

## Topics

**Applied Arithmetic (Financial) – Can I calculate income tax and net income?**

**Last Needed - 2022**

1 ► 2015 JCHL Paper 1 – Question 3 (a) ☐

**Functions and Graphs – Can I draw the graph of a quadratic function?**

**Last Needed – 2022**

2 ► 2016 JCHL Paper 1 – Question 14 (a) ☐

**Complex Numbers – Can I find the modulus of a complex number?**

**Last Needed - 2023**

3 ► 2012 LCOL Paper 1 – Question 4 (b) ☐

**Coordinate Geometry – Can I find calculate the distance between 2 points?**

**Last Needed - 2023**

4 ► 2010 LCOL Paper 2 – Question 2 (c) ☐

**Statistics – Can I use the Empirical Rule?**

**Last Needed - 2022**

5 ► 2012 LCOL Sample Paper 1 – Question 6 (c) ☐

[www.mathspoints.ie](http://www.mathspoints.ie) for **worked solutions** to these questions.

 [LCOL Resources by Topic](#)

 [LCOL Revision – 50 Common Questions](#)

1 ► 2015 JCHL Paper 1 – Question 3

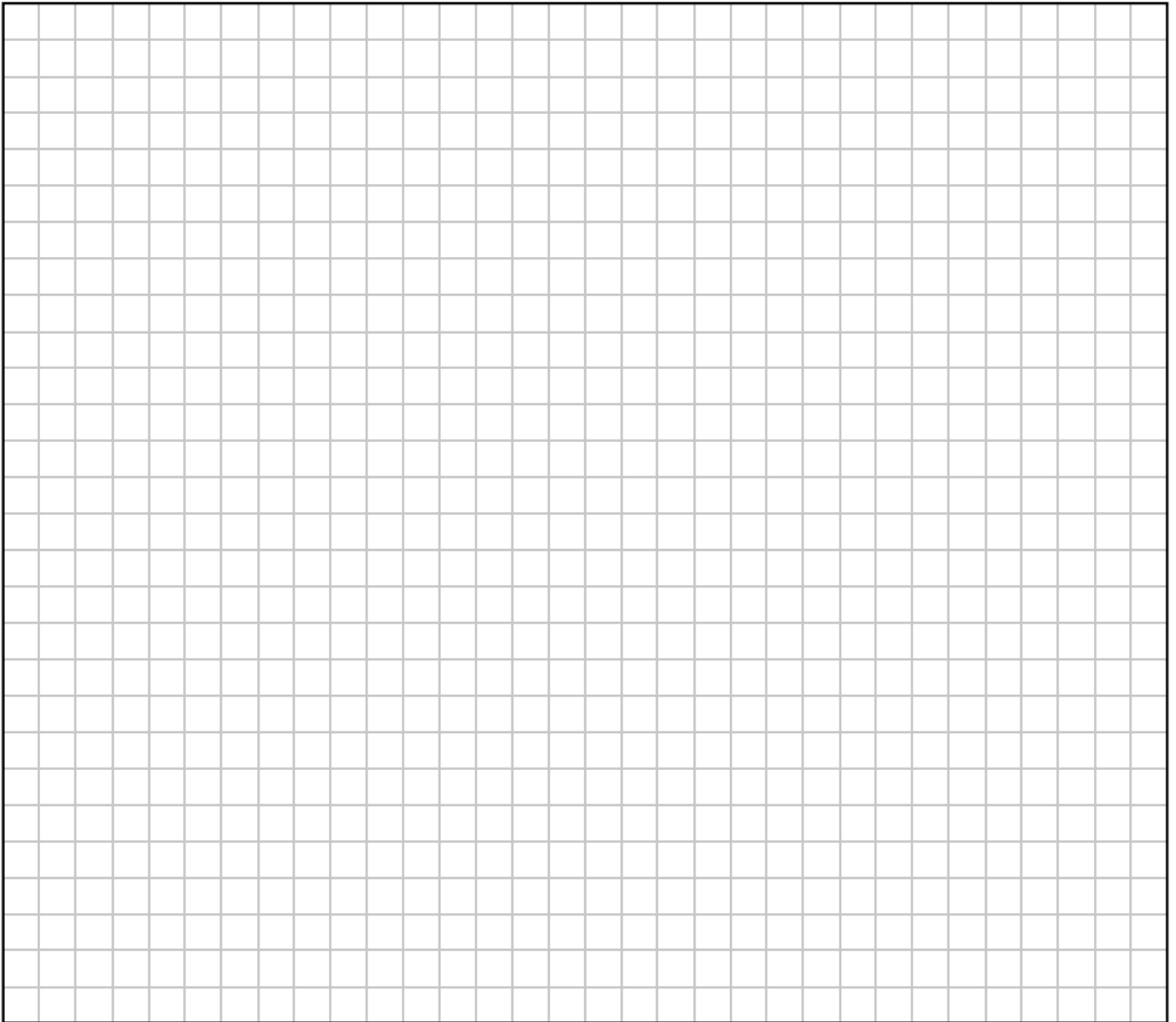
Eleanor has a **gross** income of €38 500 for the year.

