

Write your name here

Surname

Other names

In the style of:

**Edexcel GCSE**

Centre Number

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Candidate Number

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# Mathematics A

## Trial and Improvement

**Higher Tier**

Past Paper Style Questions  
Arranged by Topic

Paper Reference

**1MA0/2H**

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- **Calculators may be used.**



### Information

- The total mark for this paper is 100
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed.

### Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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1. The equation

$$x^3 + 20x = 73$$

has a solution between 2 and 3

Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show **ALL** your working.

$x$	$x^3 + 20x$	
2.5	65.625	< 73
2.7	73.683	> 73
2.6	69.576	< 73
2.65	71.609625	< 73

$\Rightarrow 2.65 < x < 2.7$

$$\therefore x = 2.7 \text{ (1 d.p.)}$$

$$x = \dots 2.7 \text{ (1 d.p.)}$$

(Total 4 marks)



2. The equation

$$x^3 - x = 29$$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.

Give your answer correct to 1 decimal place.

You must show **all** your working.

$x$	$x^3 - x$	
3.5	39.375	$> 29$
3.2	29.568	$> 29$
3.1	26.691	$< 29$
3.15	28.105875	$< 29$

$$\therefore x = 3.2 \text{ (1 d.p.)}$$

$$x = \underline{3.2 \text{ (1 d.p.)}}$$

(Total 4 marks)



3. The equation

$$x^3 + 10x = 24$$

has a solution between 1 and 2

Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show **all** your working.

$x$	$x^3 + 10x$
1.5	18.375 < 24
1.8	23.832 < 24
1.9	25.859 > 24
1.85	24.831625 > 24

$$\therefore x = 1.8 \text{ (1 d.p.)}$$

$$x = \underline{1.8 \text{ (1 d.p.)}}$$

(Total 4 marks)



4. The equation

$$x^3 + 10x = 50$$

has a solution between 2 and 3

Use a trial and improvement method to find this solution.

Give your answer correct to 1 decimal place.

You must show **all** your working.

$x$	$x^3 + 10x$
2.5	40.625 < 50
2.8	49.952 < 50
2.9	53.389 > 50
2.85	51.649125 > 50

$$\therefore x = 2.8 \text{ (1 d.p.)}$$

$$x = \underline{2.8 \text{ (1 d.p.)}}$$

(Total 4 marks)



5. The equation

$$x^3 + 5x = 66$$

has a solution between 3 and 4

Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show **ALL** your working.

$x$	$x^3 + 5x$	
3.5	60.375	< 66
3.7	69.153	> 66
3.6	64.656	< 66
3.65	66.877125	> 66

$$\therefore x = 3.6 \text{ (1d.p.)}$$

$$x = \underline{\underline{3.6 \text{ (1d.p.)}}}$$

(Total 4 marks)

