

Negative and Fractional Indices

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

Total marks: **23**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method. You must **not** use a calculator.

1 (a) Write down the value of 7^0

.....
(1)

(b) Find the value of $81^{-\frac{1}{2}}$

.....
(1)

(c) Find the value of $125^{\frac{2}{3}}$

.....
(1)

(d) Find the value of $\left(\frac{16}{81}\right)^{-\frac{3}{4}}$

.....
(2)

(Total for Question 1 is 5 marks)

2 $2^n = \frac{\sqrt{2}}{8}$

Find the value of n .

$n = \dots\dots\dots$
(2)

(Total for Question 2 is 2 marks)

3 Write $25^n \times 125^{1-n}$ as a power of 5

$\dots\dots\dots$
(2)

(Total for Question 3 is 2 marks)

4 Simplify fully $\left(\frac{27x^6}{y^3}\right)^{-\frac{1}{3}}$

$\dots\dots\dots$
(2)

(Total for Question 4 is 2 marks)

- 5 $\frac{9^a}{3^b} = 27$
Show that $b = 2a - 3$

(2)

(Total for Question 5 is 2 marks)

- 6 Work out the value of $\left(\frac{9}{4}\right)^{-\frac{1}{2}} \times \left(\frac{2}{3}\right)^{-3}$
You must show all your working.

.....
(3)

(Total for Question 6 is 3 marks)

- 7 $2^a = \frac{1}{8}$ $2^b = 4^5$ $2^c = \frac{1}{\sqrt{2}}$
Work out the value of $a + b + c$

.....
(3)

(Total for Question 7 is 3 marks)

- 8** $5^x \times 25^y = 5^7$ and $2^x \div 2^y = 2$
Work out the values of x and y .

$x = \dots\dots\dots$ $y = \dots\dots\dots$
(4)

(Total for Question 8 is 4 marks)
