



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2013

Mathematics

(Project Maths – Phase 3)

Paper 2

Ordinary Level

Monday 10 June – Morning 9.30 to 11.30
300 marks

Examination number

Centre stamp

Running total	
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For examiner			
Question	Mark	Question	Mark
1		11	
2		12	
3		13	
4			
5			
6			
7			
8			
9			
10		Total	

Grade

Instructions

There are 13 questions on this examination paper. Answer **all** questions.

Questions do not necessarily carry equal marks. To help you manage your time during this examination, a maximum time for each question is suggested. If you remain within these times, you should have about 10 minutes left to review your work.

Write your answers in the spaces provided in this booklet. There is space for extra work at the back of the booklet. You may also ask the superintendent for more paper. Label any extra work clearly with the question number and part.

The superintendent will give you a copy of the *Formulae and Tables* booklet. You must return it at the end of the examination. You are not allowed to bring your own copy into the examination.

Marks will be lost if all necessary work is not clearly shown.

Answers should include the appropriate units of measurement, where relevant.

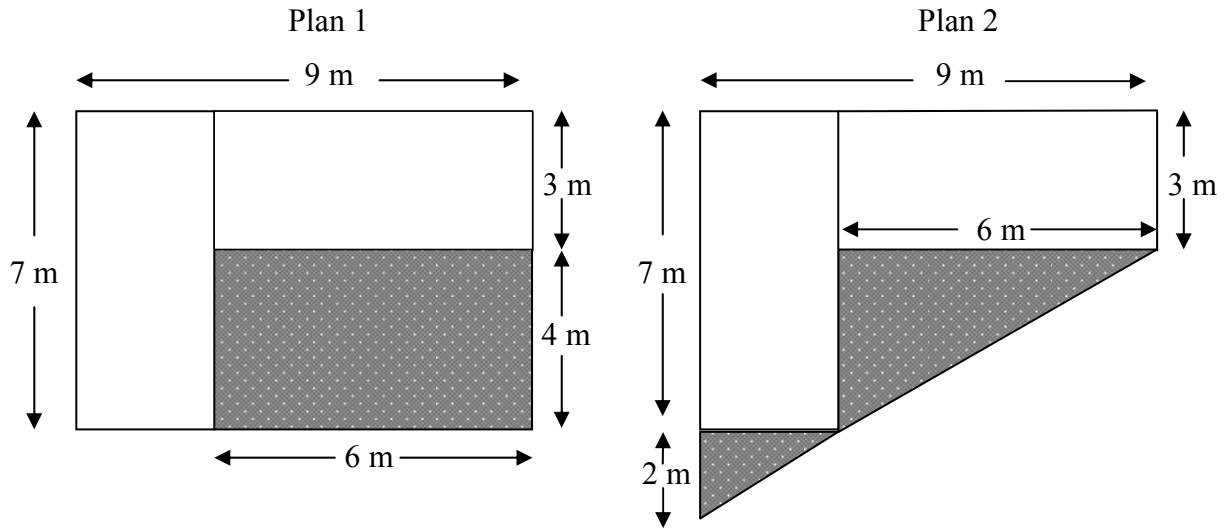
Answers should be given in simplest form, where relevant.

Write the make and model of your calculator(s) here:

Question 1

(suggested maximum time: 5 minutes)

Niamh wants to extend her kitchen. She has two plans. The extension is the shaded area in each plan.



- (a) Find the area of the extension for each plan.

Plan 1	

Plan 2	

- (b) Which plan adds the biggest area to the kitchen? Tick the correct box.

Plan 1 Plan 2

- (c) How many extra square metres would Niamh have if she uses this plan rather than the other plan?

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Question 3

(suggested maximum time: 10 minutes)

A hurling match is played between Team A and Team B.
 A player on Team A, Fiachra, has the ball and attempts to score.
 The probability of Fiachra scoring a point is 0.6 and the probability of him scoring a goal is 0.1 .



- (a) Is Fiachra more likely to score a point or a goal?

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- (b) What is the probability that Fiachra will not score a point in this attempt?

