



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2012

Mathematics

(Project Maths – Phase 2)

Paper 2

Higher Level

Monday 11 June Morning 9:30 to 12:00
300 marks

Examination number

Centre stamp

Running total

For examiner

Question	Mark	Question	Mark
1		11	
2		12	
3		13	
4		14	
5		15	
6			
7			
8			
9			
10		Total	

Grade

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

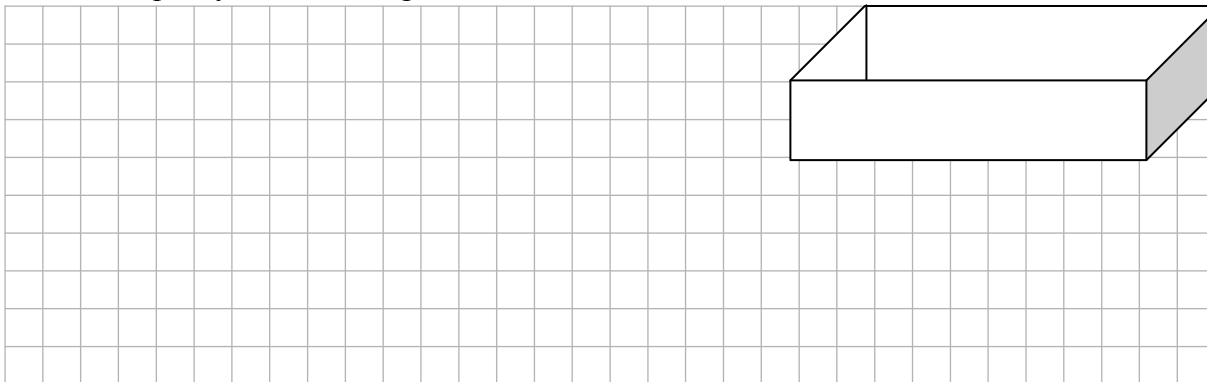
Marks will be lost if all necessary work is not clearly shown.

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:

- (b) A rectangular tank has a length of 0.6 m, a width of 0.35 m and its height measures 15 cm. Find the capacity of the rectangular tank.



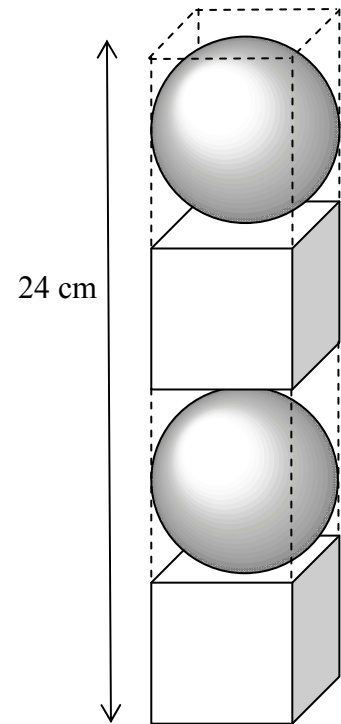
- (c) The rectangular tank is full of water. This water is then poured into the cylindrical container in (a) above. Find the depth of water in the cylinder. Give your answer correct to one decimal place.



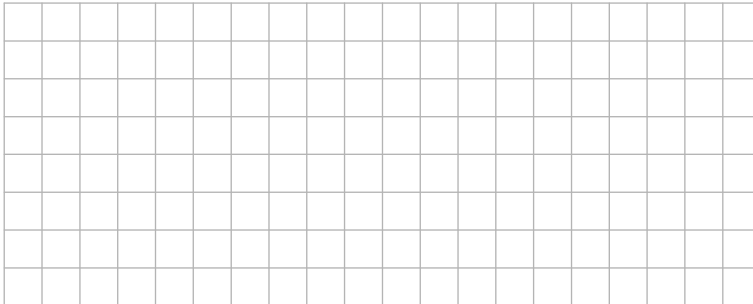
Question 3

(Suggested maximum time: 10 minutes)

