FOUNDATION & HIGHER

HIGHER EXTENDS

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

N6: Powers and roots

Integer powers, square, cube and higher roots; estimating powers and roots

20 marks · 25 minutes · Non-calculator

1) Write down the value of

(a) 2^5

.....

(1)

(b) 3^4

.....

(1)

(c) 5^3

.....

(1)

(d) 4^3

.....

(1)

[Question 1: 4 marks]

2) Write down the value of

(a) $\sqrt{144}$

.....

(1)

(b) $\sqrt[3]{216}$

.....

(1)

(c) $\sqrt[4]{81}$

.....

(1)

(d) $\sqrt[5]{32}$

.....

(1)

[Question 2: 4 marks]

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3) Between which two consecutive whole numbers does $\sqrt{70}$ lie?

.....

[Question 3: 1 marks]

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4) Estimate $\sqrt{50}$ to 1 decimal place.

.....

[Question 4: 2 marks]

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5) Which is greater, 2^{10} or 10^3? Show your working.

.....

[Question 5: 2 marks]

6) Find the value of n.

(a) $2^n = 128$

.....

(1)

(b) $3^n = 243$

.....

(1)

[Question 6: 2 marks]

7) Estimate $\sqrt[3]{30}$ to 1 decimal place. Show your working.

.....

[Question 7: 2 marks]

8) Work out $(-2)^5$

.....

[Question 8: 1 marks]

9) Write 64 as a power of 2, as a power of 4 and as a power of 8

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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) 32 (b) 81 (c) 125 (d) 64	B1 each.
2	(a) 12 (b) 6 (c) 3 (d) 2	B1 each.
3	8 and 9	B1.
4	7.1	$7^2 = 49$, so just over 7 (M1); 7.1 (A1).
5	2^{10}	1024 and 1000 (M1); 2^{10} (A1).
6	(a) 7 (b) 5	B1 each.
7	3.1	$3^3 = 27$ and $4^3 = 64$ (M1); 3.1 (A1, accept 3.0 to 3.2).
8	-32	B1.
9	2^6, 4^3, 8^2	B2 (B1 for 2 correct).