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A player on Team B, Peadar, has the ball and attempts to score. The probability of Peadar scoring a point is 0.7 and the probability of him scoring a goal is 0.2 .

- (c) Peadar is more likely to score than Fiachra.
 Give a reason why this is true.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- (d) A spectator says “Peadar will always score more than Fiachra in a game between the two teams”.

Do you agree with the spectator?

Yes No

Give a reason for your answer.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

- (e) A penalty is awarded to Team B.
 The goalkeeper for Team A has saved 12 penalties out of 20 this season.

What is the probability that the goalkeeper will save the penalty based on his previous record?

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Question 5

(suggested maximum time: 5 minutes)

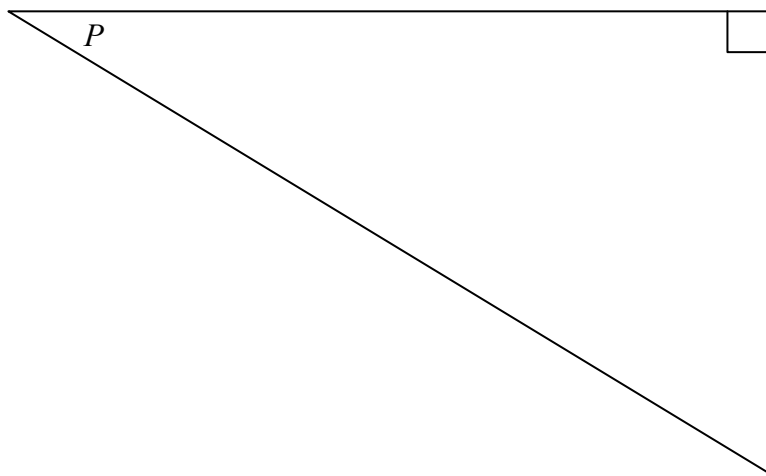
- (a)** Use your calculator to find the following trigonometric ratios.
Write each answer correct to four decimal places.

$\sin 25^\circ =$ _____

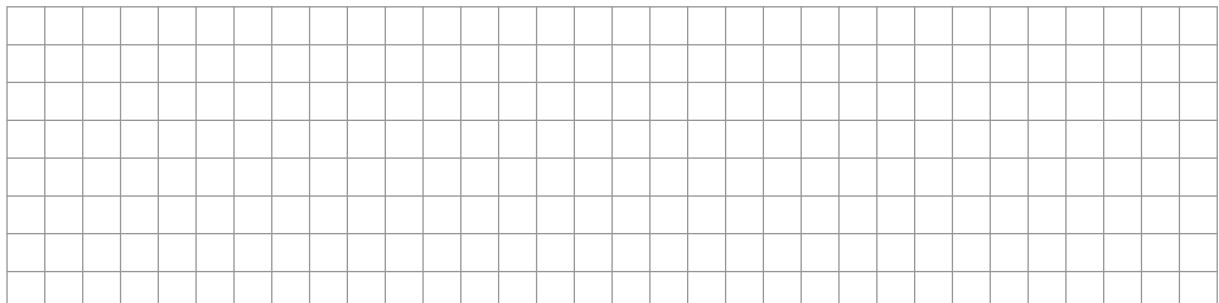
$\cos 39^\circ =$ _____

$\tan 40^\circ =$ _____

- (b)** The angle P is shown in the triangle below.



- (i)** On the diagram, clearly label the side opposite the angle P .
- (ii)** On the diagram, clearly label the side adjacent to the angle P .
- (iii)** If the length of the opposite side is 9 and the length of the adjacent side is 12, find the length of the hypotenuse.



