1 (a) Work out $\dfrac{2 \times 10^{14}}{8 \times 10^{9}}$

Give your answer in standard form.

[2 marks]

$\frac{2}{8} \times 10^{14-9}$

$= 0.25 \times 10^{5}$ (1)

$= 2.5 \times 10^{4}$ (1)

Answer 2.5×10^{4}

1 (b) $6200.07 = 6.2 \times 10^{c} + 7 \times 10^{d}$

Work out the values of c and d.

[2 marks]

$6.2 \times 1000 = 6200$, $c = 3$

$7 \times 0.01 = 0.07$, $d = -2$

$c =$ 3 (1) $d =$ -2 (1)

2 (a) Work out $2000 \times 70\,000$

Give your answer in standard form.

[2 marks]

$2 \times 10^3 \times 7 \times 10^4$ (1)

$= 2 \times 7 \times 10^{3+4}$

$= 14 \times 10^7$

$= 1.4 \times 10^8$ (1)

Answer 1.4×10^8

2 (b) Work out $\dfrac{1.8 \times 10^2}{3 \times 10^{-1}}$

Give your answer as an ordinary number.

[2 marks]

$\dfrac{1.8}{3} \times 10^{2-(-1)}$

(1)

$= 0.6 \times 10^3$

$= 6 \times 10^2$

$= 600$ (1)

Answer 600

3 Work out 80 000 000 ÷ 200

Give your answer in standard form.

[2 marks]

$\frac{80\,000\,000}{200} = 400\,000$

$= 4 \times 10^5$ (2)

Answer 4×10^5

4 (a) $b \times 10^n$ is the number 7200 written in standard form.

Work out $b \times 10^{-n}$

Write your answer as an ordinary number.

[2 marks]

$7200 = 7.2 \times 10^3$

$0.007.2 \times 10^{-3} = 0.0072$

Answer 0.0072 (2)

5 What is 1.8×10^{-4} as an ordinary number?

Circle your answer.

[1 mark]

−180 000 −18 000 0.000 18 0.000 018

6 Work out $(2.5 \times 10^4)^{-3}$

Give your answer in standard form.

[1 mark]

$2.5^{-3} \times 10^{4(-3)}$

$= (6.4 \times 10^{-2}) \times 10^{-12}$

$= 6.4 \times 10^{-14}$

Answer 6.4×10^{-14} ✓ (1)