She has an annual tax credit of €3300.

The standard rate cut-off point is €33 800.

The standard rate of income tax is 20% and the higher rate is 40%.

Find Eleanor's **net** income for the year (i.e. after tax is paid).

A large rectangular area filled with a light gray grid, intended for students to show their calculations for the problem.

## 2 ► 2016 JCHL Paper 1 – Question 14 (a)

The function  $h(x)$  below gives the approximate height of the water at Howth Harbour on a particular day, from 12 noon to 5 p.m.

$$h(x) = 10x^2 - 50x + 130,$$

where  $h(x)$  is the height of the water in centimetres, and  $x$  is the time in hours after 12 noon.

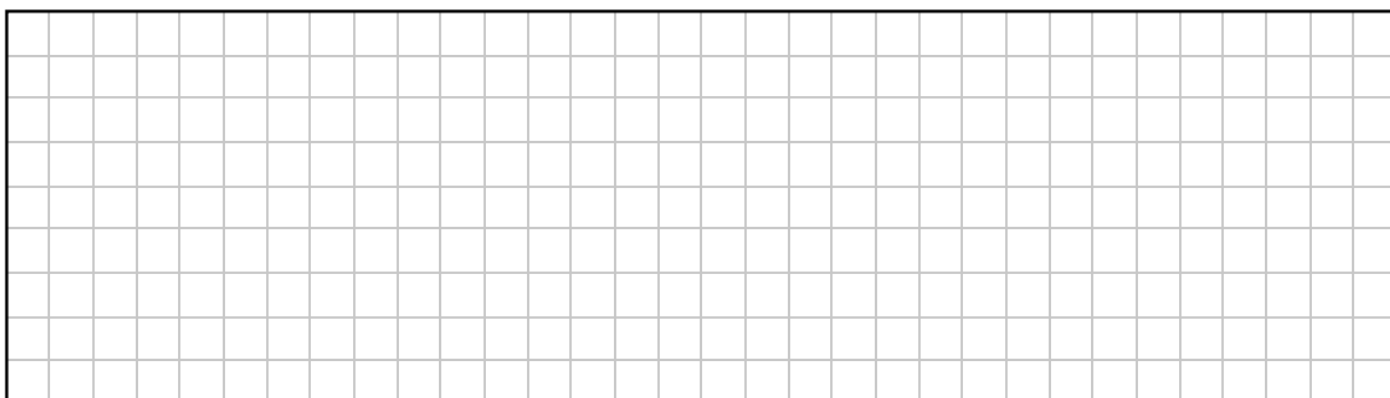
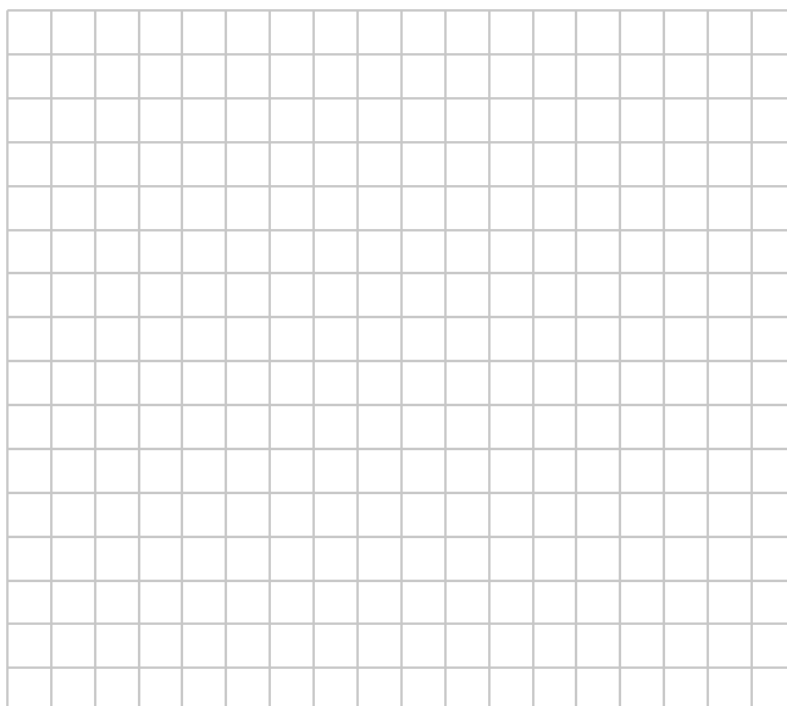
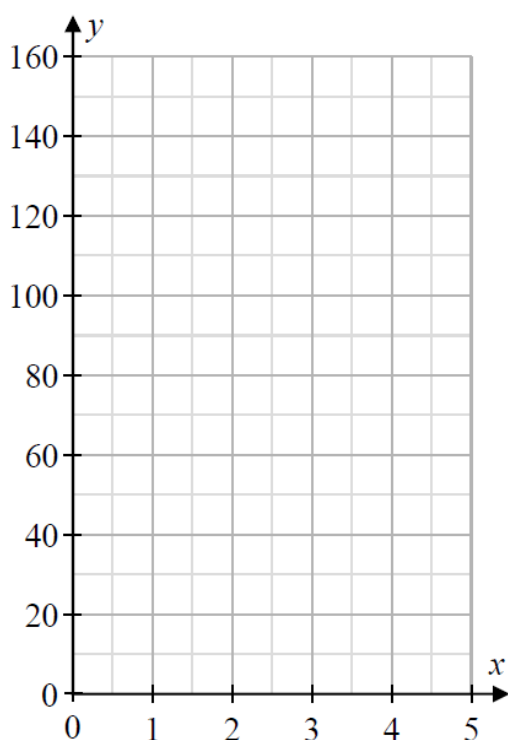
Draw the graph of the function

$$h(x) = 10x^2 - 50x + 130$$

on the axes below, for  $0 \leq x \leq 5$ ,  $x \in \mathbb{R}$ .



