This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls — Loueizeh - Baabda

Stage Exam 02
19DEC2022

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

Subject :	Maths
Class :	8A, 8B, 8C and 8E
Teacher :	Mrs. Rima Al Banna
Duration :	1 hour

1. Write all your solutions neatly on a separate paper unless stated otherwise.
2. Show all your work.
3. 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.

I) Write in the form of an irreducible fraction: (4 marks)

$A=\frac{-2a}{3}+\frac{-5a}{-6}+\frac{3a}{2}$ B= $\frac{3x-8}{x-2}+\frac{5-x}{-2+x}$

II) Given the following numbers: (5 marks)

$A=2\sqrt{27}-2\sqrt{3}+\sqrt{12}$ $B=\sqrt{75}+\sqrt{48}-7\sqrt{3}$ $C=\left(4\sqrt{5}+2\sqrt{11}\right)\left(4\sqrt{5}-2\sqrt{11}\right)$

a) Simplify A, B and C.
b) Show that: $A\times B=C$

III) Compare: (4 marks)

a) $-7\sqrt{5}$ and $-5\sqrt{7}$
b) $\frac{1}{3\sqrt{3}}$ and $\frac{1}{4\sqrt{2}}$

IV) Rationalize the denominator: (3 marks)

$\frac{3\sqrt{5}}{4\sqrt{2}}$; $\frac{\sqrt{3}-5\sqrt{2}}{\sqrt{3}}$

V) Solve the following equations: (5 marks)

a. $x^2+9=0$

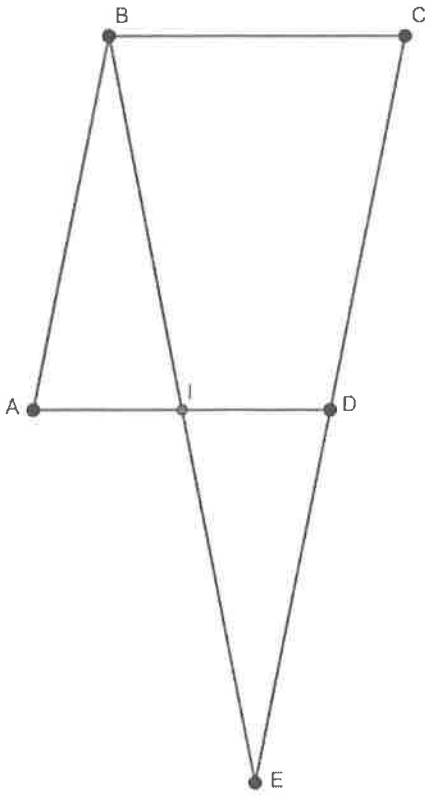
b. $7\left(x^2-10\right)=-21$

c. $\frac{5(3x+1)-2(7x-2)}{4}=1$

VI) Given quadrilateral ABCD, O is the point of intersection of its diagonals [AC] and [BD]. In each of the following cases, choose one more information to become sufficient for ABCD to be a parallelogram. (2 marks)

No.	Given Information	Additional Information		
		a	b	c
1	AB = CD	AO = OC	BC = AD	$\widehat{ABC}=\widehat{ADC}$
2	OA = OC	OB = OD	BC = AD	(AD) ∥ (BC)
3	$\widehat{BAD}=\widehat{BCD}$	AD = BC	$\widehat{ADC}=\widehat{ABC}$	OB =OD
4	$(AB)\parallel(DC)$	OB = OD	AC = BD	AB = DC

VII) ABCD is a parallelogram, such that: AB = 5 cm, AD= 4 cm and BD=6.5 cm.
I is the midpoint of [AD], and E is the symmetric of B with respect to I.



1) Show that quadrilateral ABDE is a parallelogram.
2) Prove that the points C, D and E are collinear.
3) Deduce that D is the midpoint of [CE].
4) Calculate the perimeter of ABDE.