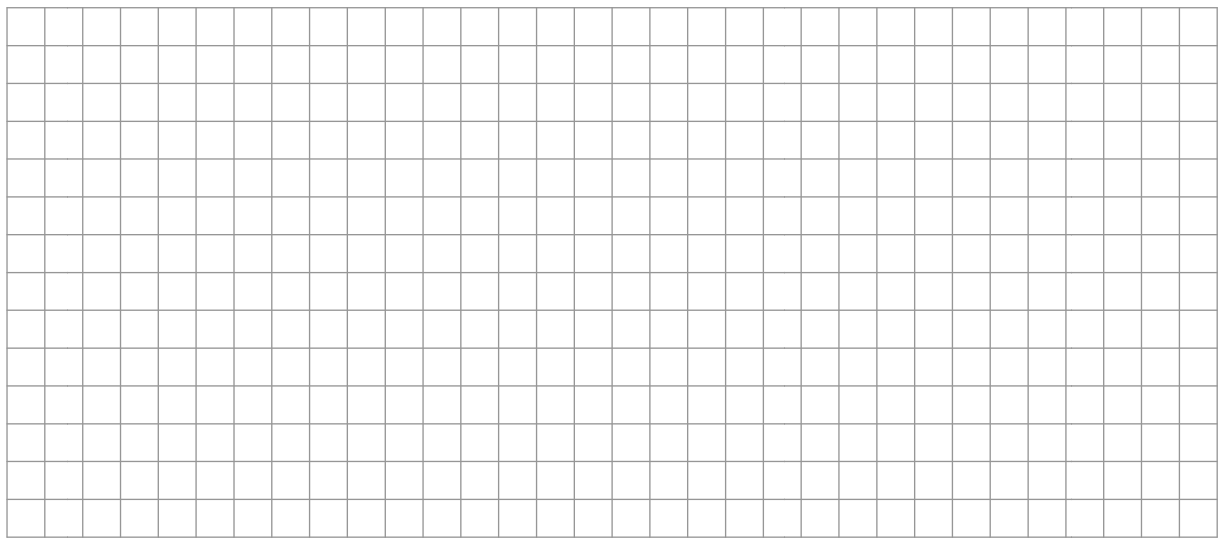
Question 7

(suggested maximum time: 10 minutes)

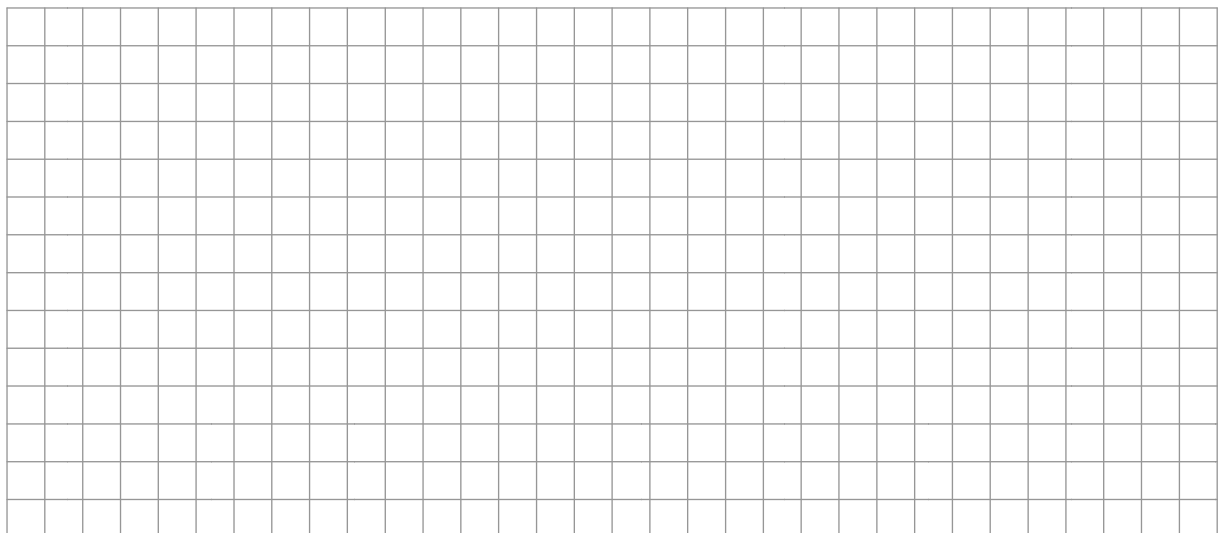
- (a) The perimeter of a rectangle is 28 cm. The length of the rectangle is 9 cm.
Find the width of the rectangle.



