

Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
TOTAL	



# GCSE Mathematics (Non-calculator Paper)

## Practice Paper Style Questions – Topic: Surds & Indices (Higher Tier)

<p><b>For this paper you must have:</b></p> <ul style="list-style-type: none"> <li>• black pen</li> <li>• HB pencil</li> <li>• ruler (with cm &amp; mm)</li> <li>• rubber</li> <li>• protractor</li> <li>• compass</li> <li>• pencil sharpener</li> </ul>	
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### Time allowed

- 1 hour

### Instructions

- Use **black ink** or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is **38**.  
The quality of your written communication is specifically assessed in questions indicated with an asterisk (\*)
- You may ask for more answer paper and graph paper.  
These must be tagged securely to this answer booklet.
- A calculator must NOT be used.

### Advice

- Read each question carefully before you answer it.
- In all calculations, show clearly how you work out your answer.
- Check your answers if you have time at the end.

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE  
ANSWER IN THE SPACES PROVIDED**

1 Work out  $(3 + \sqrt{5})(3 - \sqrt{5})$

Give your answer in its simplest form.

Answer ..... (1 mark)

2 (a) Write down the value of  $64^{1/2}$

Answer ..... (1 mark)

(b) Write  $\sqrt{80}$  in the form  $k\sqrt{5}$ , where  $k$  is an integer.

Answer ..... (1 mark)

3 Find the value of:

(i)  $6^0$

Answer ..... (1 mark)

(ii)  $36^{1/2}$

Answer ..... (1 mark)

(iii)  $\left(\frac{27}{8}\right)^{2/3}$

Answer ..... (2 marks)

**4 (a)** Simplify  $3x \times 6y$

Answer ..... (1 mark)

**(b)** Simplify  $x \times x \times x$

Answer ..... (1 mark)

**(c)** Expand  $4(4p - 7)$

Answer ..... (2 marks)

**(d)** Expand and simplify  $2(2x + 3) + 3(x + 1)$

Answer ..... (2 marks)

**(e)** Simplify  $r^3 \times r$

Answer ..... (1 mark)

**(f)** Simplify  $n^6 \div n^4$

Answer ..... (1 mark)

5 (a) Simplify  $s^5 \times s^3$

Answer ..... (1 mark)

(b) Simplify  $t^5 \div t^2$

Answer ..... (1 mark)

(c) Simplify  $6tv^6 \div 3tv^5$

Answer ..... (2 marks)

(d) Simplify  $(4w^2y^6)^{\frac{1}{2}}$

Answer ..... (2 marks)

(e) For  $y > 1$ , write the following expressions in order of size.  
Start with the expression with the least value.

$$y^0$$

$$y^2$$

$$y$$

$$y^{-2}$$

$$y^{\frac{1}{2}}$$

Answer ..... (2 marks)

**6 (a)** Simplify  $p^3 \times p^5$

Answer ..... (1 mark)

**(b)** Simplify  $t^6 \div t^3$

Answer ..... (1 mark)

**(c)** Simplify  $a^2b^3 \times 3ab^2$

Answer ..... (2 marks)

**7 (a)** Expand and simplify  $3(a + 3) + 5(2a + 2)$

Answer ..... (2 marks)

**(b)** Simplify  $x^4 \times x^8$

Answer ..... (1 mark)

**(c)** Simplify  $y^{10} \div y^5$

Answer ..... (1 mark)

**(d)** Simplify  $(z^4)^4$

Answer ..... (1 mark)

**8 (a)** Simplify  $v^8 \times v^2$

Answer ..... (1 mark)

**(b)** Simplify  $\frac{m^9}{m^3}$

Answer ..... (1 mark)

**(c)** Simplify  $(3y)^3$

Answer ..... (2 marks)

**(d)** Simplify  $3a^2h \times 4a^5h^4$

Answer ..... (2 marks)

**END OF QUESTIONS**

**There are no questions printed on this page**

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