



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2017

Mathematics

Foundation Level

Friday 9 June
Afternoon 2:00 – 4:00

300 marks

Examination Number		For Examiner						Grade
		Q.	Ex.	Adv. Ex.	Q.	Ex.	Adv. Ex.	
		1			11			
		2			12			
		3			13			
		4			14			
		5			15			
		6						
		7						
		8						
		9						
Centre Stamp		10			Total			
Running Total								

Instructions

There are 15 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. You may lose marks if you do not do so. You may 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.

You will lose marks if you do not show all necessary work.

You may lose marks if you do not include the appropriate units of measurement, where relevant.

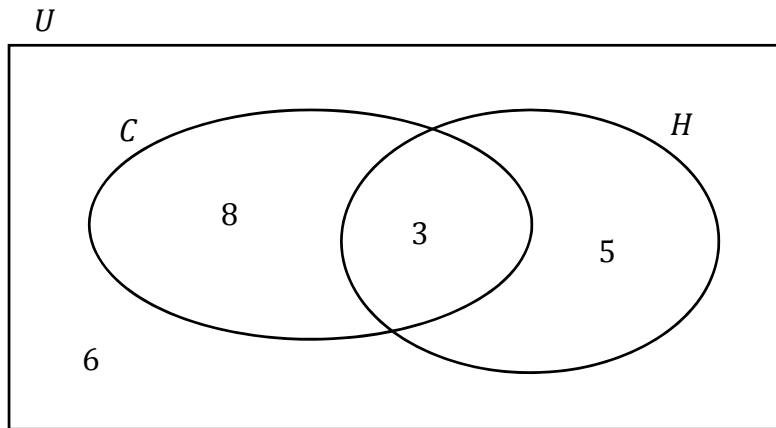
You may lose marks if you do not give your answers in simplest form, where relevant.

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

Question 2

(Suggested maximum time: 5 minutes)

Ciara carried out a survey on the 22 girls in her class to see how many play Camogie (C) and how many play Hockey (H). Her results are shown in the Venn diagram below.



- (a) Use the Venn diagram to complete the sentences below.
The first one has been done for you.

girls play Camogie **only**.

girls play Hockey **only**.

girls play both Camogie **and** Hockey.

girls play Camogie **or** Hockey or both.



One girl is picked at random from the 22 girls in Ciara's class.

- (b) Find the **probability** that this girl plays Camogie **only**.
Give your answer as a fraction.

Answer =

Question 3

(Suggested maximum time: 5 minutes)

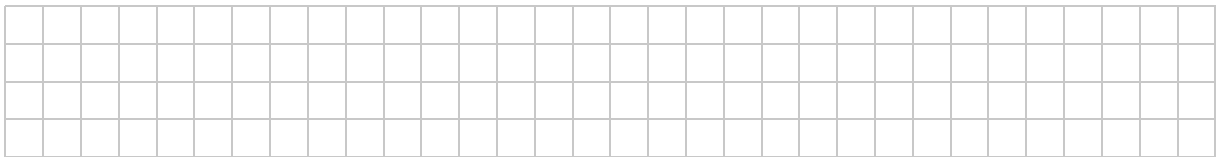
List the elements of each of the following sets.

(a) S is the set of letters in the word **TABLE**.

$$S = \{ \quad , \quad , \quad , \quad , \quad \}$$

(b) T is the set of **odd numbers** between 6 and 12.