9 cm



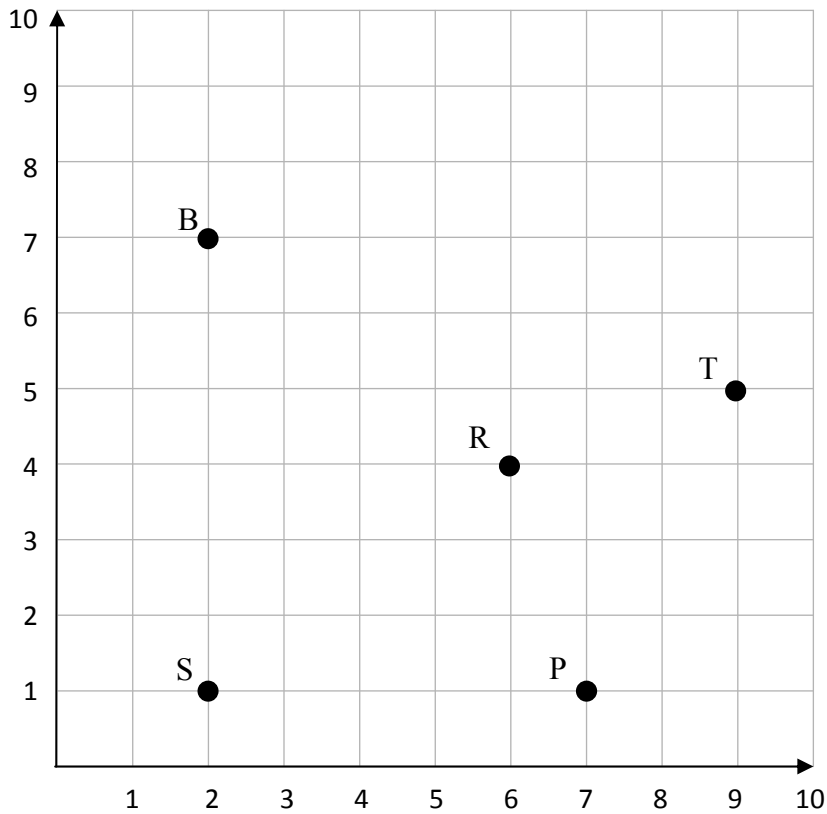
- (b) The symbol for the Olympic Games is five intersecting rings. The rings represent the five continents which compete in the games. The radius of each ring is 4 m.
Find the total circumference of the five rings. Use $\pi = 3.142$.



Question 11

(suggested maximum time: 10 minutes)

An archaeologist has discovered various items at a site. The site is laid out in a grid and the position of each item is shown on the grid. The items found are a brooch (B), a plate (P), a ring (R), a statue (S) and a tile (T).



(a) Write down the co-ordinates of the position of each item.

B = (2 , 7)

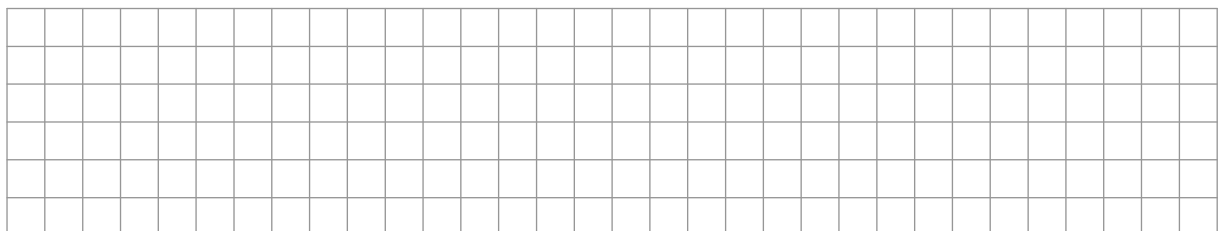
P = (,)

R = (,)

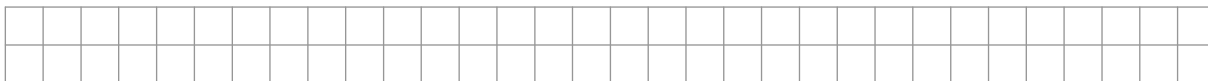
S = (,)

