

**AQA, OCR, Edexcel**

**GCSE**

# **GCSE Maths**

**Trial and Improvement Answers**

Name:

**M M E**

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**Total Marks:    /24**

## Trial and Improvement

1. Use trial and improvement to find the value of  $x$  in the equation  $2x^3 + 4x = 80$  to 1 decimal place.

(4 marks)

$x$	$2x^3 + 4x$	Big/Small
3	66	S
4	144	B
3.5	99.75	B
3.25	81.65625	B
3.125	73.53515625	S

- We know from the table that 3.15 is too small and 3.25 is too big. Thus, our answer to one decimal place is 3.2.

2. Use trial and improvement to find the value of  $b$  in the equation  $4b^3 + b = 1000$  to 1 decimal place.

$b$	$4b^3 + b$	Big/Small
6	870	S
7	1379	B
6.5	1105	B
6.25	982.8125	S
6.375	1042.710938	B

- We know from the table that 6.25 is too small and 6.375 is too big. Thus, our answer to one decimal place is 6.3

(4 marks)

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3. Use trial and improvement to prove that  $3x^2 + 2x = 101.75$  for a value of  $x$  between 5.2 and 5.6.

<b>x</b>	<b>Answer</b>	<b>Big/Small</b>
5.2	91.52	S
5.6	105.28	B
5.4	98.28	S
5.5	101.75	Exact

(3 marks)

4. Use trial and improvement to find the value of  $x$  in the equation  $2x^2 + x = 80$  to 2 decimal places.

<b>x</b>	<b>Answer</b>	<b>Big/Small</b>
6	78	S
7	105	B
6.5	91	B
6.25	84.375	B
6.125	81.15625	B
6.0625	79.5703125	S
6.09375	80.36132813	B
6.078125	79.96533203	S
6.0859375	80.16320801	B

- We know from the table that 6.078125 is too small and 6.0859375 is too big. Thus, our answer to two decimal places is 6.08

(4 marks)

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5. Use trial and improvement to find the value of  $x$  in the equation  $x^3 - 2x^2 = 100$  to three decimal places for a value of  $x$  between 5.0 and 5.5. (Hard)

<b>x</b>	<b>Answer</b>	<b>Big/Small</b>
5	75	S
6	144	B
5.5	105.875	B
5.25	89.578125	S
5.375	97.50585938	S
5.4375	101.6345215	B
5.40625	99.55630493	S
5.421875	100.5919304	B
5.4140625	100.0732484	B
5.41015625	99.81455952	S
5.412109375	99.94384965	S
5.413085938	100.0085355	B

- We know from the table that 5.412109375 is too small and 5.413085938 is too big. Thus, our answer to three decimal places is 5.413.

(5 Marks)

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6. Use trial and improvement to find the value of  $x$  to two decimal places for the following equation, where  $x$  is between 1.5 and 1.9. (Very Hard)

$$(2x)^4 - x^3 - 2x^2 = 100$$

<b>x</b>	<b>Answer</b>	<b>Big/Small</b>
1	13	S
2	240	B
1.5	73.125	S
1.75	138.578125	B
1.625	101.9941406	B
1.5625	86.66992188	S
1.59375	94.10050964	S
1.609375	97.98828602	S
1.6171875	99.97630745	S

- We can see from the table that 1.6171875 is too small and 1.625 is too big. Thus, our answer to two decimal places is 1.62.

(4 Marks)