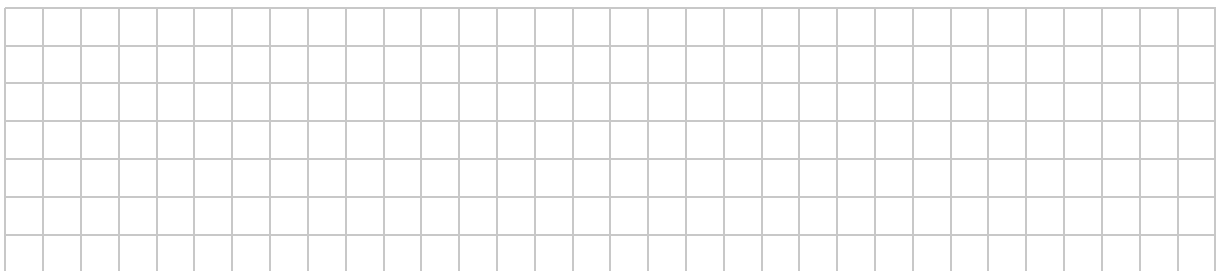
$$T = \{ \quad \}$$



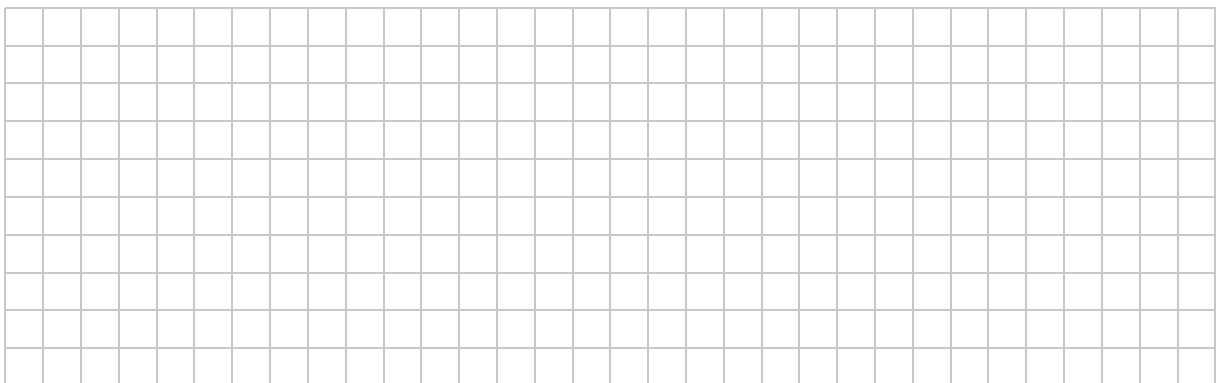
Question 4

(Suggested maximum time: 5 minutes)

(a) Find the value of $4a + 3b$, when $a = 2$ and $b = 7$.



(b) Solve the equation $2x - 4 = 14$.



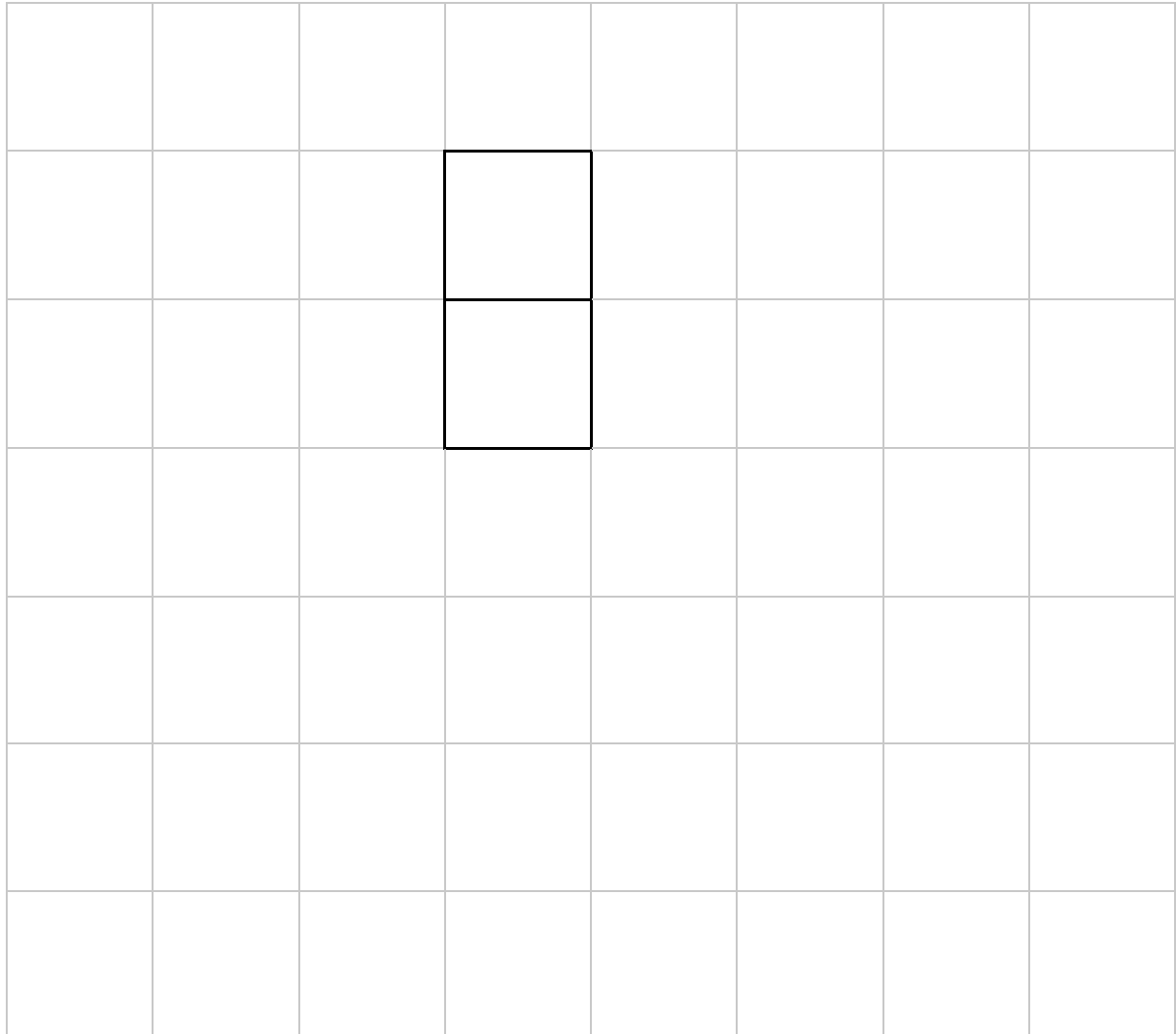
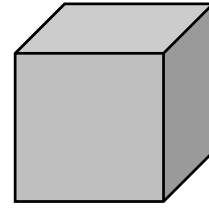
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Question 8