T = (,)

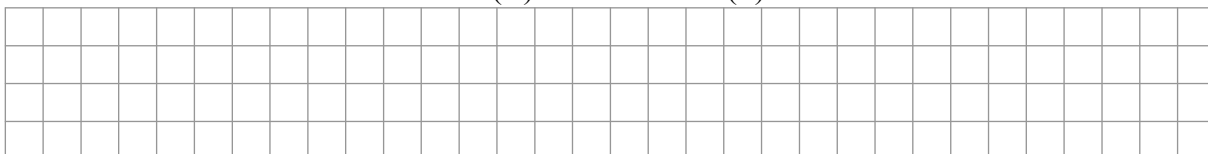
(b) Each square of the grid represents 1 m².
Find the total area of the grid.



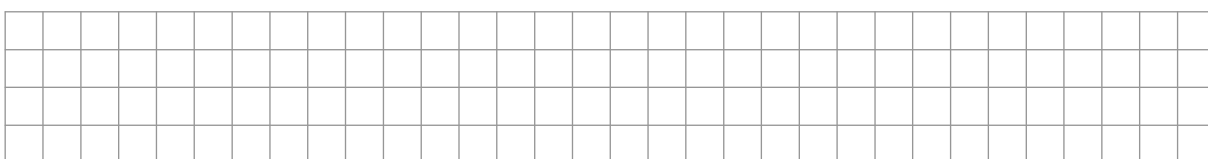
(c) Which of the items is nearest to the tile (T)?



(d) Find the distance between the brooch (B) and the statue (S).



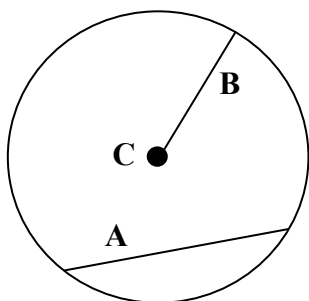
(e) What is the slope of the line from the plate (P) to the brooch (B)?



Question 12

(suggested maximum time: 15 minutes)

(a) Choose the correct terms for A, B and C from the following list:



radius

diameter

circumference

centre

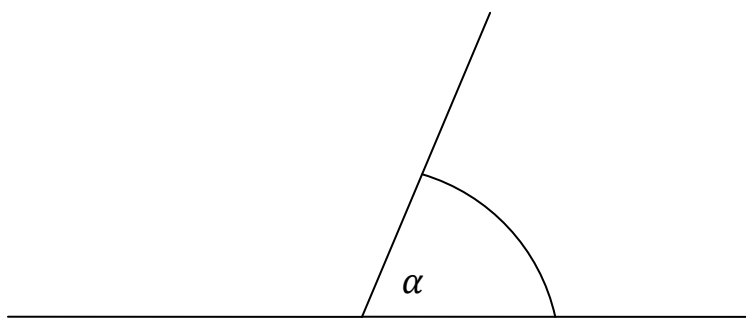
chord

Write the answers into the grid.

A	
B	
C	

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- (d) Cian used a protractor to measure the angle α in the diagram below. His answer was 100° .



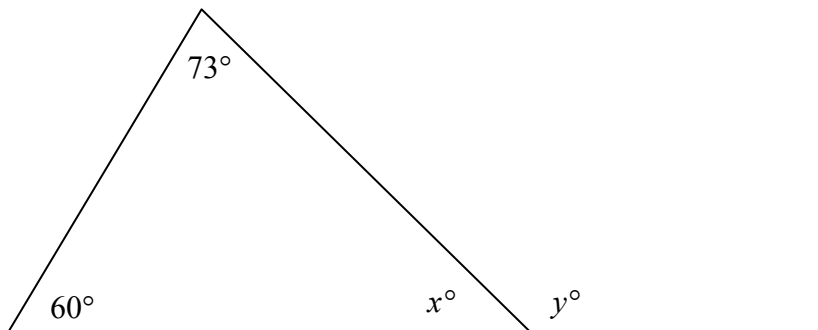
Do you agree or disagree with Cian's measurement? Give a reason for your answer.