(7 marks)

Solution of SE02 Maths - 8ABCE

Class1

I) $A = \frac{-2a^{x2}}{3x^2} + \frac{-5a}{-6} + \frac{3a^{x3}}{2x^3}$

$= \frac{-4a}{6} + \frac{5a}{6} + \frac{9a}{6} = \frac{10a}{6} \div 2 = \frac{5a}{3}$ (2)

$B = \frac{3x-8}{x-2} + \frac{5-x}{-2+x} = \frac{3x-8}{x-2} + \frac{5-x}{x-2}$ $\quad x-2 \neq 0$, $x \neq 2$

$= \frac{3x-x-8+5}{x-2}$ (2)

$= \frac{2x-3}{x-2}$

II. $A = 2\sqrt{27} - 2\sqrt{3} + \sqrt{12}$

a) $= 2\sqrt{3^3} - 2\sqrt{3} + \sqrt{2^2 \times 3} = 6\sqrt{3} - 2\sqrt{3} + 2\sqrt{3}$ (1½)

$= (6-2+2)\sqrt{3} = 6\sqrt{3}$

$B = \sqrt{75} + \sqrt{48} - 7\sqrt{3}$

$= \sqrt{3 \times 5^2} + \sqrt{2^4 \times 3} - 7\sqrt{3} = 5\sqrt{3} + 4\sqrt{3} - 7\sqrt{3}$

$= (5+4-7)\sqrt{3} = 2\sqrt{3}$ (1½)

$C = (4\sqrt{5} + 2\sqrt{11})(4\sqrt{5} - 2\sqrt{11}) = 16 \times 5 - 8\sqrt{55} + 8\sqrt{55} - 4 \times 11$

$= 80 - 0 - 44$

$= 36$ (1½)

b) $A \times B = 6\sqrt{3} \times 2\sqrt{3} = 12 \times 3 = 36 = C$ (½)

III a) $-7\sqrt{5}$ $\quad$ $-5\sqrt{7}$

$-\sqrt{49\times5}$ $\quad$ $-\sqrt{25\times7}$

$-\sqrt{245}$ ✓ $\quad$ $-\sqrt{175}$ ✓

since $-\sqrt{245} < -\sqrt{175}$ ✓

then $-7\sqrt{5} < -5\sqrt{7}$ ✓ (2)

b) $\frac{1}{3\sqrt{3}}$ $\quad$ $\frac{1}{4\sqrt{2}}$

$3\sqrt{3}$ $\quad$ $4\sqrt{2}$

$\sqrt{9\times3}$ $\quad$ $\sqrt{16\times2}$

$\sqrt{27}$ ✓ $\quad$ $\sqrt{32}$ ✓

since $\sqrt{27} < \sqrt{32}$ ✓

then $\frac{1}{\sqrt{27}} > \frac{1}{\sqrt{32}}$ (2)

$\frac{1}{3\sqrt{3}} > \frac{1}{4\sqrt{2}}$ ✓

IV $\frac{3\sqrt{5}}{4\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$ ✓ $= \frac{3\sqrt{10}}{8}$ ✓ (1)

$\frac{\sqrt{3}-5\sqrt{2}}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$ ✓ $= \frac{3-5\sqrt{6}}{3}$ ✓ (2)

V a) $x^2 + 9 = 0$

$x^2 = -9$ ✓ (1)

$\Rightarrow$ this equation admits no solution. ✓

b) $7(x^2-10) = -21$

$7x^2 - 70$ ✓ $= -21$

$7x^2 = -21 + 70$ ✓

$7x^2 = +49$ ✓

$x^2 = \frac{49}{7} = 7$ ✓ (2)

then $x = +\sqrt{7}$ or $x = -\sqrt{7}$ ✓ ✓

C. $\frac{5(3x+1)-2(7x-2)}{4} = 1$

$15x + 5 - 14x + 4 = 4$

$15x - 14x = 4 - 4 - 5$ (2)

$x = -5$

VI 1. b 2. a 3. b 4. C (2)

VII In quad. ABDE we have:

I is the midpt. of [AD] (given)

I is the midpt. of [BE] (by symmetry) (1½)

∴ ABDE is a parallelogram since its diagonals bisect each other.

2) (CD)//(AB) (property of parm ABCD)

(DE)//(AB) (property of parm ABDE) (2)

∴ (CD)//(DE) if 2 lines are parallel to a third then they parallel to each other but they have point D in common then points C, D and E are collinear.

3) DC = AB (property of parm ABCD)

DE = AB (property of parm ABDE) } ⇒ DC = DE (by comparison)

(2)

then D is midpt. of [CE].

4) Perimeter of ABDE = 2 × AB + 2 × BD

= 2 (5) + 2 (6.5) (1½)

= 10 + 13

= 23 cm.