∑ DANEMATHICS
FREE CAPS MATHS RESOURCES

GRADE 10 · ALGEBRAIC EXPRESSIONS

Factorising: Trinomials, Grouping in Pairs & the Cubes (Grade 10)

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
33	50 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 33

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 $x^2 - z^2 + x + z$ factorises fully to ... (1)

A) $(x + z)(x - z)$ **B)** $(x + z)^2$

C) $(x + z)(x - z + 1)$ **D)** $(x - z)(x + z + 1)$

1.2 $x^3 - 10x^2 + 21x$ factorises fully to ... (1)

A) $x(x - 21)(x + 1)$ **B)** $(x - 3)(x - 7)$

C) $x(x - 3)(x - 7)$ **D)** $x(x + 3)(x + 7)$

1.3 $8x^3 - 27$ factorises to ... (1)

A) $(2x - 3)(4x^2 + 6x + 9)$ **B)** $(2x - 3)(2x^2 + 6x + 9)$

C) $(2x - 3)(4x^2 - 6x + 9)$ **D)** $(2x - 3)^3$

1.4 $3x + 3y + ax + ay$ factorises to ... (1)

A) $3(x + y) + a(x + y)$ **B)** $(3x + a)(y + 1)$

C) $(3 + x)(a + y)$ **D)** $(x + y)(3 + a)$

1.5 Which expression is FULLY factorised? (1)

A) $2(x^2 - 4)$ **B)** $2(x - 2)(x + 2)$

C) $(x - 2)(x + 2)$ **D)** $(2x - 4)(x + 2)$

1.6 $x^3 + 64$ factorises to ... (1)

A) $(x + 4)^3$ **B)** $(x + 4)(x^2 + 4x + 16)$

C) $(x - 4)(x^2 + 4x + 16)$ **D)** $(x + 4)(x^2 - 4x + 16)$

1.7 $2ax - 6a - x + 3$ factorises to ... (1)

A) $(x + 3)(2a - 1)$ **B)** $(x - 3)(2a - 1)$

C) $2a(x - 3) - (x - 3)$ **D)** $(x - 3)(2a + 1)$

1.8 A rectangle has area $x^2 - 9$ and length $x + 3$. Its WIDTH is ... (1)

A) $x - 3$ **B)** $x^2 - 12$

C) $3 - x$ **D)** $x + 3$

1.9 Which method factorises $x^3 - 8$? (1)

A) taking out a common factor **B)** grouping in pairs

C) the difference of two squares **D)** the difference of two cubes

1.10 $3x^3 - 24$ factorises fully to ... (1)

A) $(3x - 6)(x^2 + 2x + 4)$ **B)** $3(x - 2)(x^2 - 2x + 4)$

C) $3(x - 2)(x^2 + 2x + 4)$ **D)** $3(x^3 - 8)$

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [10 MARKS]

Factorise the following expressions FULLY.

2.1 $x^3 - 10x^2 + 21x$ (3)

2.2 $x^2 - z^2 + x + z$ **(4)**

2.3 $2x^2 + 7x + 3$ **(3)**

QUESTION 3 [13 MARKS]

Factorise the following FULLY.

3.1 $x^3 + 27$ **(3)**

3.2 $8x^3 - 1$ **(3)**

3.3 $3x^2 - 27$ **(3)**

3.4 Explain why $x^2 + 9$ cannot be factorised while $x^3 + 27$ can, and state what you must ALWAYS check for first. **(4)**

TOTAL: 33 marks

This question paper consists of 3 questions.

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