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| Class | Index Number |
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Candidate Name _____

I  **Secondary Two Express**
MATH **Mid-Year Examination**
(Algebra Questions)

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MATHEMATICS
PAPER 1

Candidates answer on the question paper.

DATE **15 March 2010**

DURATION **1 hour 30 minutes**


INSTRUCTIONS TO CANDIDATES

Write your name, class and index number in the spaces provided on the question paper.
 Answer **all** the questions.
 Write your answers in the spaces provided on the question paper.
 If working is needed for any question, show it in the space below that question.
 Omission of essential working will result in the loss of marks.

NEITHER ELECTRONIC CALCULATORS NOR MATHEMATICAL TABLES MAY BE USED IN THIS PAPER.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part question.
 The total number of marks for this paper is 50.

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|---------------------------|--|
| PARENT'S SIGNATURE | FOR EXAMINER'S USE |
| |  |

1 Factorise the following.

(a) $-29n - 15 + 14n^2$

(b) $64x^2 - 48xy + 9y^2$

Answer (a)..... [1]

(b)..... [1]

2 Factorise the following expressions completely.

(a) $a^4 - 16$

(b) $5h + 1 - 2k - 10hk$

Answer (a)..... [2]

(b)..... [2]

3 Solve the equation $81x^2 - 9 = 7$

Answer [2]

4 Expand the following.

(a) $(4 - \frac{2a}{5})^2$

(b) $(-mp - m^2)(-mp + m^2)$

(c) $(4x - 5y)(4y + 5x)$

Answer (a)..... [1]

(b) [1]

(c) [1]

5 Express $\frac{(3x-2y)^2}{4y^2-9x^2}$ as a single fraction in the simplest form.

Answer [3]

6 Factorise $25p^3q - 10q^2 + 10p^2q^2 - 25pq$

Answer [3]

7 Factorise the following.

(a) $1 - \frac{m^4}{49}$

(b) $-120a + 9ab^2 - 6ab$

Answer (a)..... [1]

(b)..... [2]

8 Solve the equation $\frac{3h}{4(3h-1)} - 1 = \frac{3}{2(1-3h)}$.

Answer [4]

- 9 (a) Given that $4 = \frac{4mn}{4m+n}$, express m in terms of n
- (b) Find the value of m if $n = -1\frac{1}{4}$.

Answer (a)..... [3]

(b)..... [1]

10 Simplify the following expressions:

(a) $a\left(\frac{a-b}{c-a}\right)\left(\frac{a-c}{b-a}\right)$

(b) $\frac{x-2}{2} + \frac{x+3}{4} - \frac{x-5}{8}$

(c) $\frac{3}{a-b} - \frac{5}{a}$

Answer (a)..... [2]

(b)..... [3]

(c)..... [2]

11 Simplify each of the following and express your answer as a fraction in the simplest form.

(a) $\frac{x^2}{y^2} - \frac{3+y^3}{3xy^3}$

(b) $\frac{18x^6y}{(4x^3y)^2} \div \frac{6x^2y^3}{(4x)^3y^8}$

Answer (a)..... [2]

(b)..... [2]

12 It is given that $x = \frac{1+2y}{1-2y}$

(a) If $y = -5$, calculate the value of x , giving your answer as a fraction in its lowest term.

(b) Express y in terms of x .

Answer (a) [2]

(b) [2]

- 13 It is given that $p = \frac{q}{2} + 1$ and $r = \frac{q}{3}$, express r in terms of p only.

Answer [2]

-
- 14 Simplify $\frac{2y^2 - 2xy + x - y}{4y^2 - 1} \times \frac{2y + 1}{y - x}$

Answer [3]