FOUNDATION & HIGHER

HIGHER EXTENDS

Name ..... Class .....

N7: Indices

Calculate with integer and fractional indices

20 marks · 25 minutes · Non-calculator

1) Simplify. Leave each answer as a power.

(a) $3^4 \times 3^5$

.....

(1)

(b) $5^8 \div 5^3$

.....

(1)

(c) $(7^2)^3$

.....

(1)

[Question 1: 3 marks]

2) Work out the value of

(a) 5^0

.....

(1)

(b) 2^{-3}

.....

(1)

(c) $49^{\frac{1}{2}}$

.....

(1)

(d) $27^{\frac{1}{3}}$

.....

(1)

[Question 2: 4 marks]

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3) Work out the value of $8^{\frac{2}{3}}$

.....

[Question 3: 2 marks]

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4) Work out the value of $16^{-\frac{3}{4}}$

.....

[Question 4: 2 marks]

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5) Work out the value of $\left(\frac{9}{25}\right)^{-\frac{1}{2}}$

.....

[Question 5: 2 marks]

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6) Find the value of n.

(a) $2^n = \frac{1}{32}$

.....

(1)

(b) $9^n = 3$

.....

(1)

[Question 6: 2 marks]

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7) Write $4^3 \times 8^2$ as a single power of 2

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[Question 7: 2 marks]

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8) Simplify $\frac{(x^3)^4}{x^5}$

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[Question 8: 1 marks]

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9) Work out $3^{-2} + 4\frac{1}{2}$. Give your answer as a mixed number.

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[Question 9: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	(a) 3^9 (b) 5^5 (c) 7^6	B1 each.
2	(a) 1 (b) $\frac{1}{8}$ (c) 7 (d) 3	B1 each.
3	4	$(\sqrt[3]{8})^2$ (M1); A1.
4	$\frac{1}{8}$	$\frac{1}{16^{3/4}}$ or $2^3 = 8$ (M1); A1.
5	$\frac{5}{3}$	$\left(\frac{25}{9}\right)^{\frac{1}{2}}$ (M1); A1.
6	(a) -5 (b) $\frac{1}{2}$	B1 each.
7	2^{12}	$2^6 \times 2^6$ (M1); A1.
8	x^7	B1.
9	$2\frac{1}{9}$	$\frac{1}{9}$ and 2 (M1); A1.