For Supervisor's use only

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90152

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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

Level 1 Mathematics, 2005

90152 Solve right-angled triangle problems

Credits: Two
9.30 am Monday 21 November 2005

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**
Solve right-angled triangle problems.	Solve problems in practical situations involving right-angled triangles.	Solve problems in word or 3D situations.
Overall Level of Performance		

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You are advised to spend 30 minutes answering the questions in this booklet.

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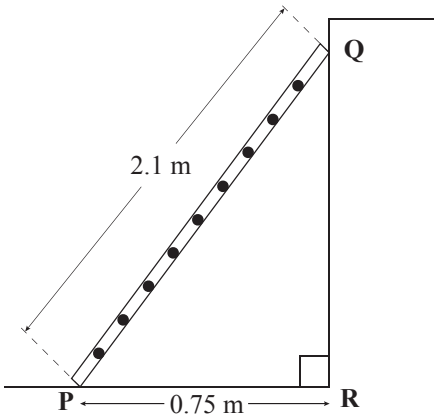
THE SLEEP-OUT

You should show **ALL** working.

QUESTION ONE

(a) Andrew has a ladder 2.1 m long.
He places it on level ground with the foot, **P**, 0.75 m from the wall.

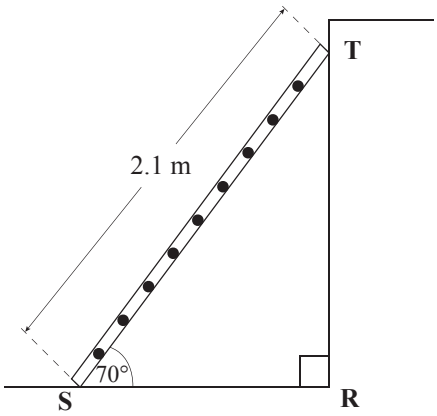
Find the distance the ladder will reach up the wall, ie find **QR**.



QR = _____ m

(b) The ladder is moved so that it makes an angle of 70° with the level ground, ie the foot is now at **S**.

Find how far the foot of the ladder will be from the wall, ie find **SR**.



SR = _____ m

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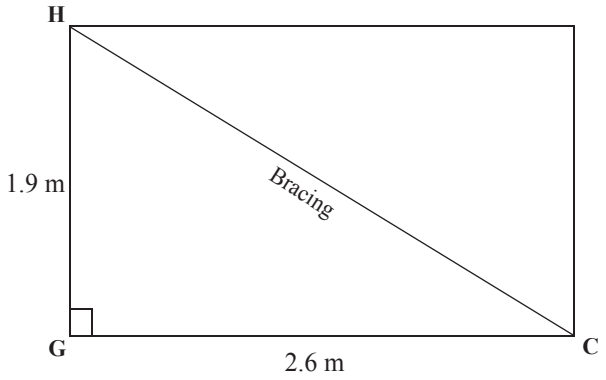
QUESTION TWO

Andrew is building a sleep-out.

(a) One wall is 1.9 m high and 2.6 m long. The bracing is from the top left to the bottom right corners of the wall.

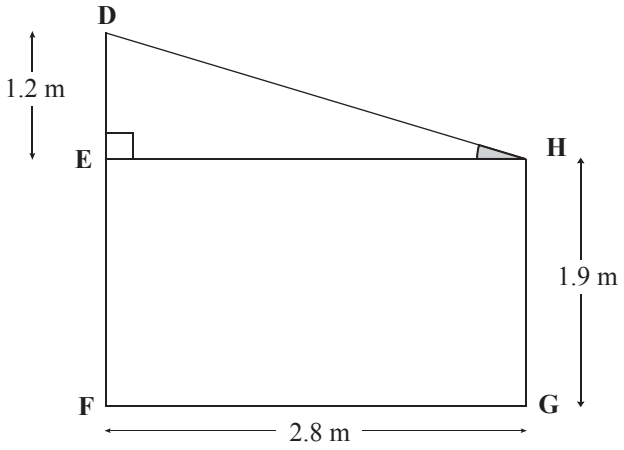
Calculate the length of bracing that will be required, ie find **HC**.



HC = _____ m

(b) The sleep-out has a sloping roof, **DH**.
ED = 1.2 m.
FG = 2.8 m.
GH = 1.9 m.

Find the angle the roof makes with the horizontal, ie find angle **EHD**.



Angle EHD = _____ °

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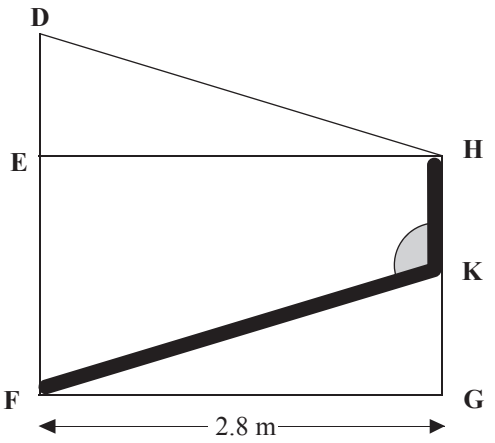
(c) **KF** is part of a pipe that takes water from the roof to the storm-water drain.