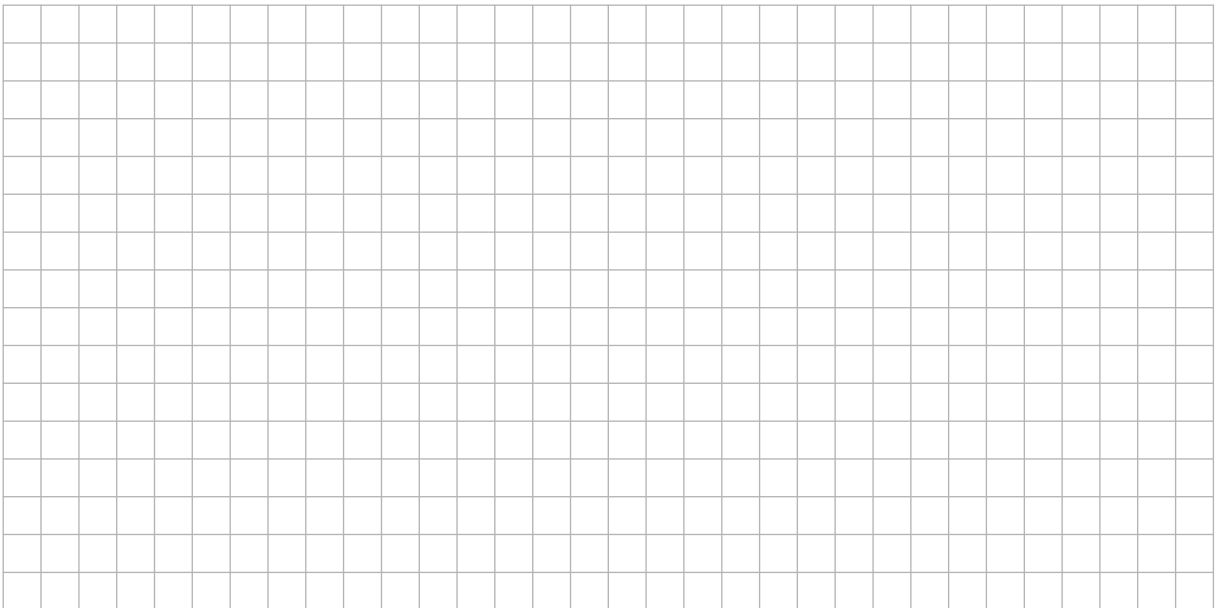
An ornament is carved from a rectangular block of wood which has a square base and a height of 24 cm. The ornament consists of two identical spheres and two identical cubes as illustrated in the diagram. The diameter of each sphere is equal to the length of the side of each cube. The ornament has the same width as the original block.



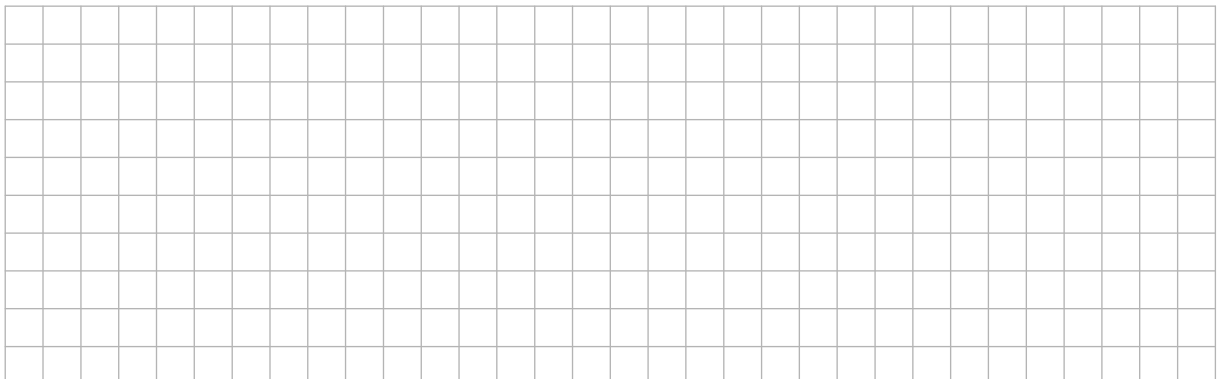
- (a) Find the length of a side of one of the cubes.



- (b) Find the volume of the ornament.

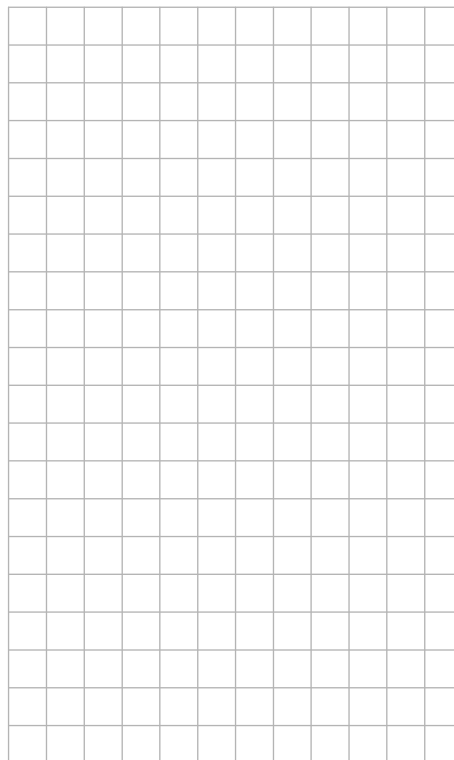
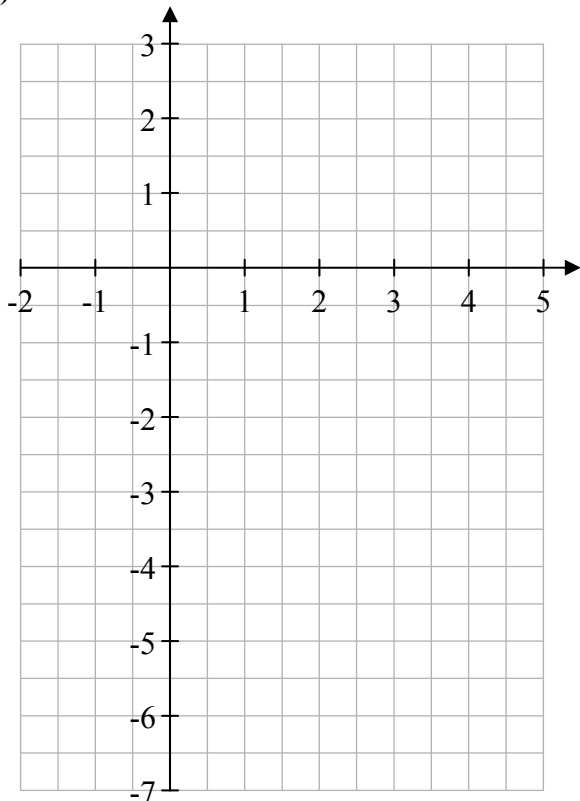


- (c) In making the ornament, what percentage of the original block of wood is carved away?

