1.3 Number: Standard Form and Rounding: 30-minute Pack

Calculator allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Round 6285 to the nearest 10.

(1)

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2 Write 7.05×10^{-3} as an ordinary number.

(1)

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3 In 2024 the population of the UK was approximately 68500000.

(a) Write this population in standard form. **(2)**

(b) The population of a small town is 3.24×10^{4}. Round this population to the nearest thousand, giving your answer as an ordinary number. **(2)**

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4 A school trip needs tickets for 187 students at £8.95 each, plus a coach costing £396. By rounding each value to 1 significant figure, estimate the total cost of the trip. You must show your rounded values.

(3)

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5 Consider the number 6.478.

(a) Round 6.478 to 2 decimal places. **(1)**

(b) The number 6.478 is truncated (not rounded) to 2 decimal places. State the truncated value and explain why it is different from your answer to part a. **(2)**

6 Calculate the following, giving each answer in standard form.

(a) $(8 \times 10^7) / (2 \times 10^3)$ **(2)**

(b) $(9 \times 10^{-2}) / (3 \times 10^5)$ **(2)**

7 Work out $(3.2 \times 10^5) + (4.5 \times 10^4)$. Give your answer in standard form.

(3)

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8 Work out $(1.8 \times 10^8) \times (1.7 \times 10^5)$.
Give your answer in standard form.

(2)

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9 A grain of sand has a mass of 2.9×10^3 grams. How many grains are in 6.3×10^8 grams of sand?
Give your answer in standard form, with the number rounded to 3 significant figures.

(3)

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Mark scheme · 1.3 Number: Standard Form and Rounding: 30-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

6290 cao	B1

Answer: **6290**

Question 2

0.00705 cao	B1

Answer: **0.00705**

Question 3

(a) coefficient 6.85 identified	M1
(a) 6.85×10^7 cao	A1

(a) Answer: **6.85×10^7**

(b) converts to ordinary number 32400 (oe)	M1
(b) 32000 cao	A1

(b) Answer: **32000**

Question 4

rounds all three values correctly to 1 sf: 200, 9, 400 (oe)	M1
correct method: (200 x 9) + 400	M1
£2200 cao	A1

Answer: **£2200**

Question 5

(a) 6.48 cao	B1

(a) Answer: **6.48**

(b) 6.47 stated cao	B1
(b) correct explanation, e.g. truncation simply removes the extra digits without checking them, whereas rounding checks the next digit and rounds up if it is 5 or more (oe)	B1

(b) Answer: **6.47; truncation cuts off the remaining digits without checking them, rounding checks the next digit**

Question 6

(a) divides coefficients and subtracts indices: 8/2 = 4, 10^{7-3}	M1
(a) 4×10^4 cao	A1

(a) Answer: **4×10^4**

(b) divides coefficients and subtracts indices: 9/3 = 3, 10^{-2-5}	M1
(b) 3×10^{-7} cao	A1

(b) Answer: **3×10^{-7}**

Question 7

converts both numbers to the same power of 10 or to ordinary numbers: 320000 and 45000 (oe)	M1
adds correctly: 320000 + 45000 = 365000 (oe)	M1
3.65×10^5 cao	A1

Answer: **3.65×10^5**

Question 8

1.8 x 1.7 = 3.06 seen	M1
3.06×10^{13} cao	A1

Answer: **3.06×10^{13}**

Question 9

chooses the correct operation (x or ÷)	M1
correct calculation with the numbers and the powers of 10	M1
2.17×10^5 cao	A1

Answer: **2.17×10^5**

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