This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls
Loucizeh - Baabda

Stage Exam 06

20JUN, 21JUN2022

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

Subject :	Maths
Class :	7A and 7E
Teacher :	Miss Lydia Goodwin
Duration :	1 hour

Show ALL your work. Calculators are NOT allowed. Answer on grid/squared paper.

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.

SE06/20212022/Maths/7AE

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

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

I. Simplify.

a. $-20 - 3 + (-40) + (-3)$ [2 marks]

b. $-12 + 5 - 4 - (-19)$

II. Simplify. Write your answer in lowest terms. [3.5 marks]

a. $\frac{7}{12} - \frac{3}{8}$

b. $\frac{9}{28} \div \frac{15}{8}$

III. Expand and reduce the following expressions. [6 marks]

a. $-6(x + 2) - 2x$

b. $(x + 5)(3x - 4)$

c. $(2y + 7)^2$

IV. Factorize the following expressions. [4 marks]

a. $x^2 + 3x$

b. $6x^3y^2 - 33x^4y$

c. $(r + 9) + 3p(r + 9)$

V. Solve the following equations. [5.5 marks]

a. $-2 + \frac{m}{4} = -12$

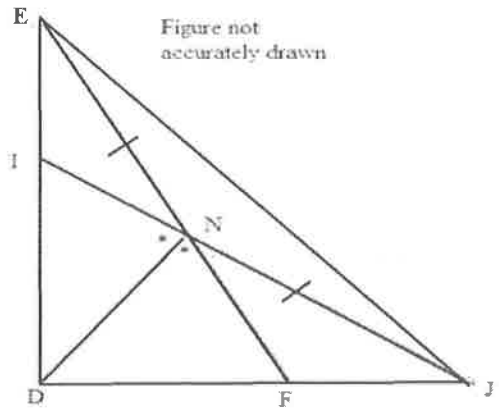
b. $-2(x + 5) = -x + 3$

VI. Solve the following problem. [2 marks]

Hani and his friends planned to go for a long drive. He bought 12 bottles of water and a few bottles of orange juice from Spinneys. The total number of bottles they had was four times that of water bottles. How many bottles of orange juice did Hani buy? Write an equation to solve your problem.

VII. DEF is a right triangle at D. D$\hat{N}$I = D$\hat{N}$F and [DN) is the bisector of $I\hat{D}F$. [13 marks]

a. Prove that the two triangles DNI and DNF are congruent.
b. Determine the homologous elements.
c. (NI) cuts (DF) at J such that $NJ = NE$.
   Show that the two triangles NFJ and NIE are congruent.
d. Deduce the nature of triangle EDJ.



Don't redraw the figure on your answer sheet

I

a) $-20 - 3 + (-40) + (-3)$

$= -23 + -43$

$= \boxed{-66}$ (1)

b) $-12 + 5 - 4 - (-19)$

$= -12 + 5 - 4 + 19$

$= -7 - 4 + 19$

$= -11 + 19$

$= \boxed{8}$ (1)

II

a) $\frac{7}{12} - \frac{3}{8}$

$= \frac{14}{24} - \frac{9}{24}$ (1)

$= \boxed{\frac{5}{24}}$ (0.5)

b) $\frac{9}{28} \div \frac{15}{8}$

$= \frac{9}{28} \times \frac{8}{15}$ (1)

$= \frac{9 \div 3}{28 \div 4} \times \frac{8 \div 4}{15 \div 3}$

$= \frac{3 \times 2}{7 \times 5}$

$= \boxed{\frac{6}{35}}$ (1)

III.

a) $-6(x+2) - 2x$

$= -6x + (-12) - 2x$

$= -6x + (-2x) + (-12)$

$= \boxed{-8x - 12}$ (2)

b) $(x+5)(3x-4)$

$(x+5)(3x+-4)$

First: $(x)(3x) = 3x^2$

Outter: $(x)(-4) = -4x$

Inner: $(5)(3x) = 15x$

Last: $(5)(-4) = -20$

$\boxed{3x^2 - 4x + 15x - 20}$ (2) combine like terms

$\boxed{3x^2 + 11x - 20}$

c) $(2y+7)^2$

$(a+b)^2 = a^2 + 2ab + b^2$

$a = 2y$; $b = 7$

$(2y+7)^2 = (2y)^2 + 2(2y)(7) + (7)^2$

$= \boxed{4y^2 + 28y + 49}$ (2)

IV

a) $x^2 + 3x$

$\boxed{x(x+3)}$ (1)

b) $6x^3y^2 - 33x^4y$

$\boxed{3x^3y(2y - 11x)}$ (1)

c) $(r+9) + 3p(r+9)$

$\boxed{(r+9)(1+3p)}$ (2)

V

a) $-2 + \frac{m}{4} = -12$

$+2 \qquad +2$ (1)

$(\frac{4}{1})\frac{m}{4} = -10(4)$ (1)

$\boxed{m = -40}$ (1)

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

$-2x + (-10) = -x+3$

$+x \quad +10 \quad +x \quad +10$

$-x = 13$

$\boxed{x = -13}$ (2.5)

VI Let x be the numer of orange juice bottles.

Total bottles $= (4)(12) = 48$

$x + 12 = 48$

$-12 \quad -12$

$x = 36$

Hani bought 36 orange juice bottles. (2)

VII a) R.T.P: $DN\hat{I} = DN\hat{F}$

Proof:

intro: In triangles DNI and DNF we have: (1)

Body:

(1) $D\hat{N}I = D\hat{N}F$ (given) (1)

(2) DN is a common side (1)

(3) $N\hat{D}I = N\hat{D}F$ ([DN) bisects $I\hat{D}F$) (1)

Conclusion: Hence, the two triangles DNI and DNF are congruent by A.S.A. (1)

b) Homologous Elements:

(1) $D\hat{I}N = D\hat{F}N$ (0.5)

(2) DI = DF (0.5)

(3) NI = NF (0.5)

c) R.T.P.: $NFJ \cong NIE$

Proof:

Intro: In triangles NFJ and NIE we have: (1)

Body:

① $EN = JN$ (given) (1)

② $E\hat{N}I = J\hat{N}F$ (vertically opposite angles) (1)

③ $IN = NF$ (by H.E. of congruent triangles DNI and DNF) (1)

Conclusion: Hence, the two triangles NFJ and NIE are congruent by S.A.S. (1)

d)

$ED = EI + ID$ and

$JD = JF + FD$ but,

$EI = JF$ and $ID = FD$ by HE of congruent triangles NFJ and NIE.

Therefore, $ED = JD$ by comparison and EDJ is a right isosceles triangle of main vertex D. (1.5)