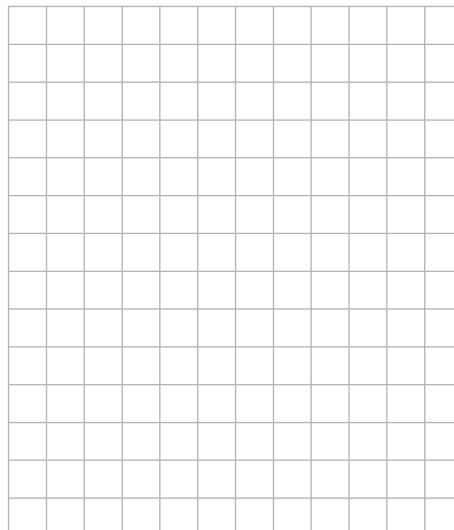
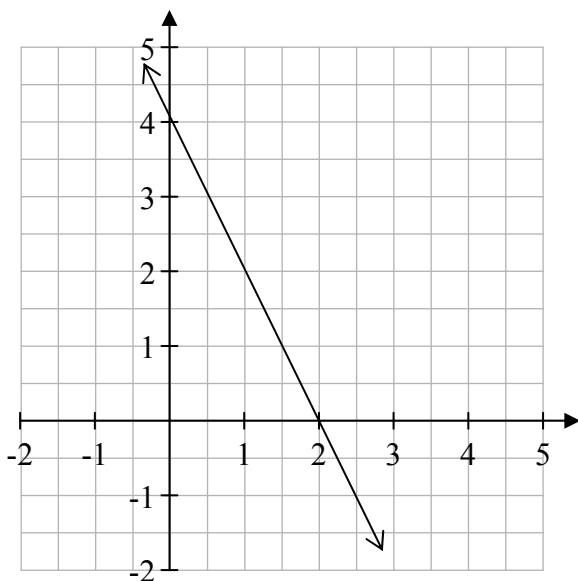


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(c) Draw a sketch of Line 1 on the axes shown.



(d) The diagram below represents one of the given lines. Which line does it represent?



Answer = Line _____

- (e) The table shows some values of x and y for the equation of one of the lines. Which equation do they satisfy?

x	y
7	12
9	20
10	24

Answer = Line _____

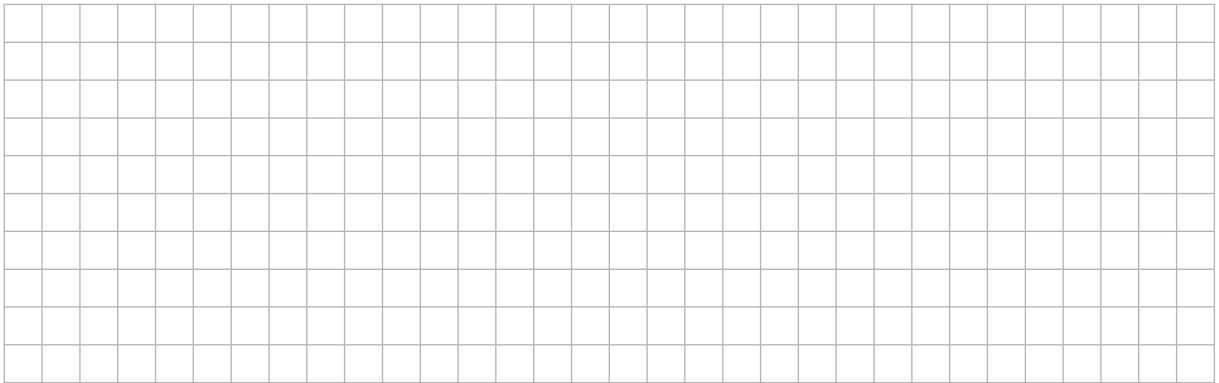
- (f) There is one value of x which will give the same value of y for Line 4 as it will for Line 6. Find, using algebra, this value of x and the corresponding value of y .

- (g) Verify your answer to (f) above.

