For Supervisor's use only

1

90153

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 1 Mathematics, 2006

90153 Use geometric reasoning to solve problems

Credits: Two
9.30 am Friday 24 November 2006

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.

You should show ALL working.

If you need more space for any answer, use the page(s) 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**
Use geometric reasoning to solve problems. ☐	Use, and state, geometric reasons in solving problems. ☐	Solve an extended geometrical problem. ☐
Overall Level of Performance ☐		

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

Assessor's use only

DON'T FENCE ME IN

You should show **ALL** working.

Questions One to Five refer to **different** fence and gate designs.

QUESTION ONE

The diagram shows part of a fence.
AD and **BC** intersect at **E**.
Angle **AEB** = 48°.
Angle **BCD** = 73°.

Calculate the size of angle **CDE**.

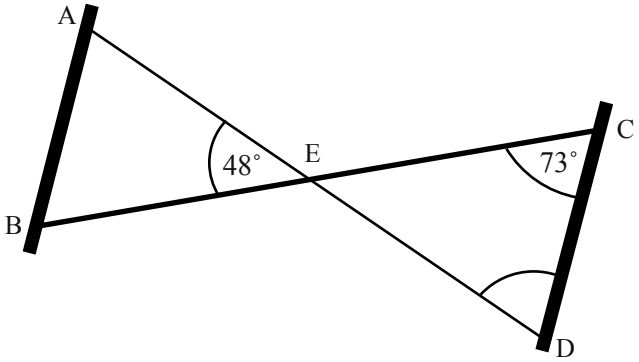

Diagram NOT to scale

QUESTION TWO

The diagram shows part of another fence.
LM = **LN**.
KL is parallel to **NM**.
LM is parallel to **KN**.
Angle **LNK** = 54°.

Calculate the size of angle **LMN**.

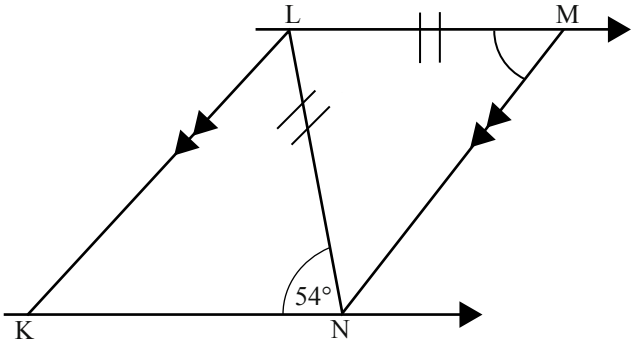

Diagram NOT to scale

QUESTION THREE

Assessor's use only

The diagram shows the design for a gate.