(Suggested maximum time: 5 minutes)

The diagram below shows part of a **net** of a cube.

Complete the net of the cube, as accurately as you can.



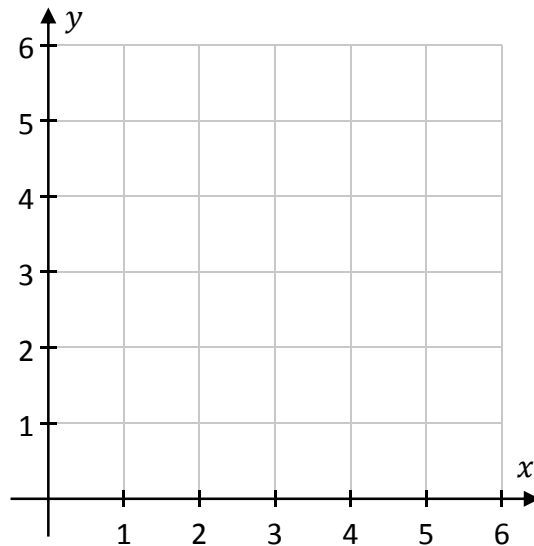
Question 9

(Suggested maximum time: 5 minutes)

- (a)** Plot the following two points on the co-ordinate diagram below.
Label each point clearly.

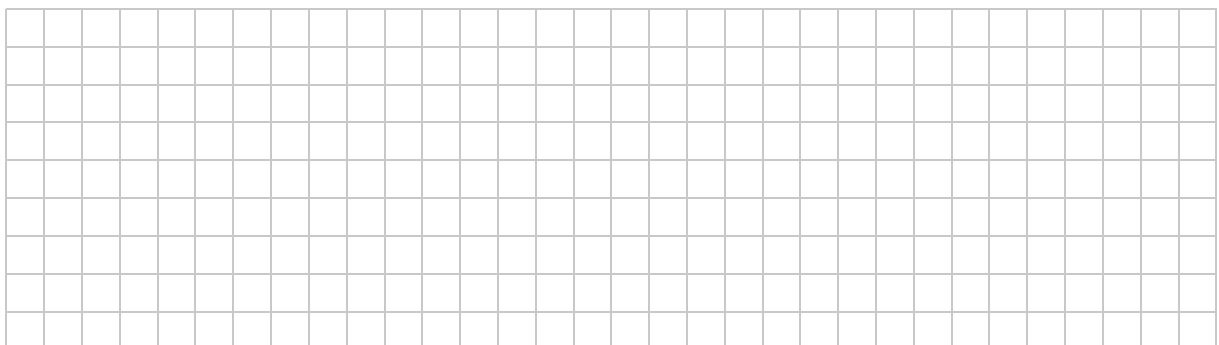
$$K = (5, 3)$$

$$L = (1, 5)$$



- (b)** Find the co-ordinates of the **midpoint** of $[KL]$.