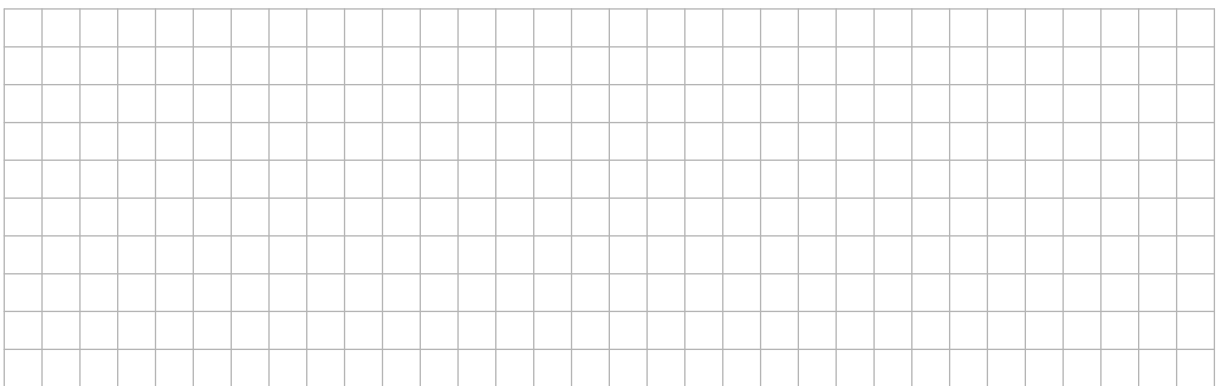
Question 11

(Suggested maximum time: 5 minutes)

- (a) Construct a right-angled triangle containing an angle A such that $\sin A = 0.4$.



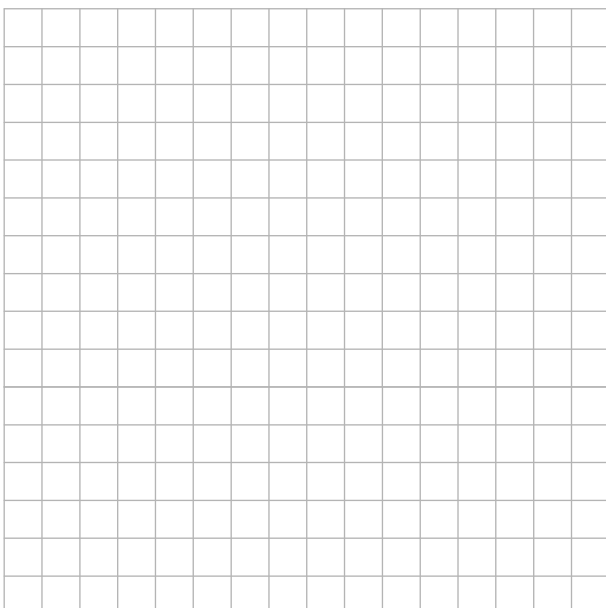
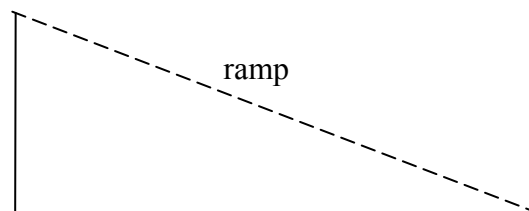
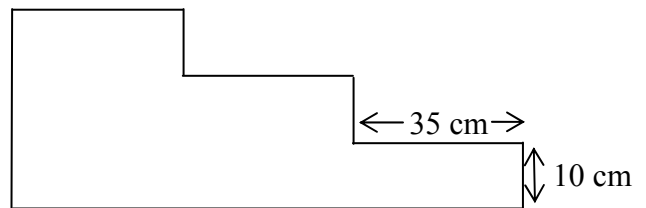
- (b) Find, from your triangle, $\cos A$ in surd form.



Question 12

(Suggested maximum time: 5 minutes)

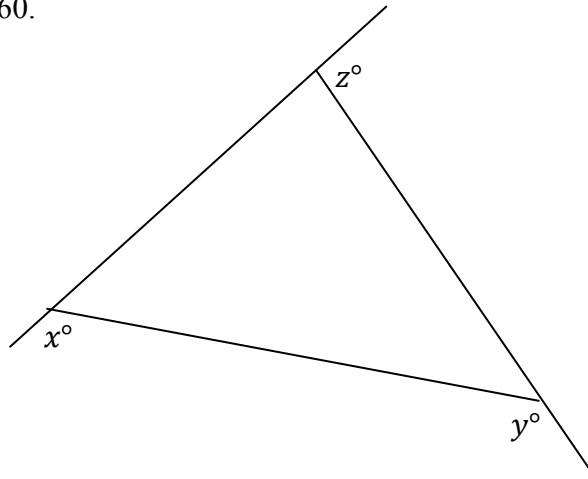
A homeowner wishes to replace the three identical steps leading to her front door with a ramp. Each step is 10 cm high and 35 cm long. Find the length of the ramp. Give your answer correct to one decimal place.



