

Name

Class

# MATHS TEACHER HUB

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## Indices

### (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.**

**7** Simplify  $d^2 \times d^3$

.....  
(1)

Specimen 1 – Paper 3F

**(Total for Question 7 is 1 mark )**

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**16** Simplify  $(m^3)^2$

.....  
(1)

Specimen 1 – Paper 2F

**(Total for Question 16 is 1 mark )**

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**17** Simplify  $4e^2f \times 5ef^3$

.....  
(2)

November 2021 – Paper 3F

**(Total for Question 17 is 2 marks)**

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19 (a) Simplify  $(t^3)^2$

.....  
(1)

(b) Simplify  $\frac{w^9}{w^4}$

.....  
(1)

Specimen 2 – Paper 1F

**(Total for Question 19 is 2 marks)**

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20 (a) Simplify  $c^5 \div c^2$

.....  
(1)

(b) Simplify  $(d^4)^3$

.....  
(1)

November 2021 – Paper 1F

**(Total for Question 20 is 2 marks)**

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20 Work out the value of  $\frac{3^7 \times 3^{-2}}{3^3}$

November 2018 – Paper 1F

**(Total for Question 20 is 2 marks)**

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**20** (a) Simplify  $m^3 \times m^4$

.....  
(1)

(b) Simplify  $(5np^3)^3$

.....  
(2)

(c) Simplify  $\frac{32q^9r^4}{4q^3r}$

.....  
(2)

May 2018 – Paper 2F

**(Total for Question 20 is 5 marks)**

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**21** (a) Simplify  $(x^3)^5$

.....  
(1)

June 2022 – Paper 2F

**(Total for Question 21 is 1 mark )**

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**21**  $p^3 \times p^x = p^9$

(a) Find the value of  $x$ .

$x = \dots\dots\dots$   
(1)

$(7^2)^y = 7^{10}$

(b) Find the value of  $y$ .

$y = \dots\dots\dots$   
(1)

$100^a \times 1000^b$  can be written in the form  $10^w$

(c) Show that  $w = 2a + 3b$

(2)

23 (a) Simplify  $n^3 \times n^5$

.....  
(1)

(b) Simplify  $\frac{c^3d^4}{c^2d}$

.....  
(2)

May 2020 – Paper 3F

**(Total for Question 23 is 3 marks)**

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24 Simplify  $5u^2w^4 \times 7uw^3$

.....  
(2)

Specimen 2 – Paper 2F

**(Total for Question 24 is 2 marks)**

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**26** (a) Simplify  $(p^2)^5$

.....  
(1)

(b) Simplify  $12x^7y^3 \div 6x^3y$

.....  
(2)

November 2019 – Paper 1F

**(Total for Question 26 is 3 marks)**

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**30** Simplify  $(m^{-2})^{-3}$

.....  
(1)

May 2020 – Paper 1F

**(Total for Question 30 is 1 mark )**

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