For Supervisor's use only

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90287

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 2 Mathematics, 2003

90287 Solve problems using a coordinate geometry method

Credits: Two
9.30 am Wednesday 19 November 2003

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

Show ALL working.

If you need more space for any answer, use the page provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–8 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

For Assessor's use only

Achievement Criteria		
Achievement	**Achievement with Merit**	**Achievement with Excellence**
Solve problems using a coordinate geometry method. ☐	Solve problems involving a combination of at least two coordinate geometry methods. ☐	Choose and apply a variety of coordinate geometry methods to solve problems. ☐
Overall Level of Performance ☐		

You are advised to spend 25 minutes answering the questions in this booklet.

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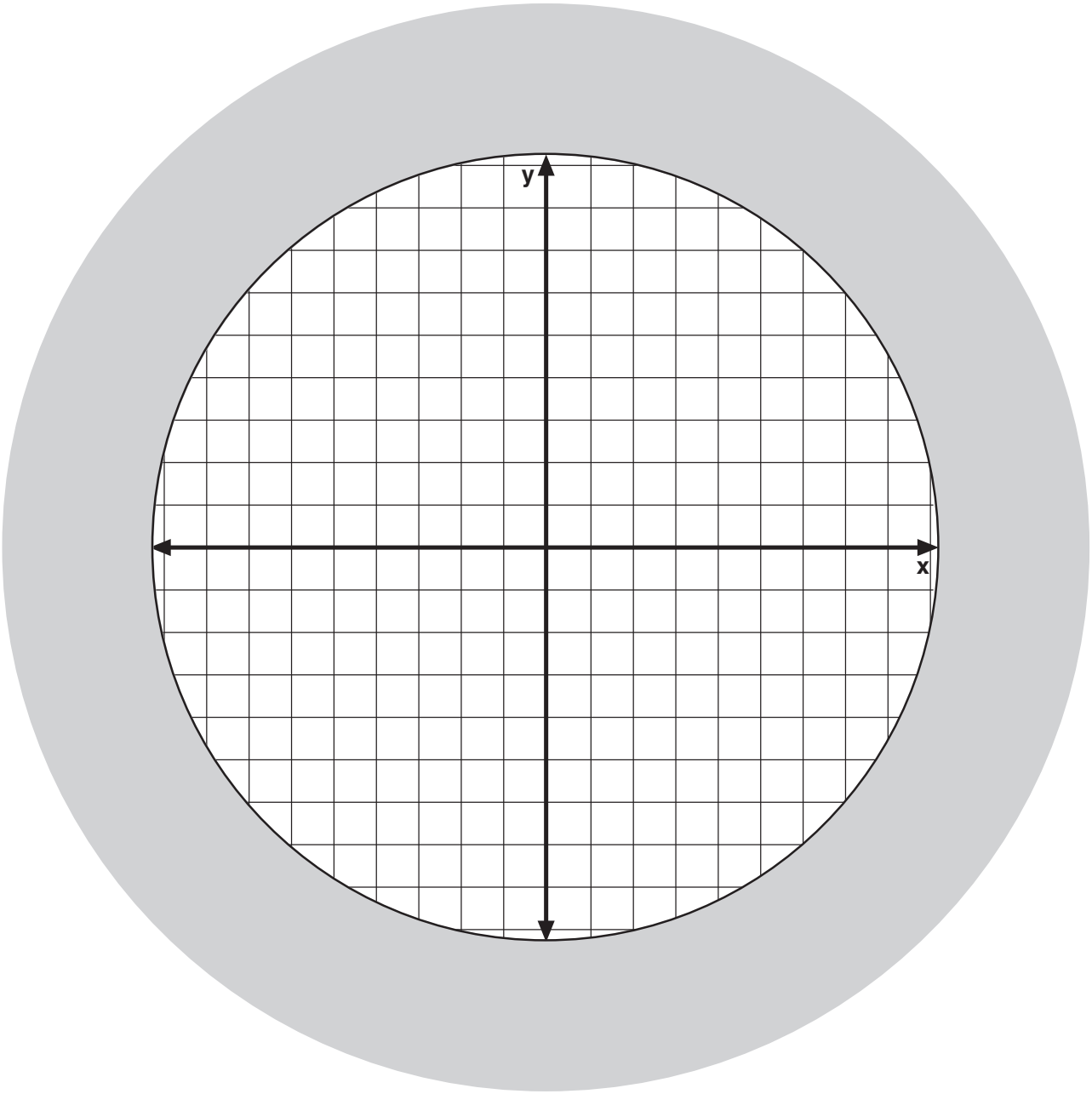
CONSTELLATION HERBERT

One night, Elizabeth was looking through her telescope at the sky.

Use coordinate geometry techniques to solve ALL questions.

Use the axes shown on the grid below to help answer these questions.

Note: The grid lines are 1 light year apart. The stars have single letter names.



Show ALL working.

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QUESTION ONE

(a) Calculate the distance between the star **A** (4, 5) and the star **B** (0, –3).