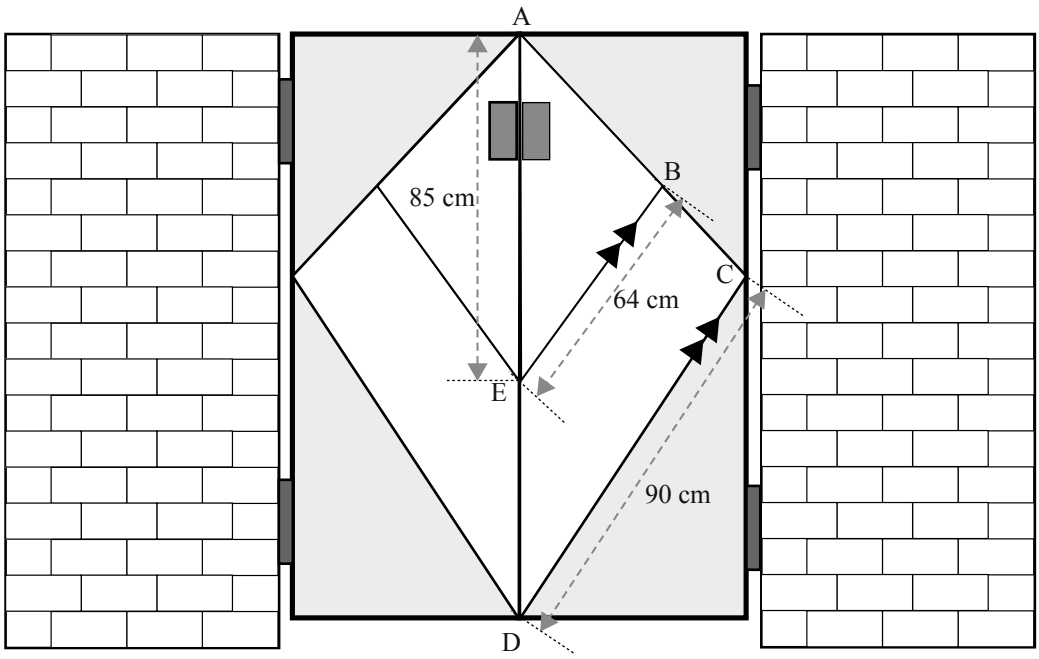

Diagram NOT to scale

AE = 85 cm
BE = 64 cm
CD = 90 cm
Triangles **ABE** and **ACD** are **similar**.

Calculate the height of the gate, **AD**.

QUESTION FOUR

Assessor's use only

The diagram shows a design for part of a fence.
GHIJK is a **regular pentagon** and **EHGF** is a **trapezium**.
AB is parallel to **CD**.

Calculate the size of angle **EHG**.

You must give a geometric reason for each step leading to your answer.

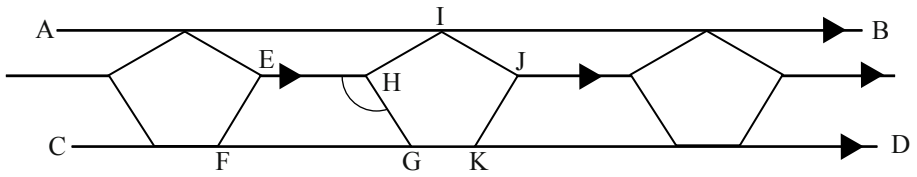

Diagram NOT to scale

QUESTION FIVE

Assessor's use only

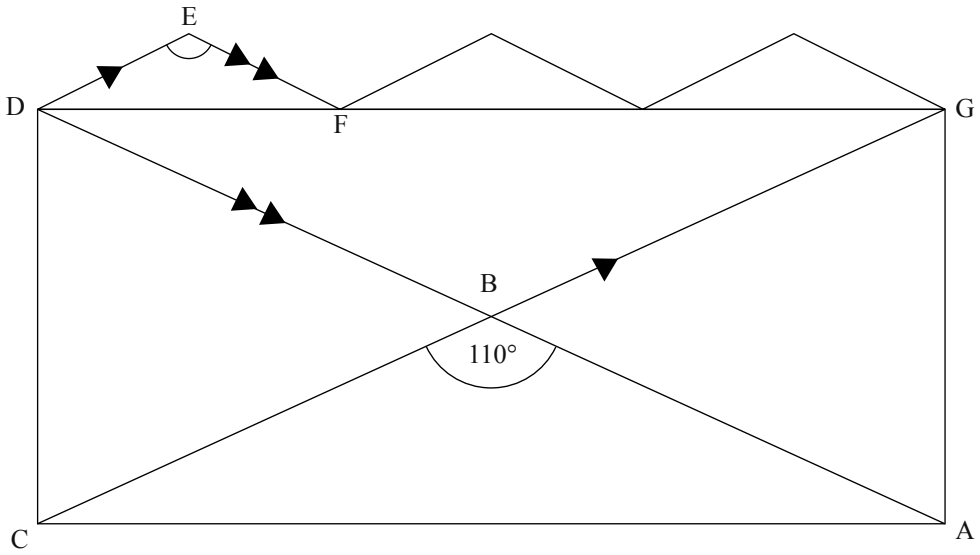

Diagram NOT to scale

The diagram shows another fence design.
ACDG is a rectangle.
Angle **CBA** = 110°.
CG is parallel to **DE**.
DA is parallel to **EF**.

Calculate the size of angle **DEF**.
You must give a geometric reason for each step leading to your answer.