FG = 2.8 m.
FK = 3.03 m.

Find the angle **HKF**.

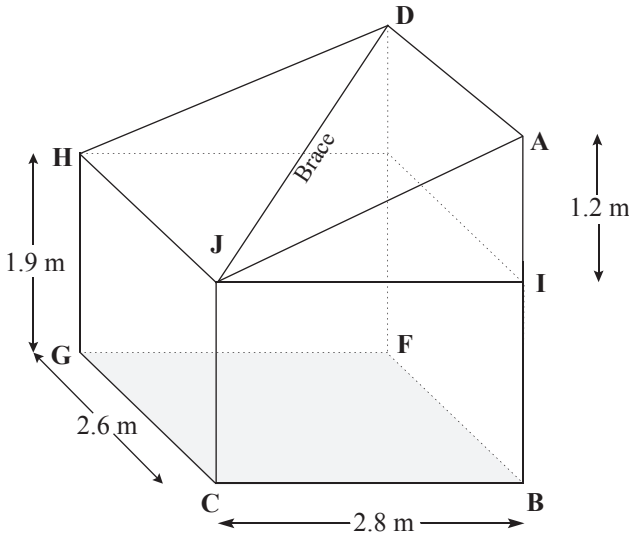


Angle HKF = _____ °

(d) **DJ** is a brace for the sloping roof of the sleep-out.

AI = 1.2 m.
CB = 2.8 m.
GC = 2.6 m.
GH = 1.9 m.

Calculate the length of the brace, **DJ**.



DJ = _____ m

QUESTION THREE

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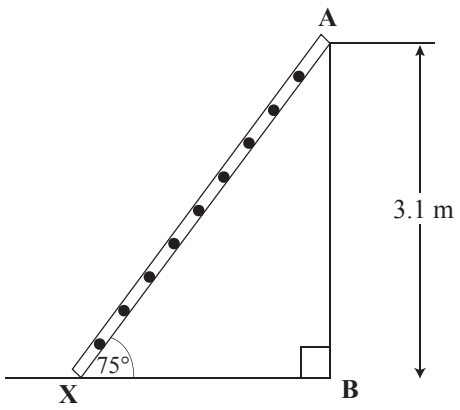
A safe angle for a ladder is 75° to the horizontal.

Calculate the length of ladder if it reaches 3.1 m above level ground, ie find **XA**.



XA = _____ m

QUESTION FOUR

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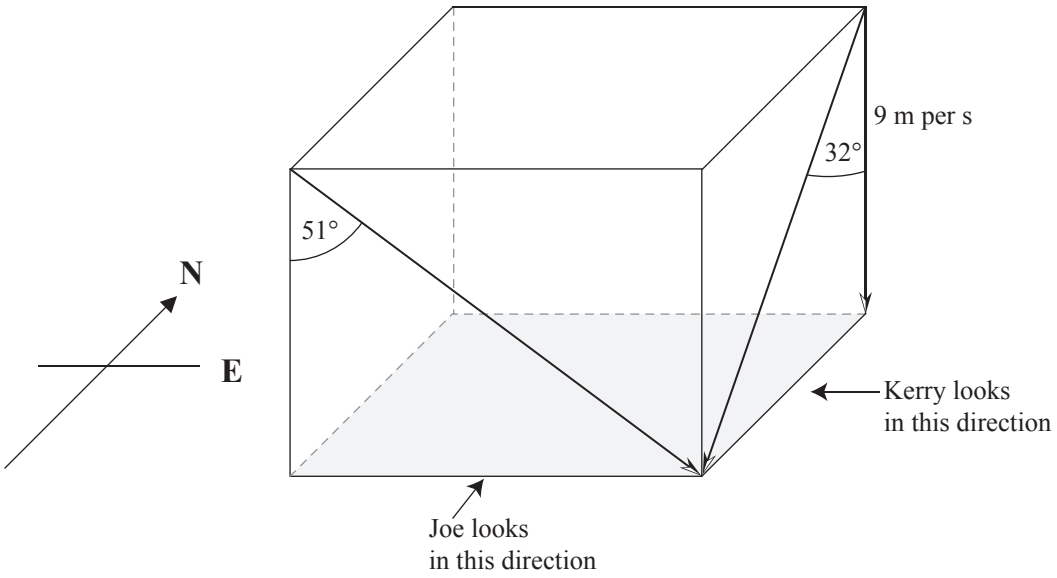

If there is no wind blowing, rain falls vertically at 9 metres per second (m per s).
The wind blowing makes the rain come down at an angle.
Joe and Kerry measure the angle of the falling rain at the same time.
To Joe, the rain appears to be falling towards the east at an angle of 51° to the vertical.
To Kerry, the rain appears to be falling towards the south at an angle of 32° to the vertical.

Find the speed of the wind.

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

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Question number