 = \frac{9y^6}{x^2}$ (2)

c. $\frac{4x^5y^{-3}}{3x^2y} = \frac{4x^3y^{-4}}{3} = \frac{4x^3}{3y^4}$ (2)

d. $\frac{p^2}{3p^3} = \frac{1}{3p}$ (1)

IV. $A = 4 \times (11^3 \times 2)^2 \times 22^3$

$= 2^2 \times 11^6 \times 2^2 \times 2^3 \times 11^3$

$= 2^7 \times 11^9$ (3)

V. a. $19980 = 1.998 \times 10^4$ (1)

b. $378.252 \times 10^4 = 3.78252 \times 10^2 \times 10^4$

$= 3.78252 \times 10^6$ (1)

VI. on the question sheet.

VII. a. [AI] is the median relative to [BC] since it is issued from the vertex A to the midpoint of [BC]. (1)

b. $CI = \frac{BC}{2} = \frac{6}{2} = 3$ cm (I is the midpoint of [BC])

then $CA = CI = 3$ cm. (2)

c. Since $AC = CI$ (proved), then ACI is an isosceles triangle of main vertex C.

$C\hat{A}I = C\hat{I}A = \frac{180^\circ - A\hat{C}I}{2}$ (base angles of isosceles triangle ACI)

$= \frac{180^\circ - 60^\circ}{2}$

$= \frac{120^\circ}{2} = 60^\circ$

(3.5)

Since $C\hat{A}I = C\hat{I}A = A\hat{C}I = 60^\circ$

then ACI is an equilateral triangle.

d. $A\hat{I}B = B\hat{I}C - A\hat{I}C$ ($B\hat{I}C$ is a straight angle)

$= 180° - 60°$

$= 120°$ (1.5)

e. $AI = CI$ (sides of equilateral triangle ACI)

$BI = CI$ (I is the midpoint of [BC])

then $AI = BI$ (by comparison) (2.5)

therefore AIB is an obtuse isosceles triangle of main vertex I.

f. $I\hat{A}B = I\hat{B}A = \frac{180° - A\hat{I}B}{2}$ (base angles of isosceles triangle AIB)

(2) $= \frac{180° - 120°}{2}$

$= \frac{60°}{2} = 30°$

g. drawing on the question sheet. ($\frac{1}{2}$)

[IJ] is the height relative to [AB] (given), but since AIB is an isosceles triangle, then [IJ] is also the median, perpendicular bisector and angle bisector at the same time.

(1)