Midpoint =



Question 10

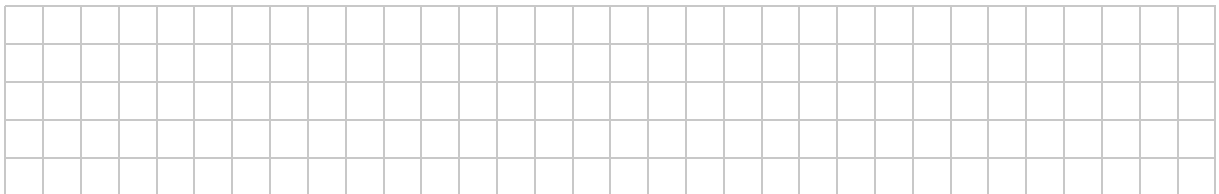
(Suggested maximum time: 5 minutes)

The table below shows a function.

This function takes a **shape** as an input. The output is the **number of sides** of that shape.

Fill in the missing input and the two missing outputs in the table.

Input: Shape	Output: Number of sides
Pentagon	5
Square	
Hexagon	
	3



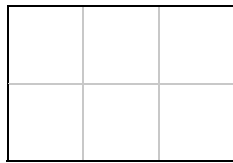
Question 11

(Suggested maximum time: 10 minutes)

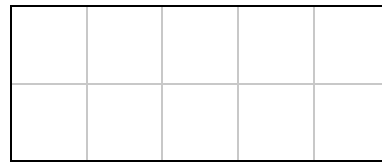
The first three stages of a pattern are shown below.



Stage 1

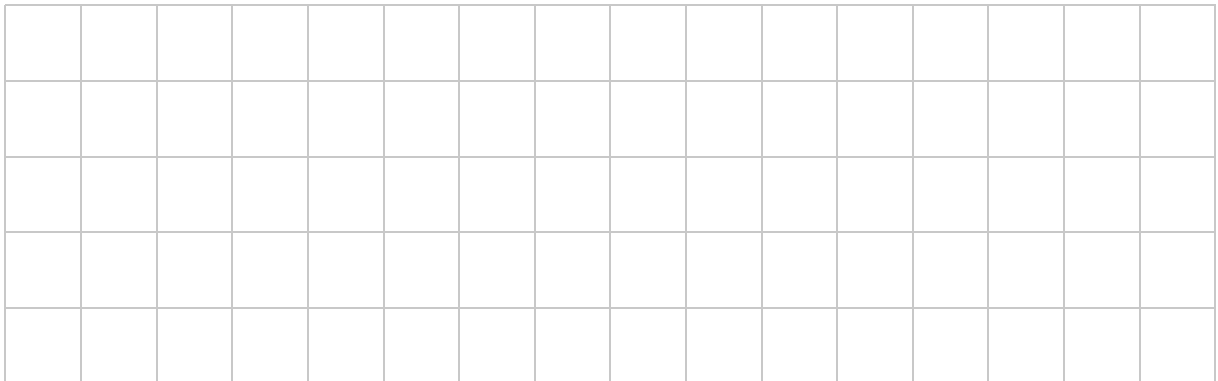


Stage 2



Stage 3

(a) Draw the next stage of the pattern.

