



THIRD SPACE
LEARNING

GCSE Exam Questions

Negative Indices | Algebra

GCSE Exam Questions: Negative Indices

1) (a) Evaluate 7^{-2}

(2)

(b) Evaluate $8^{-\frac{1}{3}}$

(3)

(5 marks)

2) (a) Evaluate $\left(\frac{3}{7}\right)^{-2}$

(3)

(b) Evaluate $\left(\frac{36}{81}\right)^{-\frac{1}{2}}$

(3)

(6 marks)

GCSE Exam Questions: Negative Indices

3) (a) Work out $9^{-\frac{1}{2}} + 12^{-2}$

(3)

(b) Work out $5^{-2} \times (27^2)^{\frac{1}{3}}$

(4)

(7 marks)

4) (a) Find the value of x such that $2^x = \frac{1}{4}$

(2)

(b) Find the value of y such that $5^y = \frac{1}{\sqrt{125}}$

(2)

(4 marks)

GCSE Exam Questions: Negative Indices Answers

	Question	Answer	Marks
1) (a)	Evaluate 7^{-2}	(a) $\frac{1}{7^2}$ seen oe	(1)
		$\frac{1}{49}$	(1)
(b)	Evaluate $8^{-\frac{1}{3}}$	(b) $\frac{1}{8^{\frac{1}{3}}}$ seen oe	(1)
		$8^{\frac{1}{3}} = 2$ seen	(1)
		$\frac{1}{2}$	(1)
2) (a)	Evaluate $\left(\frac{3}{7}\right)^{-2}$	(a) $\frac{1}{\left(\frac{3}{7}\right)^2}$ seen oe	(1)
		$3^2 = 9$ or $7^2 = 49$ seen	(1)
		$\frac{49}{9}$	(1)
(b)	Evaluate $\left(\frac{36}{81}\right)^{-\frac{1}{2}}$	(b) $\frac{1}{\left(\frac{36}{81}\right)^{\frac{1}{2}}}$ seen oe	(1)
		$81^{\frac{1}{2}} = 9$ or $36^{\frac{1}{2}} = 6$ seen	(1)
		$\frac{9}{6}$ or $\frac{3}{2}$ or $1\frac{1}{2}$	(1)

GCSE Exam Questions: Negative Indices Answers

	Question	Answer	Marks
3) (a)	Work out $9^{-\frac{1}{2}} + 12^{-2}$	(a) $9^{-\frac{1}{2}} = \frac{1}{3}$ seen or $12^{-2} = \frac{1}{144}$ seen $\frac{1}{3} + \frac{1}{144} = \frac{144 + 3}{432}$ or evidence of finding a common denominator $\frac{147}{432}$ oe	(1) (1) (1)
(b)	Work out $5^{-2} \times (27^2)^{-\frac{1}{3}}$	(b) $5^{-2} = \frac{1}{25}$ seen $27^{-\frac{2}{3}} = \frac{1}{9}$ seen Evidence of multiplying the denominators seen $\frac{1}{225}$	(1) (1) (1) (1)
4) (a)	Find the value of x such that $2^x = \frac{1}{4}$	(a) $2^2 = 4$ seen $x = -2$	(1) (1)
(b)	Find the value of y such that $5^y = \frac{1}{\sqrt{125}}$	(b) $5^3 = 125$ seen $y = -\frac{3}{2}$ or -1.5	(1) (1)

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