FOUNDATION & HIGHER

SAME AT BOTH TIERS

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

N15: Rounding and error intervals

Solve problems involving rounding, truncation and error intervals

20 marks · 25 minutes · Calculator allowed

1) A number rounds to 3600 to 2 significant figures and truncates to 3500 to 2 significant figures. Find the error interval for the number.

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[Question 1: 3 marks]

2) A plank is 2.4 m long to the nearest 10 cm. How many 30 cm pieces can definitely be cut from it?

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[Question 2: 3 marks]

3) Each bag of sugar is 1 kg to the nearest 10 g. What is the least possible total mass of 25 bags?

..... kg

[Question 3: 2 marks]

4) A hall seats 450 people, to the nearest 10. What is the largest number of people you can be sure will have a seat?

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[Question 4: 2 marks]

5) A length truncated to 1 decimal place is 6.3 cm. Rounded to 1 decimal place it is also 6.3 cm. Find the error interval for the length.

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[Question 5: 3 marks]

6) A runner's time is 9.8 s to 1 decimal place. Could the time have been less than 9.75 s? Explain.

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[Question 6: 2 marks]

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7) A town has 23 000 people, to 2 significant figures, and an area of 20 km^2, to 1 significant figure. Find the greatest possible population density.

..... people/km^2

[Question 7: 3 marks]

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8) $x = 7$ and $y = 3$, each to the nearest whole number. Find the largest possible value of $x - y$.

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[Question 8: 2 marks]

End of paper – 20 marks in total

Answers and brief mark scheme

Q	Answer	Method / notes
1	$3550 \leqslant x < 3600$	Rounding gives $3550 \leqslant x < 3650$ (P1); truncation gives $3500 \leqslant x < 3600$ (P1); combined (A1).
2	7	Lower bound 2.35 m (P1); $2.35 \div 0.3 = 7.8$ (P1); 7 (A1).
3	24.875	25×0.995 (P1); A1.
4	445	$445 \leqslant n < 455$ (P1); A1.
5	$6.3 \leqslant l < 6.35$	Truncation gives < 6.4, rounding gives < 6.35 (P1, P1); A1.
6	No	Interval $9.75 \leqslant t < 9.85$ (P1); C1.
7	About 1570	Population UB 23 500 (P1); area LB 15 (P1); 1566.7 (A1).
8	5	$7.5 - 2.5$ (P1); A1.