

Name

Class



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Indices

(9 – 1) Topic booklet

Foundation

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)

16 Simplify $(m^3)^2$



.....
(1)

Specimen 1 – Paper 2F

(Total for Question 16 is 1 mark)

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



.....
(2)

November 2021 – Paper 3F

(Total for Question 17 is 2 marks)

18 Write down the value of 10^0

.....

May 2024 – Paper 1F

(Total for Question 18 is 1 mark)

19 (a) (i) Write down the value of 5^0

.....
(1)

(ii) Write down the value of 5^{-2}

.....
(1)

(b) Write $\frac{2^5 \times 2^4}{2^3}$ in the form 2^n where n is an integer.

.....
(2)

November 2023 – Paper 1F

(Total for Question 19 is 4 marks)

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)

20 (a) Simplify $(m^2)^3$



.....
(1)

(b) Simplify $x^5 \times x^8$

.....
(1)

(c) Expand $4p(p^2 + 3p)$

.....
(2)

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)

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)

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)

21 Simplify $(2^{-5} \times 2^8)^2$

Give your answer as a power of 2

November 2022 – 1F

(Total for Question 21 is 2 marks)

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

.....
(1)

June 2022 – Paper 2F

(Total for Question 21 is 1 mark)

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

(a) Find the value of x .

$x =$
(1)

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

(b) Find the value of y .

$y =$
(1)

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

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

(2)

November 2017 – Paper 2F

(Total for Question 21 is 4 marks)

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)

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



..... (2)

Specimen 2 – Paper 2F

(Total for Question 24 is 2 marks)

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)

29 Work out the value of $\frac{4^{-6} \times 4^9}{4}$

June 2023 – Paper 1F

(Total for Question 29 is 2 marks)

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

.....
(1)

May 2020 – Paper 1F

(Total for Question 30 is 1 mark)