GCSE Maths: Standard form: large and small numbers (Higher): worksheet

GCSE Maths - Standard Form, Indices and Surds - Higher - Lesson 6.4

Name: _____ Date: _____ Score: _____

23 questions. Write your answers in the spaces. Answers and step-by-step help are free at **websink.site/gcse/maths/ch06-standard-form-indices-surds/higher/standard-form-large-and-small-numbers/**

Exercise 6I Writing numbers in standard form (Non-calculator)

1 Is each number in standard form? Give a reason.

(a) 3.4×10^5

Answer:

(b) 34×10^4

Answer:

(c) 0.5×10^3

Answer:

(d) 9.99×10^{-2}

Answer:

(e) 10×10^2

Answer:

(f) 6×10^0

Answer:

2 Write each number in standard form.

(a) 6000

Answer:

(b) 45,000

Answer:

(c) 380,000

Answer:

(d) 5,600,000

Answer:

(e) 91,000,000

Answer:

(f) 720

Answer:

3 Write each number in standard form.

(a) 0.7

Answer:

(b) 0.06

Answer:

(c) 0.0035

Answer:

(d) 0.00072

Answer:

(e) 0.000081

Answer:

(f) 0.0000046

Answer:

4 Write each as an ordinary number.

(a) 5×10^3

Answer:

(b) 2.4×10^4

Answer:

(c) 7.08×10^5

Answer:

(d) 1.5×10^6

Answer:

(e) 9.2×10^7

Answer:

5 Write each as an ordinary number.

(a) 4×10^{-1}

Answer:

(b) 6.2×10^{-3}

Answer:

(c) 3.07×10^{-4}

Answer:

(d) 8.5×10^{-5}

Answer:

(e) 1.1×10^{-6}

Answer:

6 These numbers are **not** in standard form. Write each in standard form.

(a) 45×10^3

Answer:

(b) 0.6×10^5

Answer:

(c) 120×10^{-4}

Answer:

(d) 0.08×10^7

Answer:

(e) 250×10^2

Answer:

7 **A calculator display shows each of these. Write the value in standard form and as an ordinary number.**

(a) 3.6E8

Answer:

(b) 2.4E-3

Answer:

(c) 7.1E5

Answer:

(d) 5E-2

Answer:

8 **Write each number in standard form, correct to the number of significant figures shown.**

(a) 4,523,000 (2 s.f.)

Answer:

(b) 0.0003846 (2 s.f.)

Answer:

(c) 299,792,458 (3 s.f.)

Answer:

(d) 6,371,000 (3 s.f.)

Answer:

9 **Write each of these facts in standard form.**

(a) The world population is about 8,100,000,000.

Answer:

(b) The Moon is about 384,400 km from the Earth.

Answer:

(c) A sheet of paper is about 0.0001 m thick.

Answer:

(d) A hydrogen atom has a mass of 0.000000000000000000000000000167 kg.

Answer:

10 **Write each number in standard form.**

(a) 25 million

Answer:

(b) half a billion (a billion is 1,000,000,000)

Answer:

(c) three thousandths

Answer:

(d) 1 hundred-thousandth

Answer:

11 **Explain why 10 is written as 1×10^1 in standard form and why 0.1 is written as 1×10^{-1}.**

Answer:

12 **Ali writes $0.0072 = 7.2 \times 10^3$. Explain his mistake and write the correct standard form.**

Answer:

13 **$N = 4.5 \times 10^6$. Write $10N$ and $N \div 100$ in standard form.**

(a) $10N$

Answer:

(b) $N \div 100$

Answer:

14 **Which of these is not equal to 3.5×10^4? A: 35,000 B: 350×10^2 C: 0.35×10^5 D: 3.5×10^{-4}**

Answer:

15 **The number 7.2×10^n is greater than 500 and less than 50,000. List all the possible whole-number values of n.**

Answer:

Exercise 6J Standard form in context Non-calculator

1 **Write each measurement in standard form.**

(a) The diameter of the Sun is 1,392,000 km.

Answer:

(b) The wavelength of red light is 0.0000007 m.

Answer:

(c) The population of the UK is about 67,000,000.

Answer:

(d) A human hair is about 0.00007 m wide.

Answer:

(e) The nearest star is about 40,000,000,000,000 km away.

Answer:

2 **Write each of these as an ordinary number.**

(a) The Earth is 1.5×10^8 km from the Sun.

Answer:

(b) A virus is 1.2×10^{-7} m long.

Answer:

(c) A computer can do 3×10^9 operations per second.

Answer:

(d) A grain of pollen has a mass of 2.5×10^{-9} kg.

Answer:

3 **Write each of these numbers in standard form.**

(a) 85,000

Answer:

(b) 0.0092

Answer:

(c) 630,000,000

Answer:

(d) 0.00000058

Answer:

(e) 1,200,000,000

Answer:

4 **Write each number as an ordinary number.**

(a) 6.3×10^4

Answer:

(b) 9×10^{-3}

Answer:

(c) 1.07×10^6

Answer:

(d) 4.4×10^{-2}

Answer:

5 **Write each number in standard form.**

(a) 32×10^6

Answer:

(b) 0.45×10^3

Answer:

(c) 560×10^{-5}

Answer:

(d) 0.09×10^{4}

Answer:

6 **Zoe says: "50×10^{4} is bigger than 5×10^{4}, so it must be in standard form." Is she right? Explain.**

Answer:

7 **A scientist measures a bacterium as 0.0000025 m long. She writes 25×10^{-7} m. Write this correctly in standard form.**

Answer:

8 **Show that 3×10^{5} is 100 times bigger than 3×10^{3}.**

Answer:

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