



The National  
Orthodox School  
Shmaisani

Mark

40

Subject: Mathematics

First Exam / Second Semester

Name: *Answers*

Grade-Section: 8 CS ( )

Date:

Duration: 1 hour

**READ THESE INSTRUCTIONS FIRST.**

Write candidate name, class and section in the spaces provided above.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, and glue or correction fluid.

Number of pages: 6

Answer all questions. Number of questions: 8

The number of marks is given at the beginning of each question or part question.

QUESTION NUMBER	MARK SCHEME
1	7
2	4
3	6
4	6
5	6
6	5
7	4
8	2
<b>TOTAL</b>	<b>40</b>

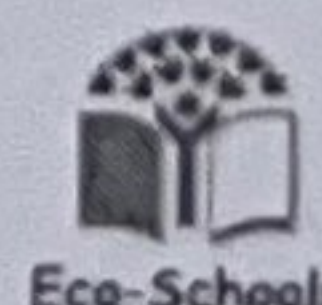
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Question 1

7 marks

Simplify. Write with a single positive index.

•  $y^{-5} \times y^{-2} \times y^{10}$

$$y^{-5-2+10}$$

$$y^3$$

•  $y^4 \times y^{16} \div y^{35}$

$$y^{20-35}$$

$$y^{-15} = \frac{1}{y^{15}}$$

•  $80y^7 \div 2y^{-2}$

$$40y^{7-(-2)}$$

$$40y^9$$

•  $(2a^2)^{-3}$

$$2^{-3} a^{-6} = \frac{1}{2^3 a^6} = \frac{1}{8a^6}$$

•  $9(ab^9)^2$

$$9a^2 b^{18}$$

•  $\frac{8(ab)^4}{4(ab)^6}$

$$2(ab)^{-2} = \frac{2}{(ab)^2} = \frac{2}{a^2 b^2}$$

•  $(-8ab^5) \times (-3a^2b)$

$$24a^3 b^6$$

Question 2

4 marks

Collect like terms together and simplify.

•  $24ab + xy - 7xy - 20ab$

$$4ab - 6xy$$

•  $-8a^2 + 2a^2 - 2b + 9b - 7b + 2c^2$

$$-6a^2 + \cancel{7b} - \cancel{7b} + 2c^2$$

$$2c^2 - 6a^2$$

Question 3

6 marks

Write as a single fraction in the simplest form. Show your work!

•  $\frac{5}{x} + \frac{3x}{2x} =$

$$\frac{10}{2x} + \frac{3x^2}{2x} = \frac{3x^2 + 10}{2x}$$

•  $\frac{9}{1} - \frac{2}{y} =$

$$\frac{9y}{y} - \frac{2}{y} = \frac{9y - 2}{y}$$

Question 4

6 marks

Simplify the following algebraic fractions. Show your work!

$$\bullet \frac{5(y+6)}{10(y+6)} = \frac{\cancel{5} \cdot \cancel{(y+6)}}{\cancel{2} \cdot \cancel{5} \cdot \cancel{(y+6)}} = \frac{1}{2}$$

Factorize then simplify.

$$\bullet \frac{4x^3 + 8x^2}{4x^2 + 8x} = \frac{\overset{\div 4}{\cancel{4}x^2}(\cancel{x+2})}{\underset{\div 4}{\cancel{4}x}(\cancel{x+2})} = x$$

Question 5

6 marks

Expand and simplify to the simplest form. Show your work!