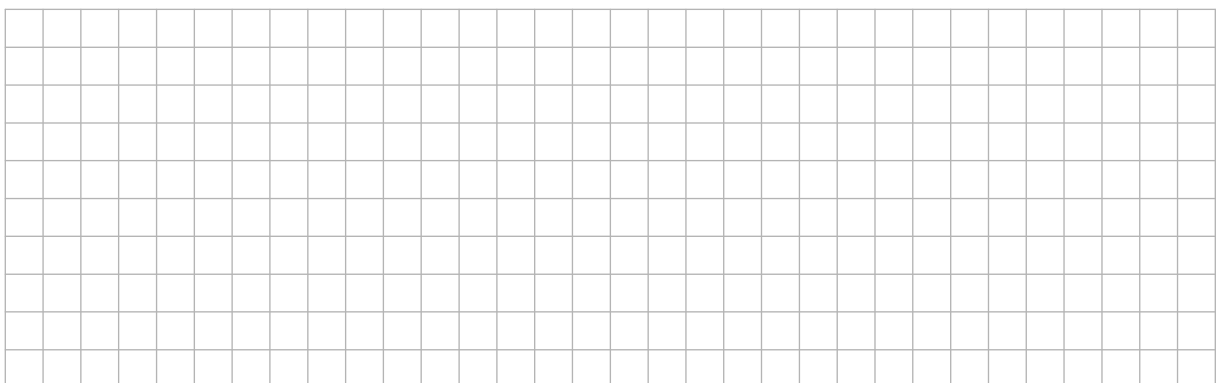
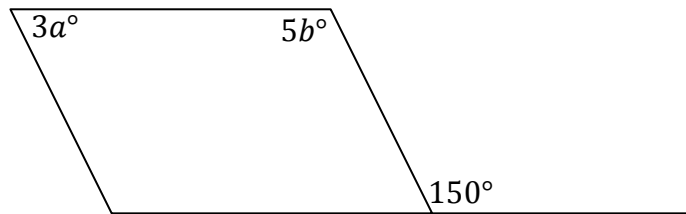
Question 15

(Suggested maximum time: 5 minutes)

- (a) Prove that $x + y + z = 360$.

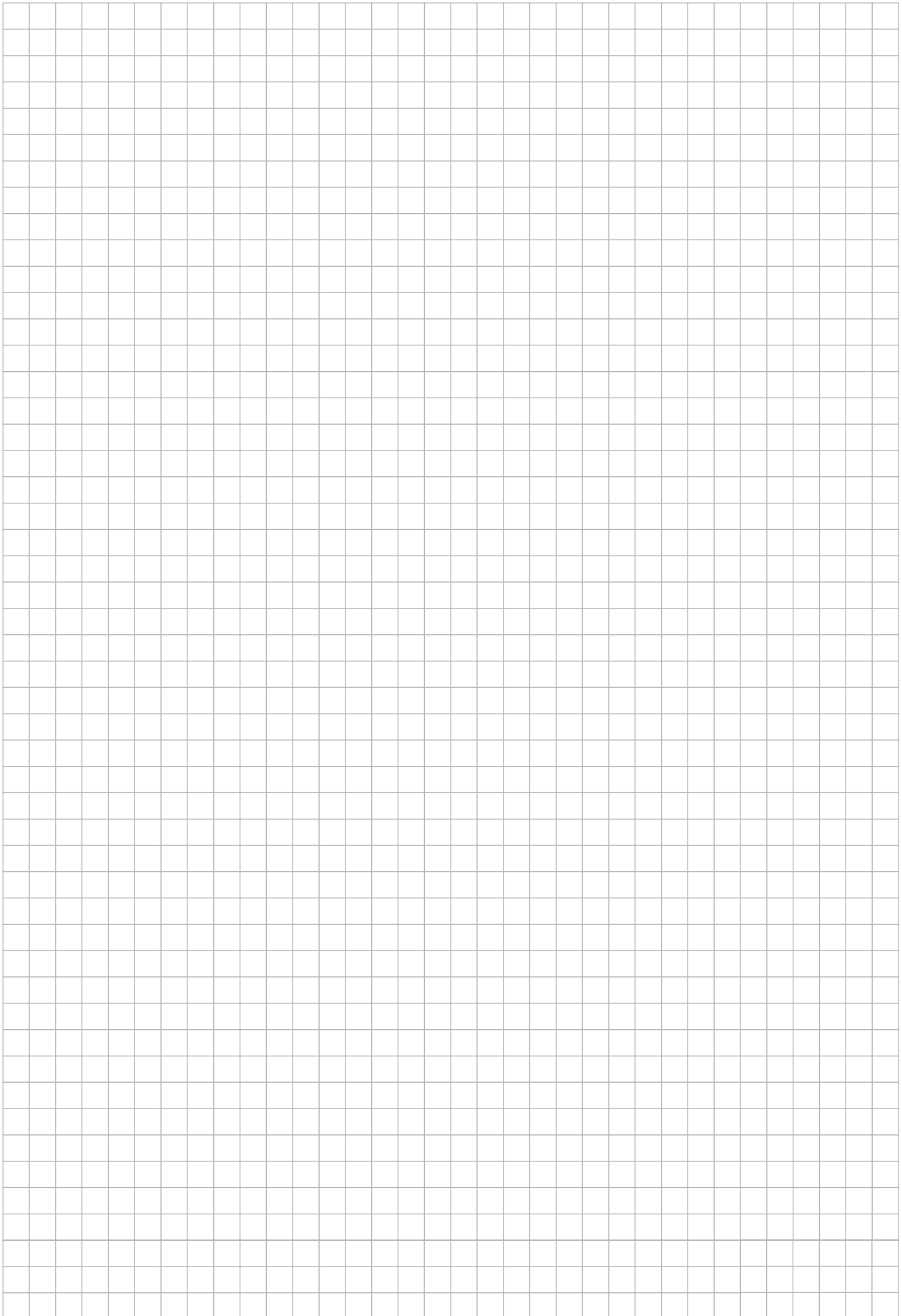


- (b) The diagram below shows a parallelogram and one exterior angle. Find the value of a and the value of b .