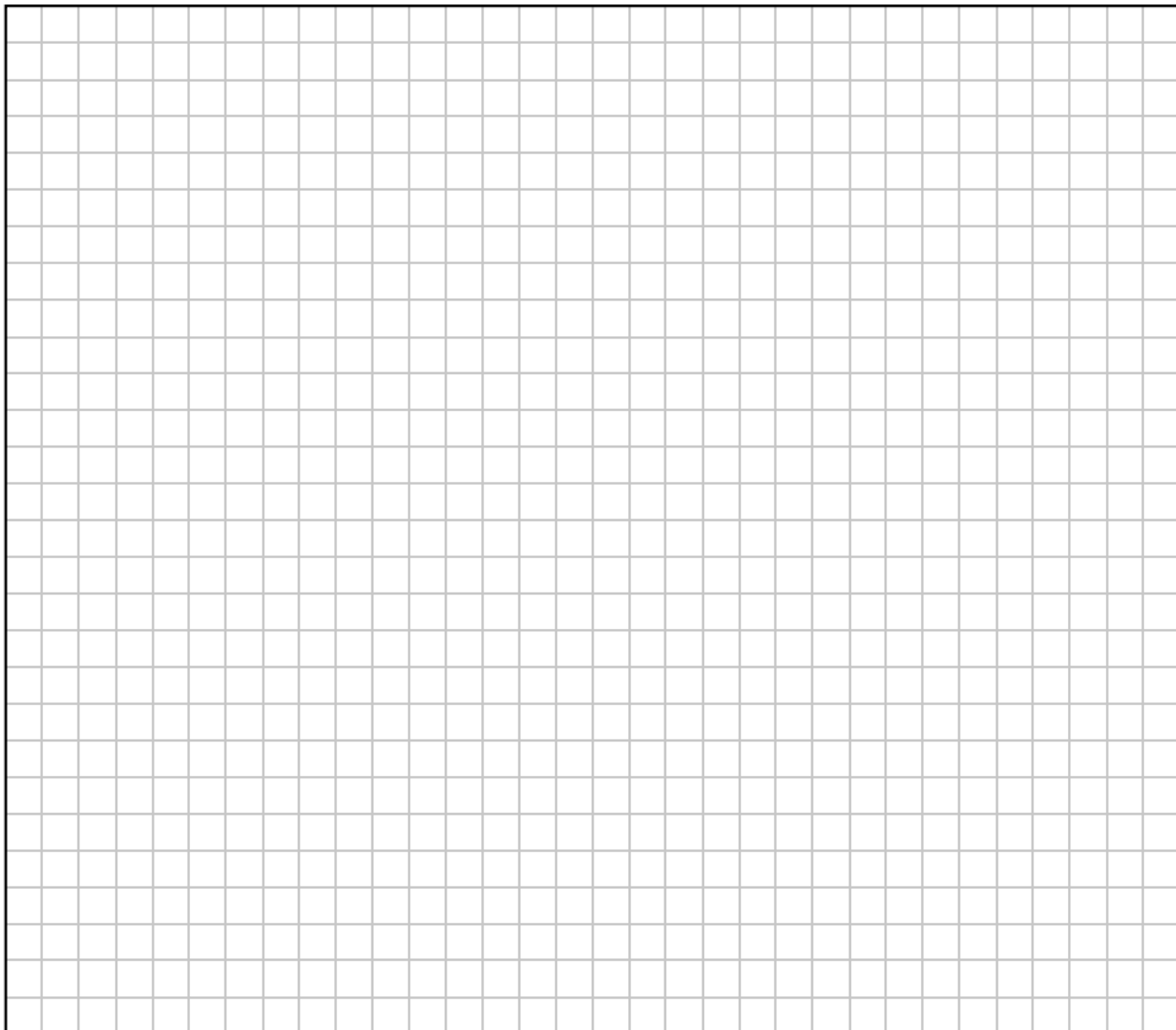
Source: [www.theirishlandscape.com](http://www.theirishlandscape.com). Altered.



3 ► 2012 LCOL Paper 1 – Question 4 (b)

Let  $z = 1 + i$ .

