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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

For Supervisor's use only

Level 1 Mathematics, 2008

90153 Use geometric reasoning to solve problems

Credits: Two
9.30 am Monday 24 November 2008

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 2–7 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

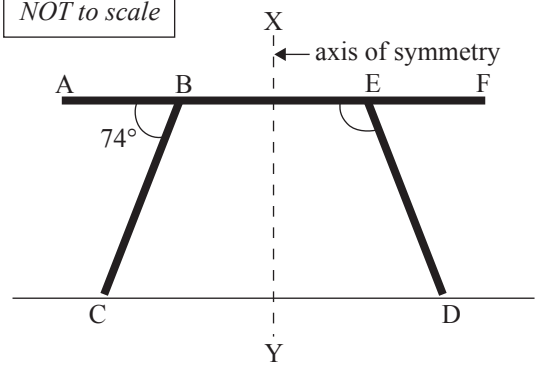
To achieve merit you must give reasons for your answers.

QUESTION ONE

Bob's trestle is shown in the diagram.

ABEF is a straight line.
XY is an axis of symmetry.
Angle ABC = 74°.

Diagram is NOT to scale



Calculate the size of angle AED, giving reasons for your answers.

Calculations Reasons

Angle AED = _____ °

QUESTION TWO

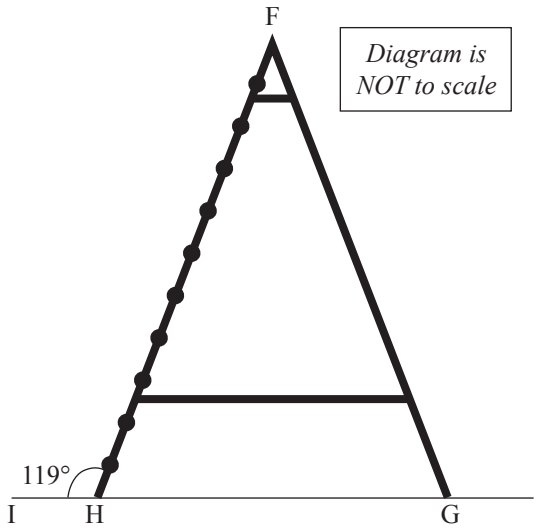
Bob's step-ladder is shown in the diagram.

Angle IHF = 119°.

HF = GF.

Calculate the size of angle HFG,
giving reasons for your answers.

Diagram is NOT to scale



Calculations Reasons

Angle HFG = _____ °

Assessor's use only

QUESTION THREE

The diagram shows a rectangular stained-glass window, JKLM.

One of the pieces of glass in the window, PQRST, is a regular pentagon.

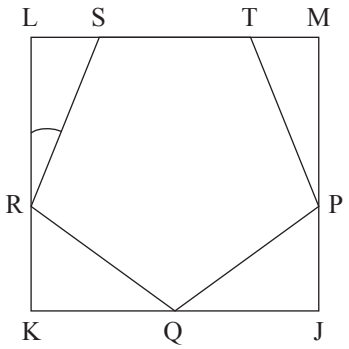


Diagram is NOT to scale

Calculate the size of angle LRS, giving reasons for your answers.

Calculations	Reasons

Angle LRS = _____ °

QUESTION FOUR

In the diagram, ABCD is a semicircle, centre, O.

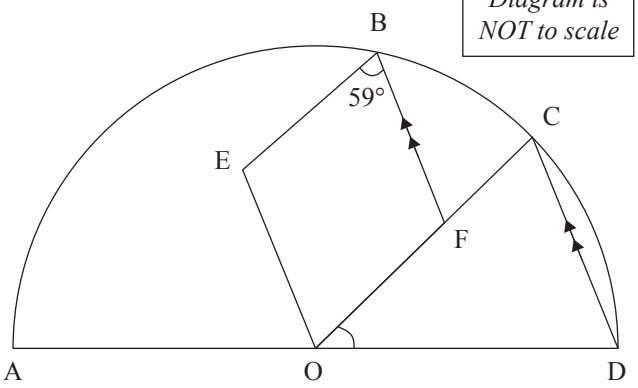
EBFO is a rhombus.

BF is parallel to CD.

Angle EBF = 59°.

Calculate the size of angle COD.

Diagram is NOT to scale



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

Angle COD = _____ °

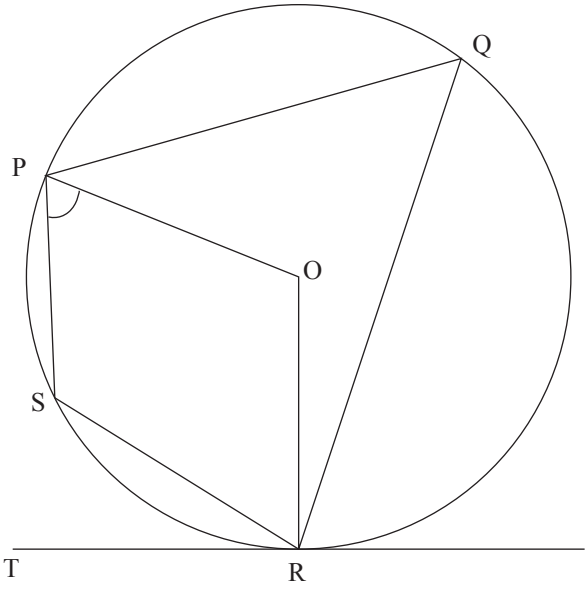
QUESTION FIVE

Assessor's use only

Diagram is NOT to scale

In the diagram P, Q, R and S lie on a circle, centre, O.

TR is a tangent to the circle at R.
Angle PQR = $x°$.
Angle SRT = $y°$.



Find the size of angle SPO, in terms of x and y.

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

Angle SPO = _____ °

QUESTION SIX

ABE and ACF are two triangles.
Angle BCD = 28°.
Angle DEF = 36°.

Find the size of angle FDE.

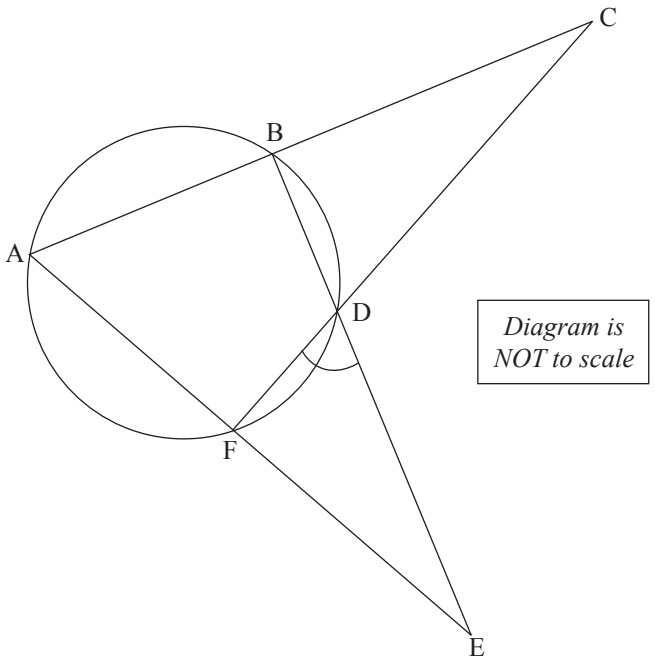


Diagram is NOT to scale

Assessor's use only

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

Angle FDE = _____ °

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

Assessor's use only

Question number	

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

Assessor's use only

Question number	