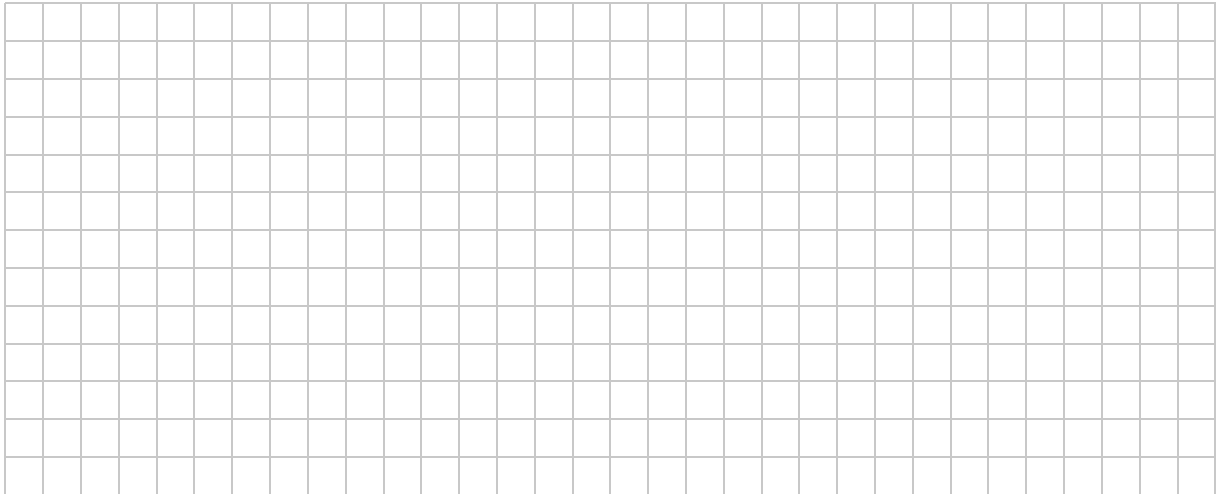


(b) Fill in the four missing values in the table below to show the height, the length, and the area of each of the first four stages in the pattern.

	Height (units)	Length (units)	Area (square units)
Stage 1	2	1	$2 \times 1 = 2$
Stage 2	2	3	$2 \times 3 = 6$
Stage 3	2		
Stage 4	2		



- (d) Use the theorem of **Pythagoras** to find the length of the side marked y in Triangle C. Remember that the other sides are 15 cm and 20 cm in length.



Question 14

(Suggested maximum time: 5 minutes)

Draw the **axis of symmetry** of the following shape.

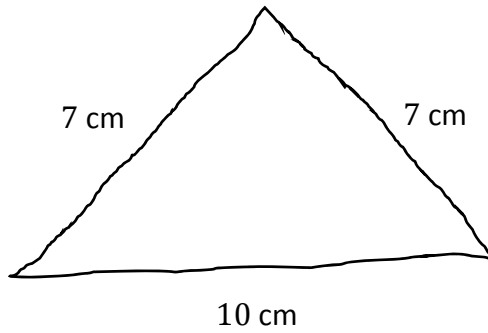


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Question 15

(Suggested maximum time: 15 minutes)

(a) The sketch below shows a triangle with sides of length 7 cm, 7 cm, and 10 cm.



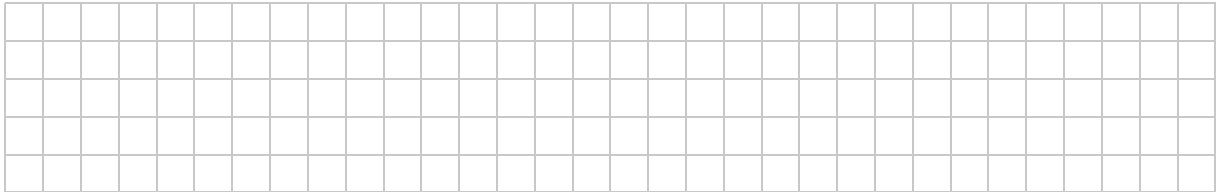
(i) **Construct** this triangle in the space below. Show all of your construction lines clearly.



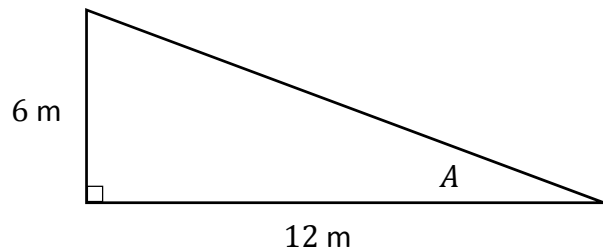
The triangle is a scaled diagram of part of a roof. The scale is **1 cm = 2 m**.

(ii) Use this fact to fill in the two missing values in the table below.