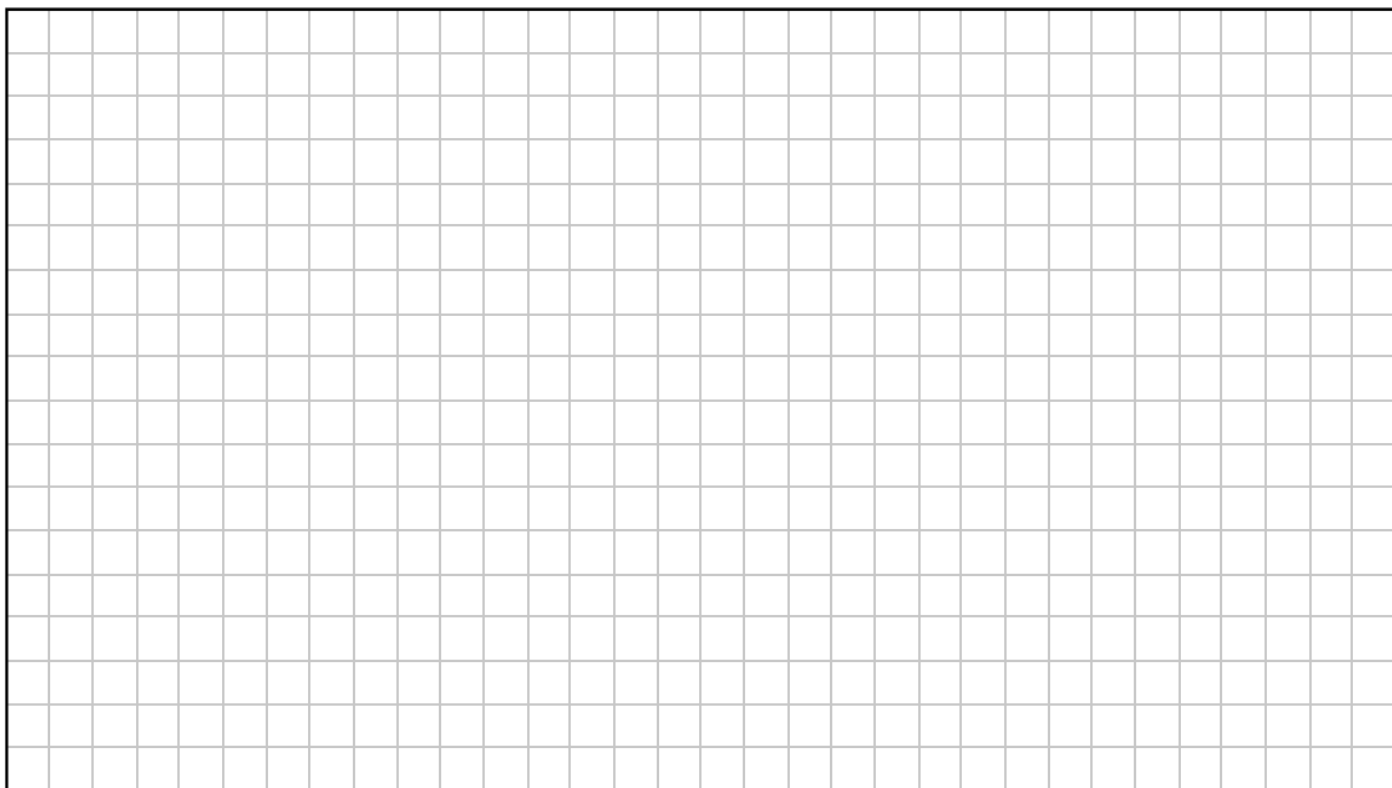
Find  $|z|$ .



4 ► 2010 LCOL Paper 2 – Question 2 (c)

$A(2, -1)$  and  $B(-4, 7)$  are two points.

Find  $|AB|$ .