Agree

Disagree

Reason	

- (e) Theorems on your course can be used to find the measure of the angles in the diagram below. Write down, in your own words, any theorem that you could use to find one of the missing angles.



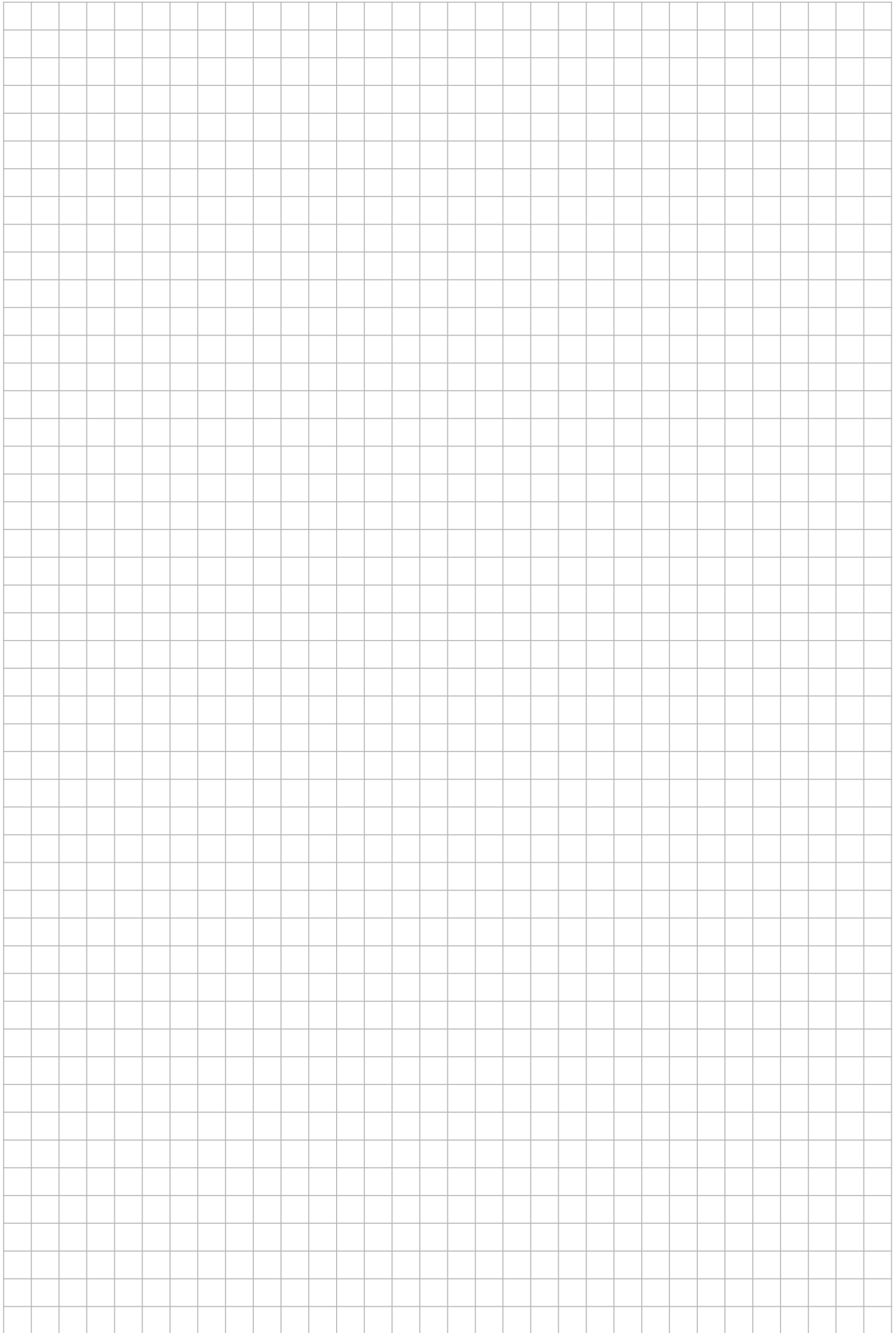
Theorem	

- (f) Find the measure of each of the missing angles in the diagram in part (e) above. Show your calculations.