$$\bullet 7(x - 7) - 3(x + 1)$$
$$7x - 49 - 3x - 3$$
$$4x - 52$$

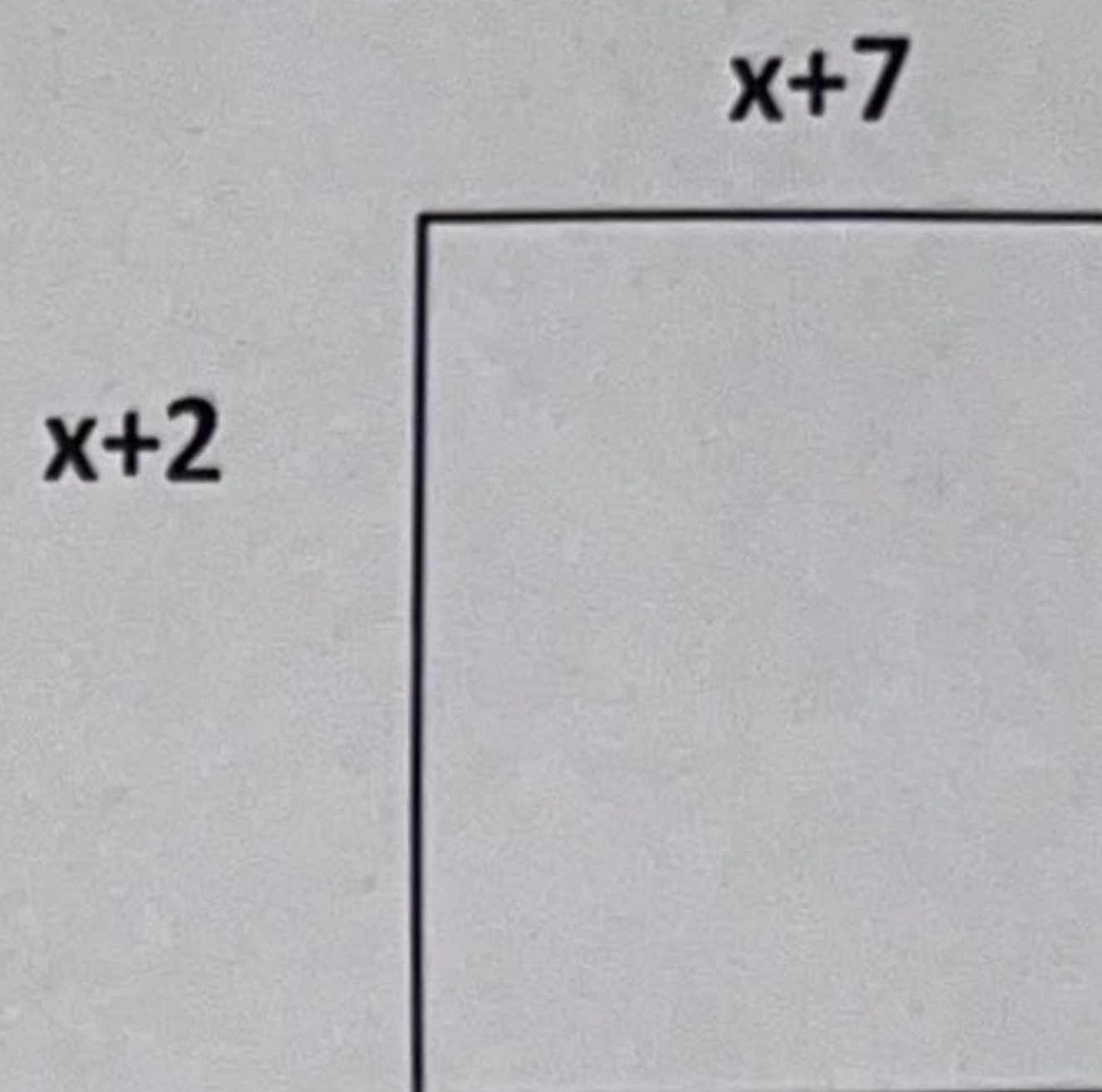
$$\bullet (6 - x)^2$$
$$(6 - x)(6 - x)$$
$$36 - 6x - 6x + x^2$$
$$x^2 - 12x + 36$$

Question 6

5 marks

Write down an expression for the area of the following rectangle:

$$\begin{aligned} \text{Area} &= (x+2)(x+7) \\ &= x^2 + 7x + 2x + 14 \\ &= x^2 + 9x + 14 \end{aligned}$$



$$\text{Area}_{\text{rectangle}} = L \times W$$

Question 7

4 marks

Find the value of

- $y^2 + 2y + 8$

when  $y = -2$

$$\begin{aligned} &y^2 + 2y + 8 \\ &= (-2)^2 + 2(-2) + 8 \\ &= 4 - 4 + 8 = 8 \end{aligned}$$

- $7mnr$

when  $m = -10$ ,  $n = 5$ ,  $r = 1$

$$\begin{aligned} &7mnr \\ &= 7(-10)(5)(1) \\ &= -350 \end{aligned}$$

Question 8

2 marks

Complete the following statements:

$$x^2 - 81 = (x + \boxed{9})(x - \boxed{9})$$

$$x^2 + 10x + 25 = (x + \boxed{5})^2$$