(b) Find the equation of the line passing through the star **A** (4, 5) and the star **B** (0, –3).

(c) Trish's Comet passes through the point (4, 2) and follows a path parallel to the line $y = -3x + 1$.

Find the equation of the path that Trish's Comet follows.

QUESTION TWO

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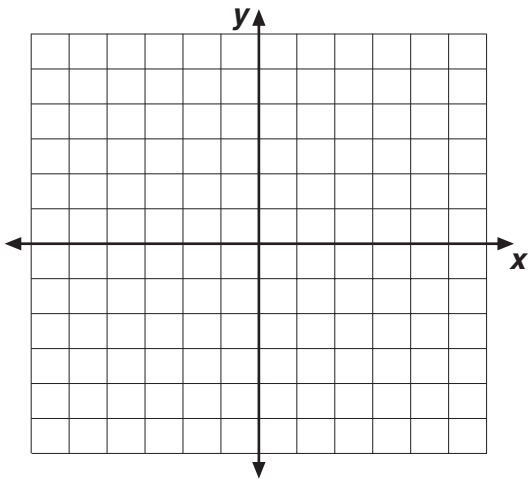
David's Comet follows a path equidistant from the star **B** (0, –3) and the star **D** (–6, 0).

Find the equation of the path that David's Comet follows.

You may use this grid for working.



QUESTION THREE

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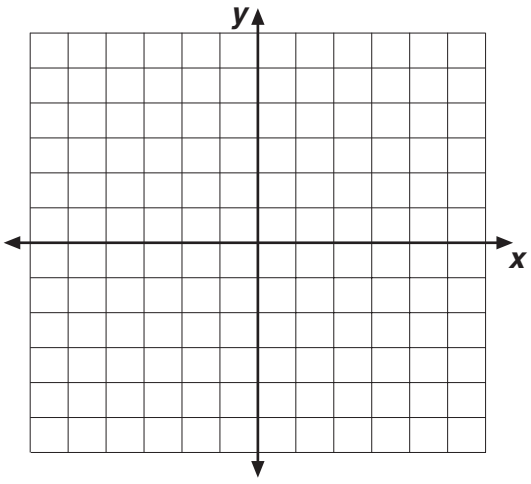
The three stars **A** (4, 5), **B** (0, –3) and **D** (–6, 0) form a triangle.

John's Comet follows a path along the median of this triangle through the star **D** (–6, 0).

Find the equation of the path that John's Comet follows.

You may use this grid for working.



QUESTION FOUR

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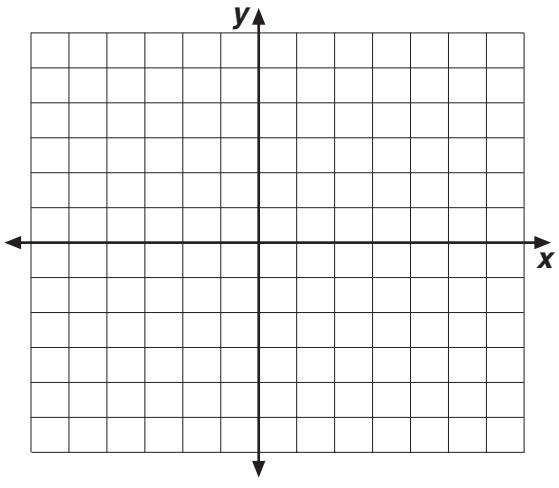
The equation of the line passing through the star **A** (4, 5) and the star **C** (7, –4) is given by $3x + y = 17$.

The equation of the altitude of the triangle **ABC** through the star **B** (0, –3) is given by $x - 3y = 9$.

Calculate the length of the altitude of the triangle **ABC** through vertex **B** (0, –3).

You may use this grid for working.



QUESTION FIVE

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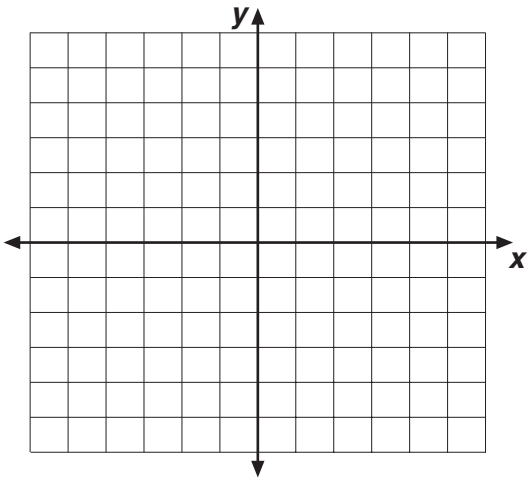
Rona's Comet follows a path that can be modelled by the equation $y = \frac{1}{2}x + 4$.

Calculate the closest distance that Rona's Comet comes to the star **A** (4, 5).

You may use this grid for working.



Extra paper for continuation of answers if required.
Clearly number the question.

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Question Number