

# Fractional and Negative Indices

## Question Paper

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Fractional and Negative Indices
Grade Level	Grade 6
Booklet	Question Paper

**Time Allowed:** 63 minutes

**Score:** /52

**Percentage:** /100

**Grade Boundaries:**

1. Find the value of

(i)  $36^{\frac{1}{2}}$

.....

(ii)  $3^{-2}$

.....

**(Total 2 marks)**

2. Write down the value of

(a)  $7^0$

.....

**(1)**

(b)  $4^{-1}$

.....

**(1)**

**(Total 2 marks)**

3. (a) Simplify  $2^0$

.....

**(1)**

(b) Simplify  $5^{-1}$

.....

**(1)**

**(Total 2 marks)**

4. (a) Write down the value of  $2^{-1}$

.....

**(1)**

(b) Write down the value of  $64^{\frac{1}{2}}$

.....

**(1)**

**(Total 2 marks)**

5. Write down the value of

(i)  $5^0$

.....

(ii)  $4^{-2}$

.....

(iii)  $100^{\frac{1}{2}}$

.....

**(Total 3 marks)**

6. (a) Write down the value of

(i)  $9^0$

.....

(ii)  $169^{\frac{1}{2}}$

.....

**(2)**

(b) Work out  $64^{\frac{2}{3}}$

.....

**(2)**

**(Total 4 marks)**

7. (a) Find the value of  $36^{\frac{1}{2}}$

.....

**(1)**

(b) Find the value of  $8^{-\frac{2}{3}}$

.....

**(2)**

**(Total 3 marks)**

8. Work out

(i)  $4^0$

.....

(ii)  $4^{-2}$

.....

(iii)  $16^{\frac{3}{2}}$

.....

**(Total 3 marks)**

9. Write down the value of

(a)  $25^{\frac{1}{2}}$

.....

**(1)**

(b)  $9^0$

.....

**(1)**

**(Total 2 marks)**

10. (a) Evaluate

(i)  $3^{-2}$

.....

(ii)  $36^{\frac{1}{2}}$

.....

(iii)  $27^{\frac{2}{3}}$

.....

(iv)  $\left(\frac{16}{81}\right)^{-\frac{3}{4}}$

.....

**(5)**

11. (a) Find the value of

(i)  $64^\circ$

.....

(ii)  $64^{\frac{1}{2}}$

.....

(iii)  $64^{-\frac{2}{3}}$

.....

**(4)**

(b)  $3 \times \sqrt{27} = 3^n$   
Find the value of  $n$ .

$n = \dots\dots\dots$

**(2)**

**(Total 6 marks)**

12. (a) Work out  $3^6 \div 3^{-7}$

.....

(1)

(b) Write down the value of  $36^{\frac{1}{2}}$

.....

(1)

(c)  $3^n = \frac{1}{9}$

Find the value of  $n$ .

$n = \dots\dots\dots$

(1)

**(Total 3 marks)**

13. (a) Simplify

(i)  $(3x^2y)^3$

.....

(ii)  $(2t^{-3})^{-2}$

.....

(4)

14.  $x = 2^p, \quad y = 2^q$

(a) Express in terms of  $x$  and/or  $y$ ,

(i)  $2^{p+q}$

.....

(ii)  $2^{2q}$

.....

(iii)  $2^{p-1}$

.....

**(3)**

$$xy = 32$$

and

$$2xy^2 = 32$$

(b) Find the value of  $p$  and the value of  $q$ .

$$p = \dots\dots\dots$$

$$q = \dots\dots\dots$$

**(2)**

**(Total 5 marks)**

16. (a) Write down the value of  $8^{\frac{1}{3}}$

.....

(1)

$8\sqrt{8}$  be written in the form  $8^k$

(b) Find the value of  $k$ .

$k =$  .....

(1)

$8\sqrt{8}$  can also be expressed in the form  $m\sqrt{2}$  where  $m$  is a positive integer.

(c) Express  $8\sqrt{8}$  in the form  $m\sqrt{2}$

.....

(2)

(d) Rationalise the denominator of  $\frac{1}{8\sqrt{8}}$

Give your answer in the form  $\frac{\sqrt{2}}{p}$  where  $p$  is a positive integer.

.....

(2)

(Total 6 marks)