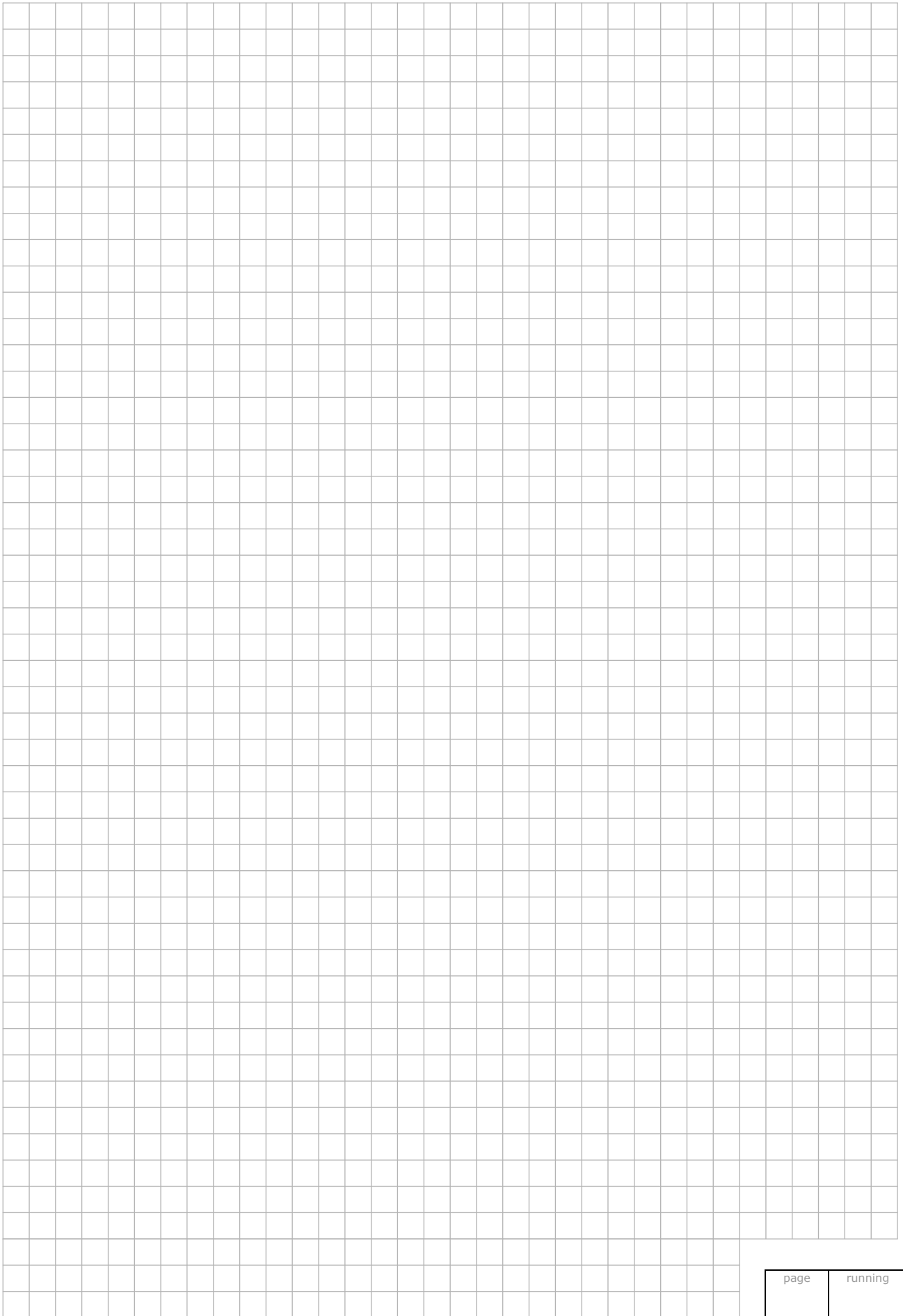


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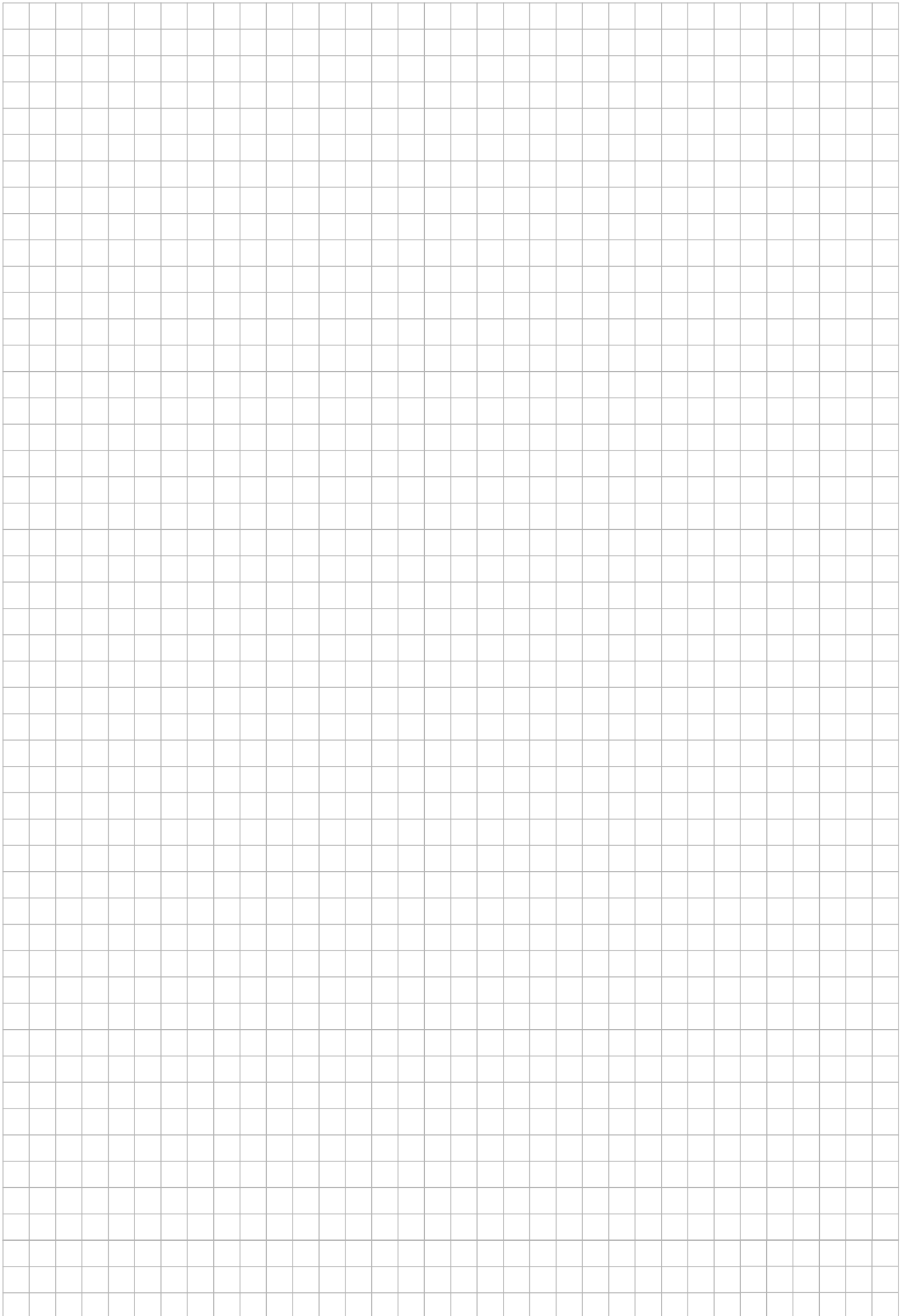


