This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Stage Exam 01

11NOV2022

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

Subject :	A Level : Maths M0	
Class :	11A and 12A	
Teacher :	Farhan Batch	
Duration :	1 hour	
Calculators 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.

№ 1 You can change temperatures from °F to °C by using the formula: $C = \frac{5(F-32)}{9}$

F is the temperature in °F; C is the temperature in °C

The minimum temperature in an elderly person's home should be 20°C. Mrs. Smith is an elderly person. The temperature in Mrs. Smith's room is 77°F

a) Decide whether or not the temperature in Mrs. Smith's room is lower than the minimum temperature should be. [3 marks]

b) Make F the subject of the formula $C = \frac{5(F-32)}{9}$ [3 marks]

№ 2 Expand and simplify $(p + 9)(p - 4)$ [2 marks]

№ 3 Solve $\frac{5m-8}{3} = 4m + 2$ [3 marks]

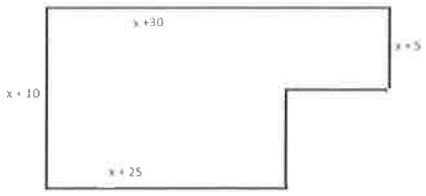
№ 4 Factorize $4x^2 - 9$ [1 mark]

№ 5 Simplify $(9x^8y^3)^{\frac{1}{2}}$ [2 marks]

№ 6 Make b the subject of the formula $a = \frac{2+3b}{b-3}$ [4 marks]

№ 7 work out a simplified expression for the area of this shape. All the angles are right angles.

[3 marks]



№ 8 The functions f and g are given such that: $f(x) = 3 - 4x, \& \; g(x) = 3 + 4x$. Find

(a) $f(6)$ [2 marks]

(b) $g(f(x))$ [3 marks]

(c) $f^{-1}(x)$The inverse of f [3 marks]

№ 9 Stacey bought a handbag in Paris, it costs €64.80. in Manchester, the same type of handbag costs £52.50. use the exchange rate £1=€1.20 to compare the cost of the handbag in Paris to the cost of the handbag in Manchester. [3 marks]

№ 10 Boris, Carla and Dean share an amount of £ 804 in the ratio 3:4:5. What will each get? [3 marks]

№ 11 Solve the equation: [6 marks]

$$\frac{2}{x-5}+\frac{1}{x+1}=3$$

№ 12 Expand and Simplify: $(6-\sqrt{2})(4+\sqrt{2})$ [3 marks]

№ 13 Perform and Simplify:

a) $\dfrac{15x+20}{x^2+9x+14} \div \dfrac{x^2+10x+24}{x^2+11x+28}$ [4 marks]

b) $\dfrac{1}{x^2+5x+6}-\dfrac{1}{2x+6}$ [3 marks]

№ 1 You can change temperatures from °F to °C by using the formula: $C = \frac{5(F-32)}{9}$

F is the temperature in °F; C is the temperature in °C

The minimum temperature in an elderly person's home should be 20°C. Mrs. Smith is an elderly person. The temperature in Mrs. Smith's room is 77°F

a) Decide whether or not the temperature in Mrs. Smith's room is lower than the minimum temperature should be. [3 marks]

b) Make F the subject of the formula $C = \frac{5(F-32)}{9}$ [3 marks]

a) $C = \frac{5(77-32)}{9} = \frac{5(45)}{9} = 25$, not lower than the minimum

b) $9C = 5F - 160$

$9C + 160 = 5F \qquad F = \frac{9C+160}{5}$

№ 2 Expand and simplify $(p+9)(p-4)$ [2 marks]

$= p^2 - 4p + 9p - 36$

$= p^2 + 5p - 36$

№ 3 Solve $\frac{5m-8}{3} = 4m + 2$ [3 marks]

$12m + 6 = 5m - 8$

$12m - 5m = -8 - 6$

$7m = -14$

$m = \frac{-14}{7} = -2$

№ 4 Factorize $4x^2 - 9$ [1 mark]

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

№ 5 Simplify $(9x^8y^3)^{\frac{1}{2}}$ [2 marks]