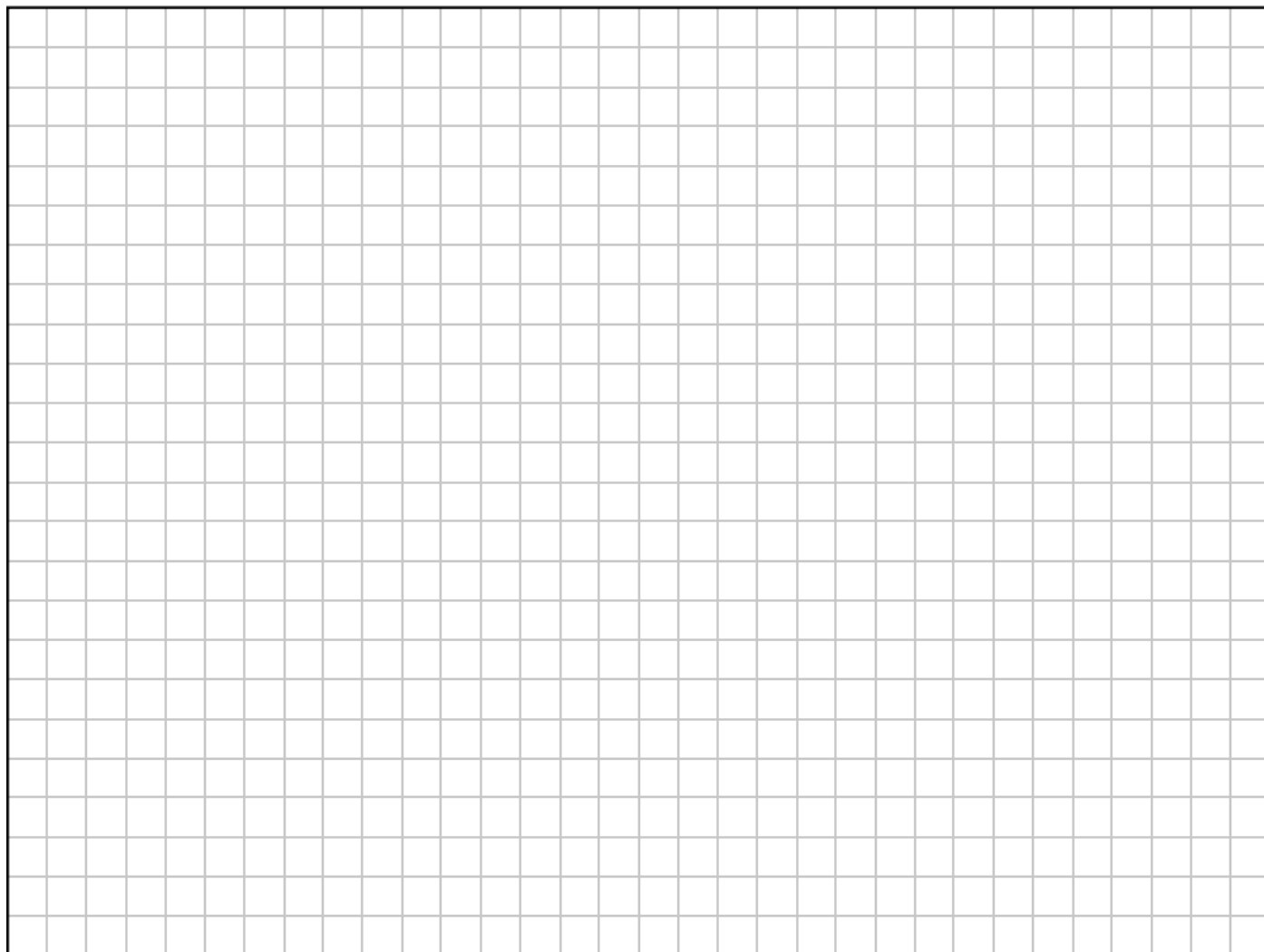
5 ► 2012 LCOL Sample Paper 2 – Question 6 (c)

The heights in 2011 of Irish males born in 1992 are normally distributed with mean 178.8 cm and standard deviation 7.9 cm.

(i) Use the *empirical rule* to complete the following sentence:

“95% of nineteen-year-old Irish men are between \_\_\_\_\_ and \_\_\_\_\_ in height.”

(ii) Use the empirical rule to make one other statement about the heights of nineteen-year old Irish men.

A large rectangular grid of graph paper, consisting of 20 columns and 30 rows of small squares, intended for students to show their work.