1.3 Number: Standard Form and Rounding: 1-hour Pack

Calculator allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Round 6285 to the nearest 100.

(1)

2 Round 6285 to the nearest 1000.

(1)

3 The number 0.04563 is given. Round it to:

(a) 1 significant figure **(1)**

(b) 2 significant figures **(1)**

(c) 3 significant figures **(1)**

4 Round 2.6748 to 2 decimal places.

(1)

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5 Round 0.038261 to 3 significant figures.

(2)

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6 The number of grains of sand on a beach is estimated to be 94000000. Write this number in standard form.

(2)

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7 Write 0.0000053 in standard form.

(2)

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8 Calculate $(9 \times 10^6) / (3 \times 10^2)$. Give your answer in standard form.

(2)

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9 A recipe requires ingredients weighed to the nearest gram. Three ingredients weigh 245 g, 128 g and 92 g. By rounding each value to 1 significant figure, estimate the total weight. You must show your rounded values.

(3)

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10 Calculate $(4 \times 10^3) \times (2 \times 10^5)$. Give your answer in standard form.

(2)

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11 Work out $(7.8 \times 10^6) - (2.5 \times 10^5)$. Give your answer in standard form.

(3)

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12 A number, when rounded to the nearest 100, is 700.

(a) Write down the smallest number it could have been. **(2)**

(b) Assuming the original number is a whole number, write down the largest number it could have been. **(2)**

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13 Round 773.8910 to 3 significant figures.

(2)

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14 Round 6.9624 to 2 decimal places.

(1)

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15 Write 7.52×10^2 as an ordinary number.

(1)

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16 Round 3901015 to 3 significant figures.

(2)

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17 Work out $(3.7 \times 10^3) \times (2 \times 10^8)$.
Give your answer in standard form.

(2)

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18 Write 0.0000099625 in standard form.

(1)

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19 Work out $(9.1 \times 10^3) + (7.8 \times 10^2)$.
Give your answer in standard form.

(3)

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20 Write 0.000012903 in standard form.

(1)

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21 Write these numbers in order, largest first.
2.3×10^{-2}, 2.9×10^{-1}, 6.9×10^{4}, 3.5×10^{4}

(2)

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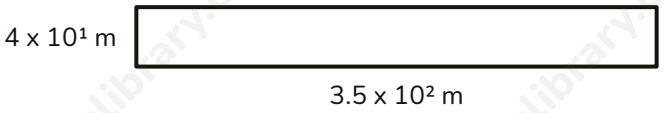
22 A company's annual revenue is £2.4×10^{8}. Its costs are £1.75×10^{8}. Calculate the company's profit, giving your answer in standard form.

(3)

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23 A field is a rectangle with length 3.5×10^{2} metres and width 4×10^{1} metres. Calculate the area of the field in square metres, giving your answer in standard form.

Diagram NOT accurately drawn



(3)

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Mark scheme · 1.3 Number: Standard Form and Rounding: 1-hour Pack

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

Question 1

6300 cao — **B1**

Answer: **6300**

Question 2

6000 cao — **B1**

Answer: **6000**

Question 3

(a) 0.05 cao — **B1**

(a) Answer: **0.05**

(b) 0.046 cao — **B1**

(b) Answer: **0.046**

(c) 0.0456 cao — **B1**

(c) Answer: **0.0456**

Question 4

2.67 cao — **B1**

Answer: **2.67**

Question 5

identifies the first three significant figures as 3, 8, 2 and the next digit as 6 — **M1**

0.0383 cao — **A1**

Answer: **0.0383**

Question 6

coefficient 9.4 identified — **M1**

9.4×10^7 cao — **A1**

Answer: **9.4×10^7**

Question 7

coefficient 5.3 identified — **M1**

5.3×10^{-6} cao — **A1**

Answer: **5.3×10^{-6}**

Question 8

divides coefficients and subtracts indices: $9/3 = 3$, 10^{6-2} — **M1**

3×10^4 cao — **A1**

Answer: **3×10^4**

Question 9

rounds all three values correctly to 1 sf: 200, 100, 90 (oe) — **M1**

correct method: 200 + 100 + 90 — **M1**

390 (g) cao — **A1**

Answer: **390 g**

Question 10

multiplies coefficients and adds indices: $4 \times 2 = 8$, 10^{3+5} — **M1**

8×10^8 cao — **A1**

Answer: **8×10^8**

Question 11

converts both numbers to the same power of 10 or to ordinary numbers: 7800000 and 250000 (oe) — **M1**

subtracts correctly: 7800000 - 250000 = 7550000 (oe) — **M1**

7.55×10^6 cao — **A1**

Answer: **7.55×10^6**

Question 12

(a) identifies the halfway point between 600 and 700 as the lower boundary — **M1**

(a) 650 cao — **A1**

(a) Answer: **650**

(b) identifies the upper boundary as 750 (the midpoint between 700 and 800) — **M1**

(b) 749 cao — **A1**

(b) Answer: **749**

Question 13

identifies the first significant figure and looks at the digit after the required place — **M1**

774 cao — **A1**

Answer: **774**

Question 14

6.96 cao — **B1**

Answer: **6.96**

Question 15

752 (accept 752.00) — **B1**

Answer: **752**

Question 16

identifies the first significant figure and looks at the digit after the required place — **M1**

3900000 cao — **A1**

Answer: **3900000**

Question 17

$3.7 \times 2 = 7.4$ seen — **M1**

7.4×10^{11} cao — **A1**

Answer: **7.4×10^{11}**

Question 18

9.9625×10^{-6} cao — **B1**

Answer: **9.9625×10^{-6}**

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Question 19

writes both numbers with the same power of 10 or as ordinary numbers	**M1**
adds or subtracts correctly	**M1**
9.88×10^3 cao	**A1**

Answer: **9.88×10^3**

Question 20

1.2903×10^{-5} cao	**B1**

Answer: **1.2903×10^{-5}**

Question 21

compares the powers of 10 first, or at least three numbers in order	**M1**
6.9×10^4, 3.5×10^4, 2.9×10^{-1}, 2.3×10^{-2} cao	**A1**

Answer: **6.9×10^4, 3.5×10^4, 2.9×10^{-1}, 2.3×10^{-2}**

Question 22

converts to ordinary numbers or a comparable form: 240000000 and 175000000 (oe)	**M1**
subtracts correctly: 240000000 - 175000000 = 65000000 oe	**M1**
6.5×10^7 cao	**A1**

Answer: **6.5×10^7**

Question 23

sets up $(3.5 \times 10^2) \times (4 \times 10^1)$, or 350×40	**M1**
multiplies coefficients and adds indices: $3.5 \times 4 = 14$, $10^{2+1} = 10^3$	**M1**
1.4×10^4 cao	**A1**

Answer: **1.4×10^4 square metres**

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