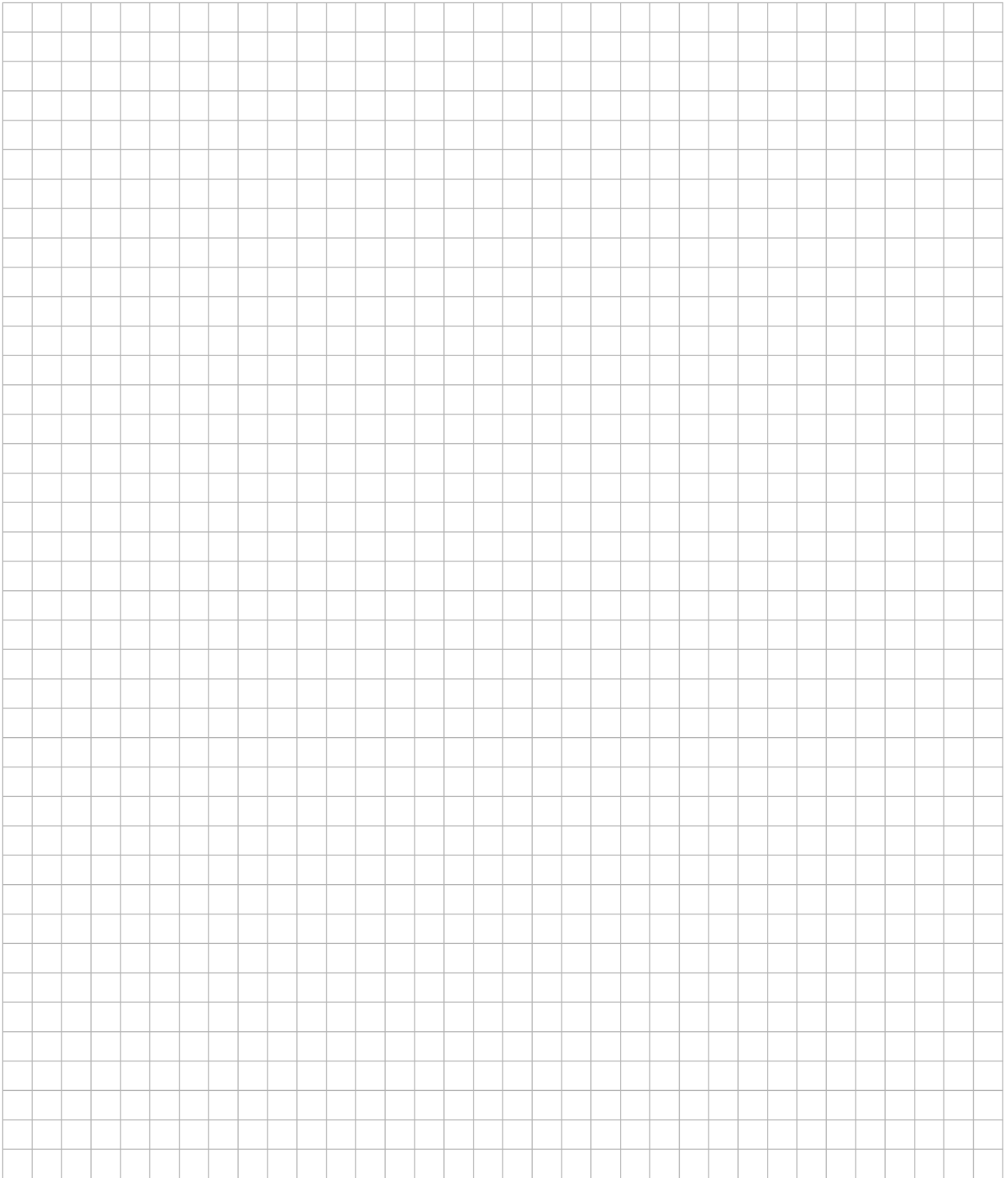
$x^\circ =$		$y^\circ =$	

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You may use this page for extra work.



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