$= 9^{1/2} x^{8/2} y^{3/2} = 3x^4 y^{3/2}$

№ 6 Make b the subject of the formula $a = \frac{2+3b}{b-3}$ [4 marks]

$ab - 3a = 2 + 3b$

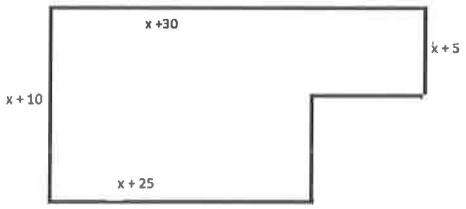
$ab - 3b = 2 + 3a$

$b(a-3) = 2 + 3a$

$b = \frac{2+3a}{a-3}$

№ 7 work out a simplified expression for the area of this shape. All the angles are right angles.

[3 marks]



Area of Rectangle

$(x+30)(x+10)$

$= x^2 + 40x + 300$

Area of Square

$= 5 \times 5 = 25$

Area of Shape $= x^2 + 40x + 300 - 25$

$= x^2 + 40x + 275$

№ 8 The functions f and g are given such that: $f(x) = 3 - 4x$, & $g(x) = 3 + 4x$. Find

(a) $f(6)$ [2 marks]

(b) $g(f(x))$ [3 marks]

(c) $f^{-1}(x)$ The inverse of f [3 marks]

a) $f(6) = 3 - 4(6) = 3 - 24 = -21$

b) $g(f(x)) = g(3-4x) = 3 + 4(3-4x) = 3 + 12 - 16x = 15 - 16x$

c) $y = 3 - 4x$

$x = 3 - 4y$

$x - 3 = -4y$

$4y = 3 - x$

$y = \frac{3-x}{4}$

№ 9 Stacey bought a handbag in Paris, it costs €64.80. in Manchester, the same type of handbag costs £52.50. use the exchange rate £1=€1.20 to compare the cost of the handbag in Paris to the cost of the handbag in Manchester. [3 marks]

Price in Euro € of the bag bought in Manchester

$52.50 \times 1.20 = €\ 63.00$

in Manchester the bag is cheaper

№ 10 Boris, Carla and Dean share an amount of £ 804 in the ratio 3:4:5. What will each get? [3 marks]

Boris : $\frac{3}{3+4+5} \times 804 = £201$

Carla : $\frac{4}{3+4+5} \times 804 = £268$

Dean : $\frac{5}{3+4+5} \times 804 = £335$

№ 11 Solve the equation: [6 marks]

$$\frac{2}{x-5}+\frac{1}{x+1}=3$$

$$\frac{2(x+1)}{(x-5)(x+1)}+\frac{1(x-5)}{(x-5)(x+1)}=\frac{3(x-5)(x+1)}{(x-5)(x+1)}$$

$$2x+2+x-5=3(x^2-5x+x-5)$$

$$3x-3=3x^2-12x-15$$

$$3x^2-15x-12=0$$

$$x_1=\frac{15-\sqrt{(15)^2-4(3)(-12)}}{2(3)}=\frac{15-\sqrt{369}}{6}$$

$$x_2=\frac{15+\sqrt{369}}{6}$$

№ 12 Expand and Simplify: $(6-\sqrt{2})(4+\sqrt{2})$ [3 marks]

$$=24+6\sqrt{2}-4\sqrt{2}-2=22+2\sqrt{2}$$

№ 13 Perform and Simplify:

a) $\frac{15x+20}{x^2+9x+14} \div \frac{x^2+10x+24}{x^2+11x+28}$ [4 marks]

$$=\frac{5(3x+4)}{(x+2)(x+7)} \div \frac{(x+6)(x+4)}{(x+7)(x+4)}$$

$$=\frac{5(3x+4)}{(x+2)(x+7)} \times \frac{(x+7)(x+4)}{(x+6)(x+4)}=\frac{5(3x+4)}{(x+2)(x+6)}$$

b) $\frac{1}{x^2+5x+6}-\frac{1}{2x+6}$ [3 marks]

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

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

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