	Length on the Diagram (cm)	Actual Length (m)
Side	7	14
Base	10	
Perimeter	24	



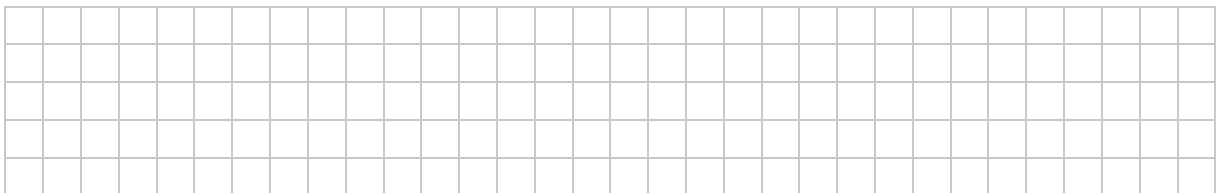
(b) The diagram below shows another part of the roof. It is in the shape of a right-angled triangle. One of the angles is marked **A**.



(i) Use the lengths of the sides of this triangle to write down the value of **tan A**.

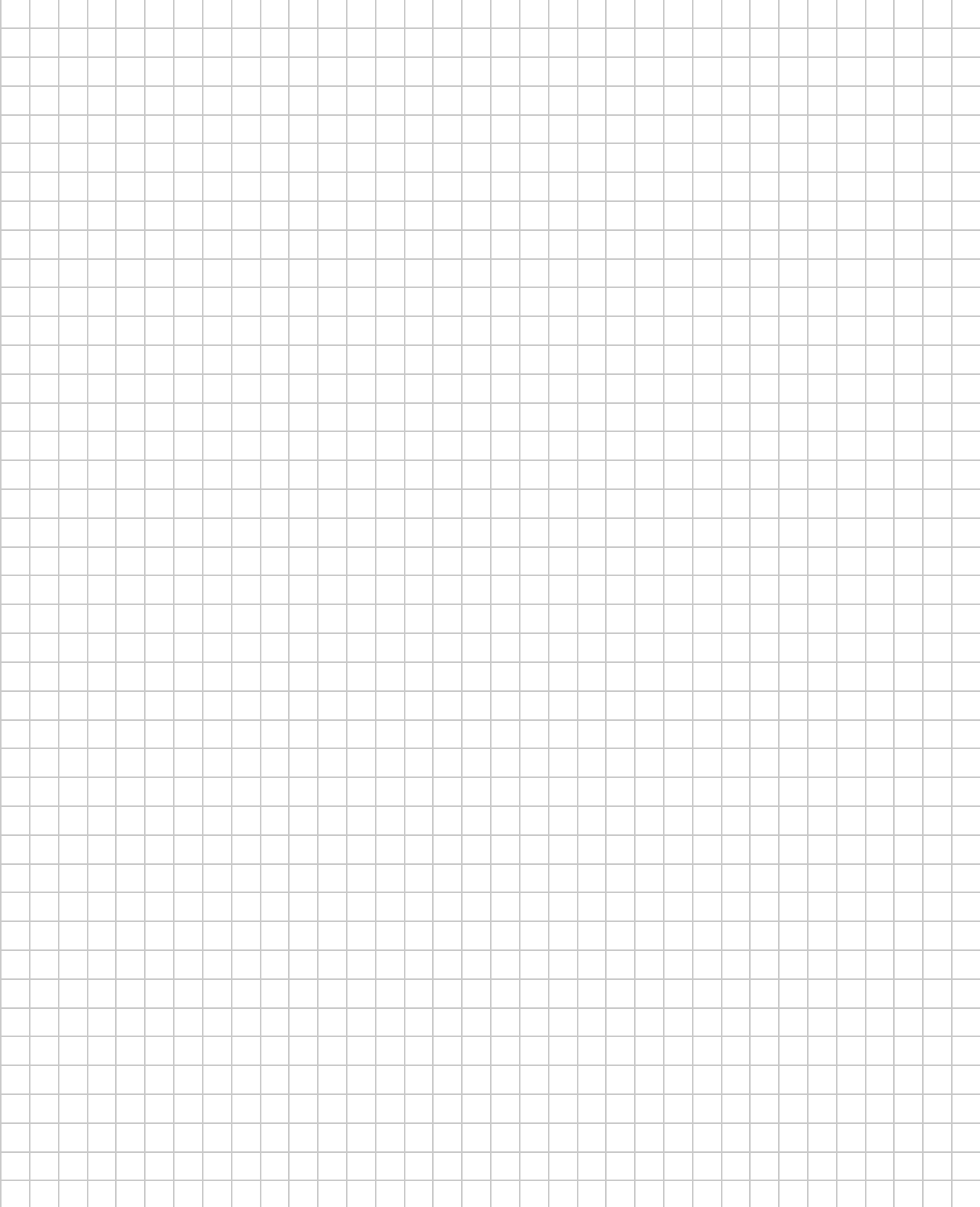
$$\tan A = \frac{\text{opposite}}{\text{adjacent}} = \frac{\boxed{}}{\boxed{}}$$

