This is a Class 1 exam

Lebanon Evangelical School for Boys and Girls

Lebanon Evangelical School

for Boys and Girls Loueizeh - Baabda

Stage Exam 05

27APR2026

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. Show all of your work.
2. 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.

Exercise 1: [8pts]

Given the two expressions:

$A(x) = (3x - 2)^2 - (2 - 3x)(x + 3) - (9x^2 - 4)$

$B(x) = (4x - 3)^2 - (x - 1)^2$

1) Expand and reduce $A(x)$.
2) Factorize $A(x)$ *and* $B(x)$.
3) Solve the equation $A(x) = 0$.
4) Solve the equation $A(x) = B(x)$.
5) Calculate $A\left(\frac{2}{3}\right)$

Exercise 2: [4pts]

Solve the following equations:

1) $(7x - 3)^2 - 4(x + 1)^2 = 0$

2) $(5x + 3)^2 + \frac{4}{9} = 0$

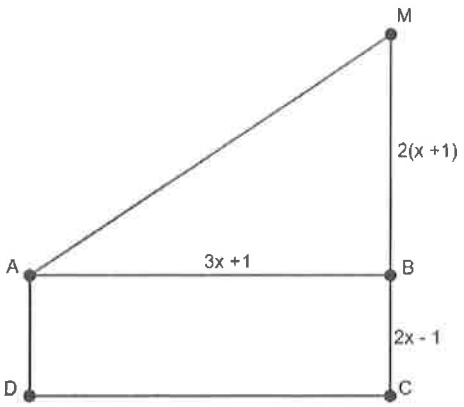
3) $x^2 + 2x - 15 = 0$

Exercise 3: [4pts]

In the adjacent figure:

- x is a length expressed in cm such that $x > 1$.
- ABCD is a rectangle such that AB = 3x + 1 and BC = 2x – 1
- ABM is a triangle, right angled at B, such that MB = 2(x + 1)

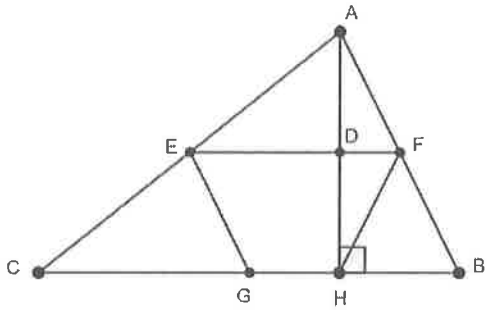
1) Calculate, in terms of x, A_1 the area of rectangle ABCD and A_2 that of triangle ABM.
2) Calculate x so that $A_1 = A_2$.



Exercise 4: [8pts]

ABC is a triangle. F, E and G are the midpoints of [AB], [AC] and [BC] respectively. [AH] is the height relative to [BC].

1) Prove that quadrilateral EFHG is an isosceles trapezoid.
2) [EF] intersect [AH] at D.
   Prove that D is the midpoint of [AH].



Solution of SE04 Maths 8 ABCE

Class 1

Exercise: 1

1) $A(x) = (3x-2)^2 - (2-3x)(x+3) - (9x^2-4)$

$A(x) = 9x^2 - 12x + 4 - (2x + 6 - 3x^2 - 9x) - 9x^2 + 4$

$A(x) = 9x^2 - 12x + 4 - 2x - 6 + 3x^2 + 9x - 9x^2 + 4$

$A(x) = 3x^2 - 5x + 2$ (2 1/2)

2) $A(x) = (3x-2)^2 - (2-3x)(x+3) - (9x^2-4)$

$A(x) = (3x-2)^2 + (3x-2)(x+3) - (3x+2)(3x-2)$

$A(x) = (3x-2)[3x-2+x+3-3x-2)$

$A(x) = (3x-2)(x-1)$ (1 1/2)

$B(x) = (4x-3)^2 - (x-1)^2$

$B(x) = [(4x-3)+(x-1)][(4x-3)-(x-1)]$

$B(x) = (5x-4)(3x-2)$ (1)

3) $A(x) = 0$

$(3x-2)(x-1) = 0$

$\Rightarrow 3x-2=0$ OR $x-1=0$

$3x = 2$ $\quad x = 1$.