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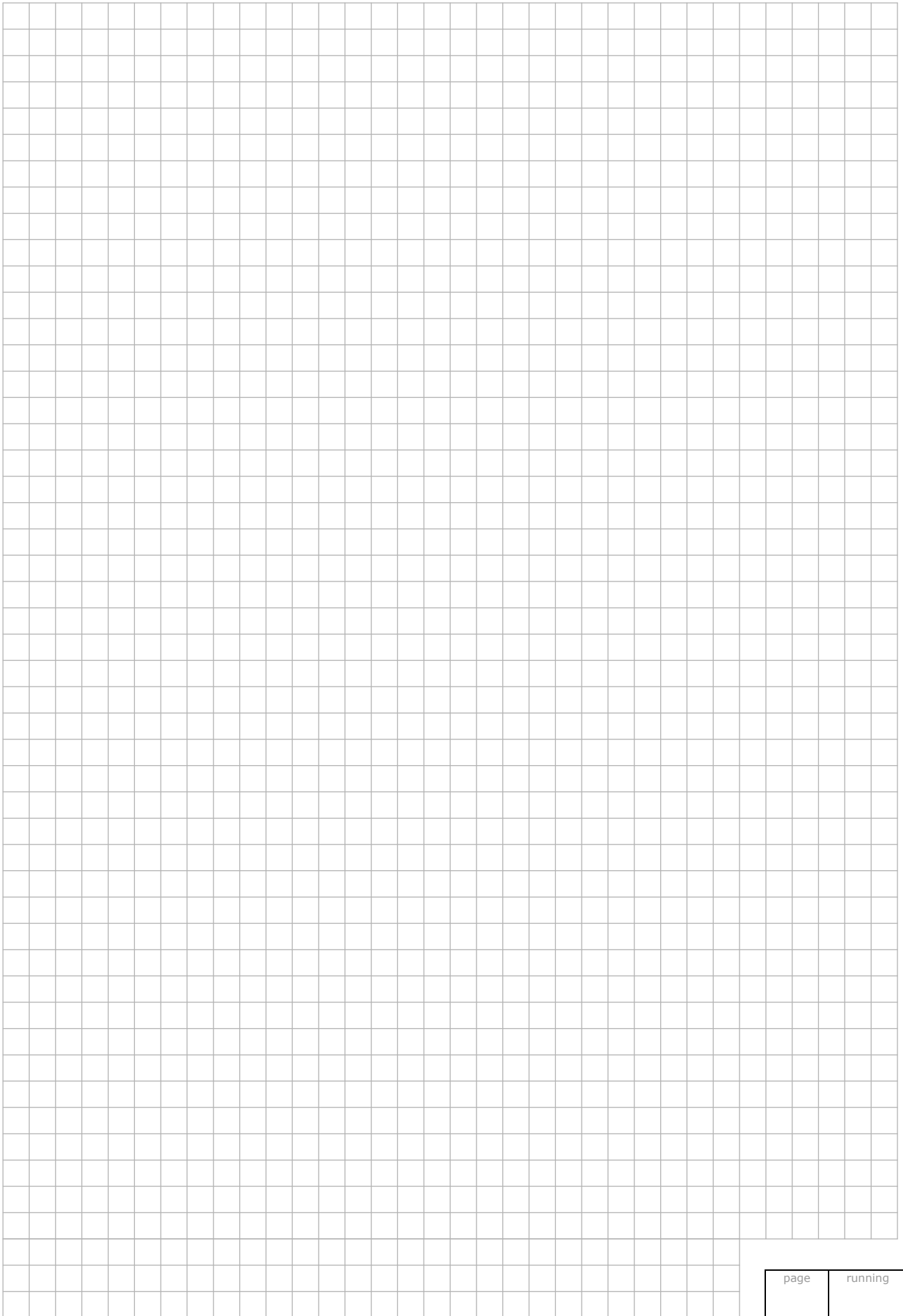