(ii) Hence use a calculator to work out the **size** of the **angle A**. Give your answer correct to the nearest degree.

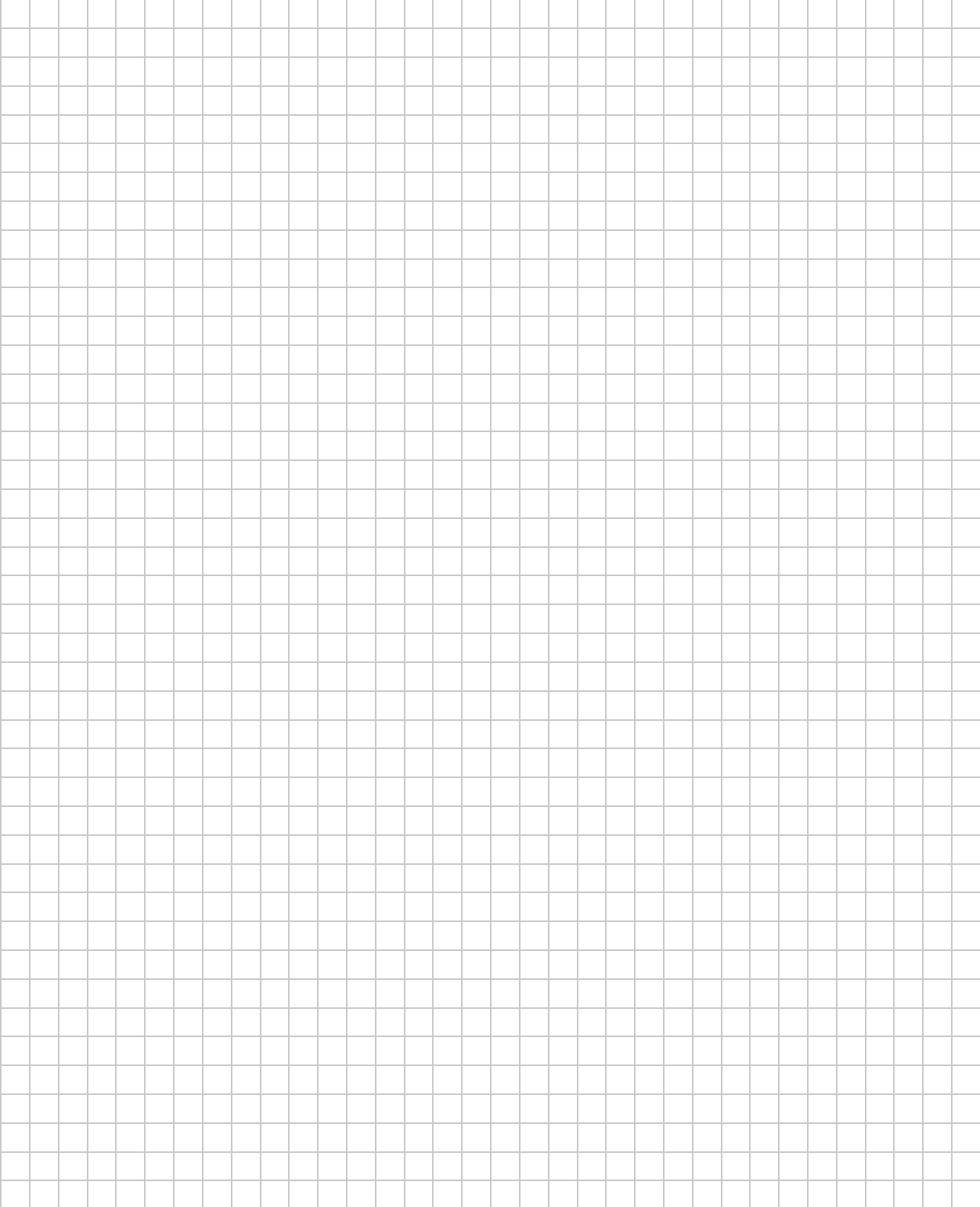


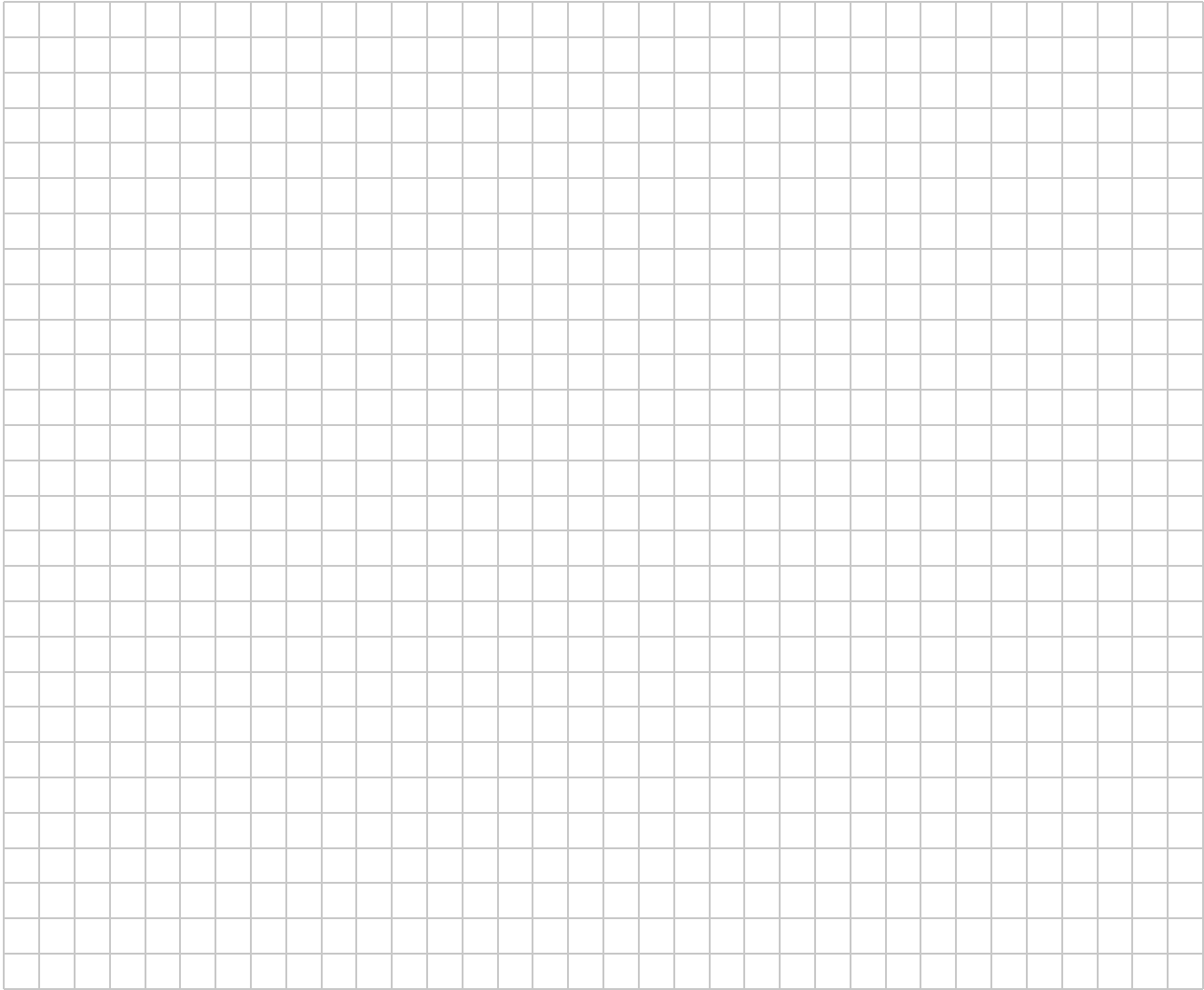
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You may use this page for extra work.
Label any extra work clearly with the question number and part.



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