FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

N1: Ordering numbers

Reason about the order of integers, decimals and fractions

20 marks · 25 minutes · Non-calculator

1) Jo says "−8 is bigger than −5 because 8 is bigger than 5." Explain why Jo is wrong.

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[Question 1: 1 marks]

2) Show that $\frac{5}{8}$ is greater than $\frac{3}{5}$.

[Question 2: 2 marks]

3) Ben writes these in order, smallest first: 0.4, 0.35, 0.307. He says "numbers with fewer digits are smaller." Explain his mistake and write the correct order.

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[Question 3: 2 marks]

4) a and b are negative numbers and $a < b$. Is it always true that $a^2 < b^2$? Use an example to explain.

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[Question 4: 2 marks]

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5) Write down a fraction between $\frac{2}{7}$ and $\frac{3}{7}$. Show that it lies between them.

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[Question 5: 2 marks]

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6) Is each statement true or false? Give a reason.

(a) $-0.5 \leqslant -\frac{1}{2}$

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(1)

(b) $0.333 \geqslant \frac{1}{3}$

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(1)

[Question 6: 2 marks]

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7) x is a number between 0 and 1. Write x, x^2, $\sqrt{x}$ and $\frac{1}{x}$ in order, smallest first. Use an example to justify your order.

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[Question 7: 3 marks]

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8) Show that $\frac{7}{11}$ is greater than 0.63

[Question 8: 2 marks]

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9) n is an integer and $-3 \leqslant 2n < 5$. List all the possible values of n and explain how you found them.

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[Question 9: 2 marks]

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10) Which is greater, $-\frac{2}{3}$ or $-\frac{3}{4}$? Explain your answer.

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[Question 10: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	Explanation	e.g. -8 is further below zero, so it is smaller (C1).
2	Shown	$\frac{25}{40}$ and $\frac{24}{40}$, or 0.625 and 0.6 (M1); conclusion (C1).
3	0.307, 0.35, 0.4	Compares place value, e.g. 0.4 = 0.400 (M1); correct order (C1).
4	No	Counter-example, e.g. $a = -3$, $b = -1$ gives $9 > 1$ (M1); conclusion (C1).
5	e.g. $\frac{5}{14}$	Equivalent fractions $\frac{4}{14}$ and $\frac{6}{14}$ (M1); valid fraction (C1).
6	(a) true (b) false	(a) They are equal (B1). (b) $\frac{1}{3} = 0.333\ldots$ is larger (B1).
7	$x^2, x, \sqrt{x}, \frac{1}{x}$	Correct order (B1); example, e.g. $x = 0.25$: 0.0625, 0.25, 0.5, 4 (M1); explanation (C1).
8	Shown	$\frac{7}{11} = 0.6363\ldots$ (M1); > 0.63 (C1).
9	$-1, 0, 1, 2$	$-1.5 \leqslant n < 2.5$ (M1); values with explanation (C1).
10	$-\frac{2}{3}$	$-0.666\ldots > -0.75$ or $-\frac{8}{12} > -\frac{9}{12}$ (M1); conclusion (C1).