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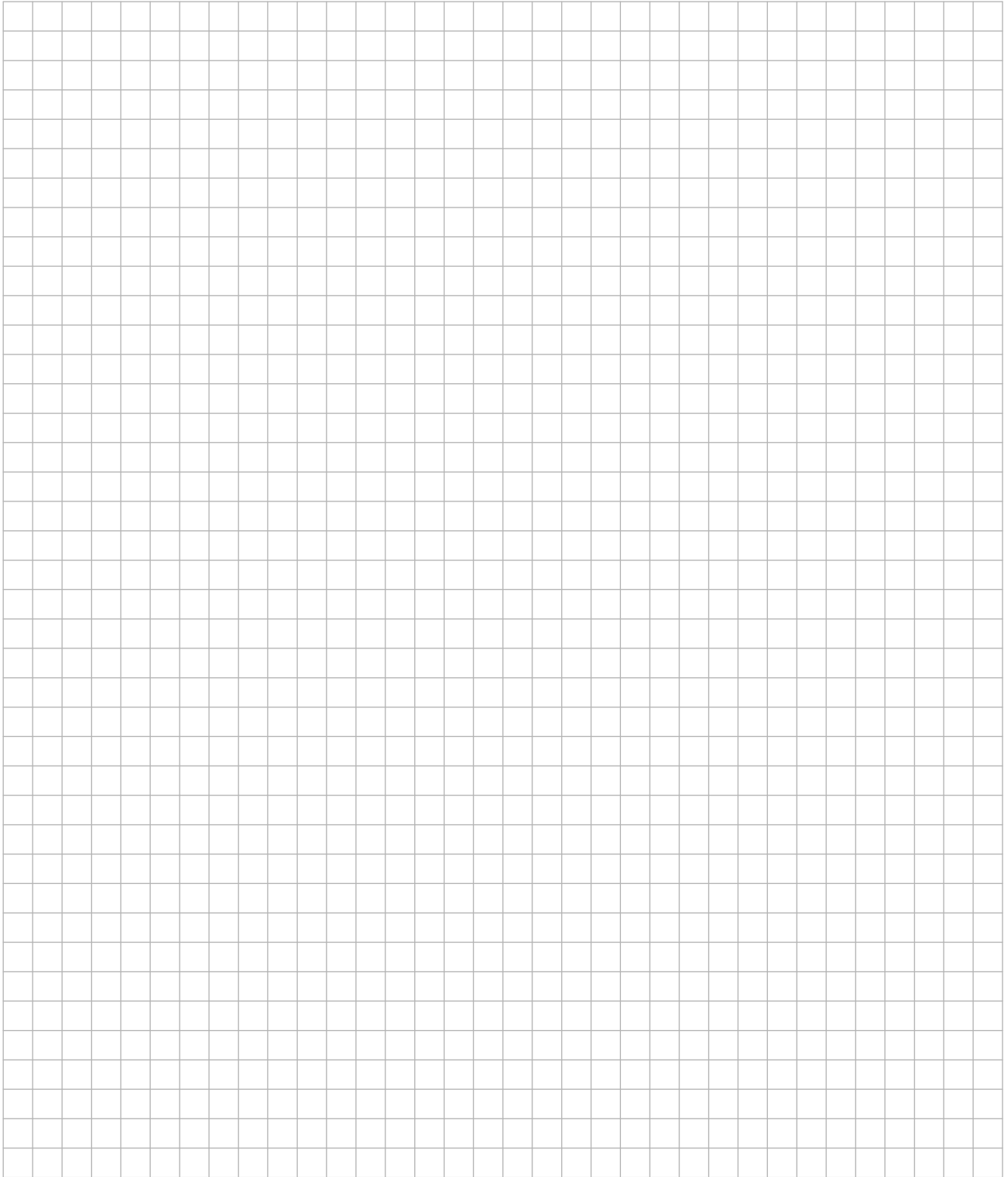
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Junior Certificate 2012 – Higher Level

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