$x = \frac{2}{3}$ (1)

4) $A(x) = B(x)$

$(3x-2)(x-1) = (5x-4)(3x-2)$

$(3x-2)(x-1) - (5x-4)(3x-2) = 0$

$(3x-2)(x-1-5x+4) = 0$

$(3x-2)(-4x+3) = 0$

$3x-2=0$ OR $-4x+3=0$

$3x = 2$ $\quad -4x = -3$

$x = \frac{2}{3}$ $\quad x = \frac{3}{4}$ (1 1/2)

5) $A\left(\frac{2}{3}\right) = \left(3\left(\frac{2}{3}\right)-2\right)\left(\frac{2}{3}-1\right)$

$A\left(\frac{2}{3}\right) = (2-2)\left(\frac{2}{3}-\frac{3}{3}\right)$

$A\left(\frac{2}{3}\right) = 0\left(-\frac{1}{3}\right)$

$A\left(\frac{2}{3}\right) = 0$. (1/2)

Exercise: 2

1) $(7x-3)^2 - 4(x+1)^2 = 0$

$[(7x-3) + 2(x+1)][(7x-3) - 2(x+1)] = 0$

$(7x-3+2x+2)(7x-3-2x-2) = 0$

$(9x-1)(5x-5) = 0$

$5(9x-1)(x-1) = 0$

$9x-1=0$ OR $x-1=0$

$9x = 1$ $x = 1$ (2)

$x = \frac{1}{9}$

2) $(5x+3)^2 + \frac{4}{9} = 0$ (1)

$(5x+3)^2 = -\frac{4}{9} \Rightarrow$ this equation has no solution

3) $x^2 + 2x - 15 = 0$

$(x-3)(x+5) = 0 \Rightarrow x-3=0$ OR $x+5=0$ (1)

$x = 3$ $x = -5$

Exercise: 3.

1) $A_1 = L \times W = AB \times BC = (3x+1)(2x-1)$. (1)

$A_2 = \frac{h \times b}{2} = \frac{MB \times AB}{2} = \frac{2(x+1)(3x+1)}{2} = (x+1)(3x+1)$ (1)

2) $A_1 = A_2$

$(3x+1)(2x-1) = (x+1)(3x+1)$

$(3x+1)(2x-1) - (x+1)(3x+1) = 0$

$(3x+1)(2x-1-x-1) = 0$

$(3x+1)(x-2) = 0$ (2)

$3x+1=0$ OR $x-2=0$

$3x = -1$ $x = 2$ accepted.

$x = -\frac{1}{3}$ rejected.

Exercise: 4.

1) In ΔABC we have:
- E is the midpt. of [AC] (given)
- F is the midpoint of [AB] (given)

$\Rightarrow EF = \frac{BC}{2}$ and $(EF) \parallel (BC)$ (Midsegment theorem)

- E is the midpoint of [AC] (given)
- G is the midpoint of [BC] (given) (5)

$\Rightarrow EG = \frac{AB}{2}$ and $(EG) \parallel (AB)$ (Midsegment theorem)

[HF] is the median relative to the hypotenuse in right angled ΔAHB. $\Rightarrow HF = \frac{AB}{2}$ (property of the median relative to the hypotenuse)

then, $EG = HF = \frac{AB}{2}$.

$\therefore$ EFHG is an isosceles trapezoid for having 2 parallel sides and 2 equal non parallel sides. (¼ each ✓)

2) In ΔAHC we have:
- E is the midpoint of [AC] (given) (3)
- $(EF) \parallel (BC)$ (proven) and since D belongs to [EF] and H belongs to (BC) $\Rightarrow (ED) \parallel (CH)$

$\therefore$ D is the midpoint of [AH] by the Converse of midsegment theorem. (½ each ✓)