QUESTION SIX

Assessor's use only

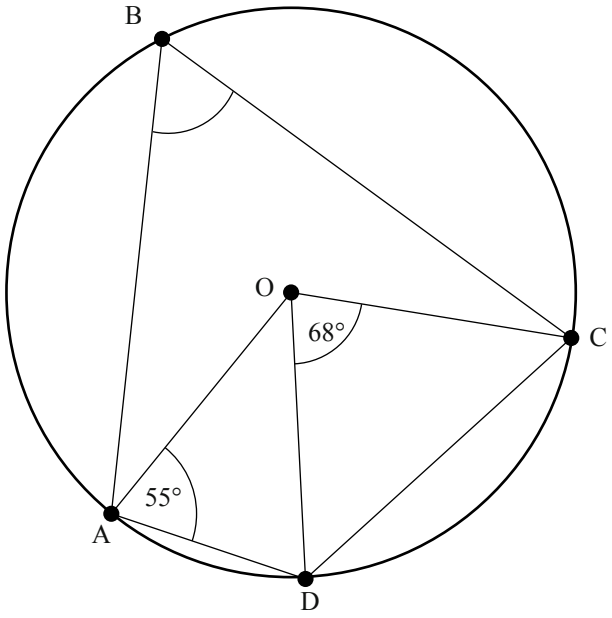

Diagram NOT to scale

The points **A, B, C** and **D** lie on a circle with centre **O**.
Angle **OAD** = 55°.
Angle **DOC** = 68°.

Calculate the size of angle **ABC**.
You must give a geometric reason for each step leading to your answer.

QUESTION SEVEN

Assessor's use only

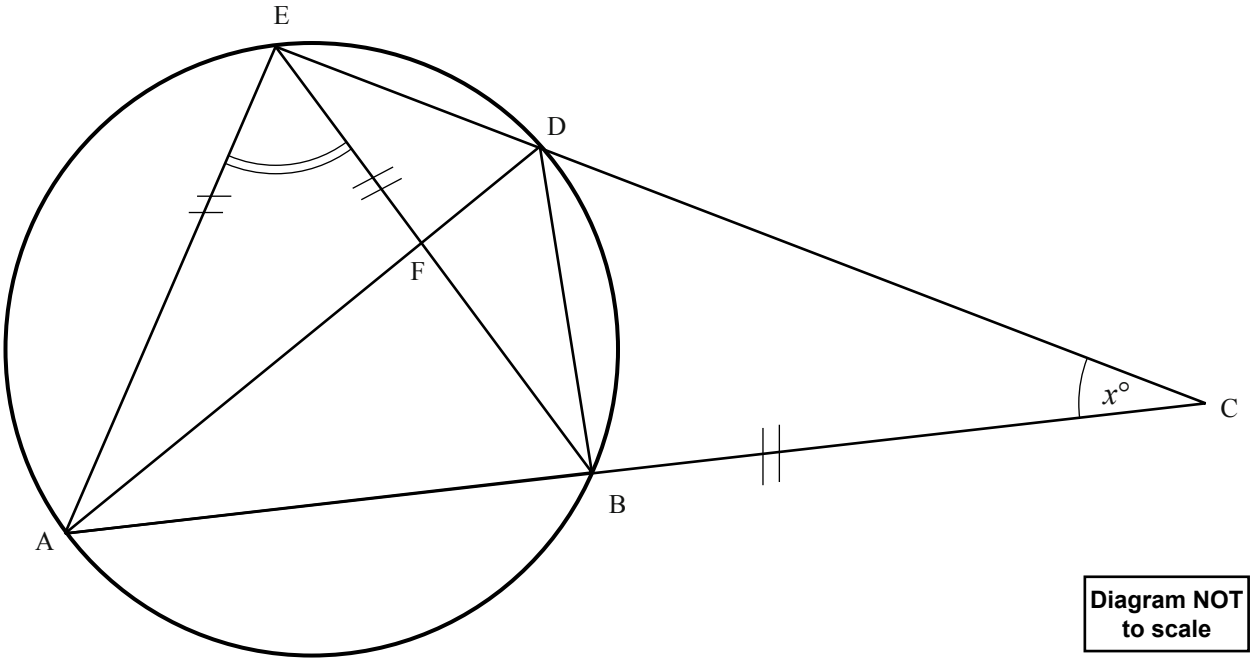

Diagram NOT to scale

In the above diagram, the points **A, B, D** and **E** lie on a circle.
AE = **BE** = **BC**.
The lines **BE** and **AD** intersect at **F**.
Angle **DCB** = $x°$.

Find the size of angle **AEB** in terms of x.
You must give a geometric reason for each step leading to your answer.

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

Assessor's use only

Question number