

Name

Class

# MATHS TEACHER HUB

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## Powers and roots

(9 – 1) Topic booklet

These questions have been collated from previous years GCSE Mathematics papers.

**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.

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.*
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- If the question is a **1F** question you are not allowed to use a calculator.
- If the question is a **2F** or a **3F** question, you may use a calculator to help you answer.

### Information

- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### 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.

**Answer ALL questions**  
**Write your answers in the space provided.**  
**You must write down all the stages in your working.**

**1** Work out the value of  $2^4$

June 2017 – Paper 1F

(Total for Question 1 is 1 mark)

**2** Work out  $3^2$

November 2022 – 1F

(Total for Question 2 is 1 mark)

**3** Find  $\sqrt{1.44}$

November 2018 – Paper 3F

(Total for Question 3 is 1 mark)

**3** Work out the value of  $3^5$

May 2018 – Paper 2F

(Total for Question 3 is 1 mark)

**3** Here is a list of numbers

4    7    9    25    27    31    64

From the numbers in the list, write down a cube number.

Sample 1 – Paper 2F

**(Total for Question 3 is 1 mark)**

**4** Work out  $2.5^2$

May 2020 – Paper 3F

**(Total for Question 4 is 1 mark)**

**4** Here is a list of numbers.

4    6    9    10    15    27    30    40

From the list, write down all the numbers that are powers of 3

June 2019 – Paper 3F

**(Total for Question 4 is 1 mark)**

**4** Find the value of  $5^4$

Specimen 2 – Paper 2F

**(Total for Question 4 is 1 mark)**

4 Work out the cube root of 64

.....  
November 2018 – Paper 2F

**(Total for Question 4 is 1 mark)**

4 Find the value of  $\sqrt{17.64}$

.....  
November 2019 – Paper 2F

**(Total for Question 4 is 1 mark)**

5 Write down the value of  $7^2$

.....  
November 2021 – Paper 1F

**(Total for Question 5 is 1 mark)**

5 Work out  $2^3$

.....  
November 2018 – Paper 1F

(1)  
**(Total for Question 5 is 1 mark)**

5 Here is a list of numbers.

3 4 9 18 27 30 36

From the numbers in the list, write down a cube number.

.....  
May 2020 – Paper 2F

**(Total for Question 5 is 1 mark)**

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5 Find the value of  $6^5$

.....  
November 2019 – Paper 2F

**(Total for Question 5 is 1 mark)**

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5 Find  $\sqrt{1.69}$

.....  
June 2022 – Paper 3F

**(Total for Question 5 is 1 mark)**

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**6** Here is a list of whole numbers from 21 to 30

21    22    23    24    25    26    27    28    29    30

(a) From the list, write down a square number.

.....  
(1)

(b) From the list, write down a multiple of 8

.....  
(1)

November 2021 – Paper 1F

**(Total for Question 6 is 2 marks)**

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**8** Here is a list of numbers.

21    22    23    24    25    26    27    28    29

(a) From the numbers in the list, write down a square number.

.....  
(1)

June 2017 – Paper 2F

**(Total for Question 8 is 1 mark)**

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**9** Nidah writes down two different prime numbers.

She adds together her two numbers.

Her answer is a square number less than 30

Find two prime numbers that Nidah could have written down.

..... , .....

November 2017 – Paper 3F

**(Total for Question 9 is 2 marks)**

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**11** Work out  $4^4$

.....

**(1)**

Specimen 1 – Paper 3F

**(Total for Question 11 is 1 mark)**

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15 (a) Write down the value of  $\sqrt{64}$

.....  
(1)

(b) Work out the value of  $5^3$

.....  
(1)

June 2019 – Paper 1F

**(Total for Question 15 is 2 marks)**

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22 Write down the value of  $2^{-3}$

.....  
(1)

November 2017 – Paper 1F

**(Total for Question 22 is 1 mark)**

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