

Multiplying and dividing standard form - Worksheet

Skill

Group A - Multiplying

Complete the calculation, writing each answer in standard form:

- 1) $(2 \times 10^2) \times (3 \times 10^3)$ 2) $(2 \times 10^2) \times (6 \times 10^3)$ 3) $(7 \times 10^2) \times (6 \times 10^3)$
4) $(3 \times 10^3) \times (2 \times 10^4)$ 5) $(7 \times 10^3) \times (2 \times 10^4)$ 6) $(7 \times 10^3) \times (8 \times 10^4)$
7) $(4 \times 10^{-2}) \times (2 \times 10^4)$ 8) $(4 \times 10^{-2}) \times (3 \times 10^{-4})$ 9) $(9 \times 10^2) \times (3 \times 10^{-4})$
10) $(2.2 \times 10^5) \times (4.2 \times 10^3)$ 11) $(8.1 \times 10^5) \times (4 \times 10^3)$ 12) $(8 \times 10^5) \times (3.2 \times 10^3)$
-

Group B - Dividing

Complete the calculation, writing each answer in standard form:

- 1) $(6 \times 10^5) \div (2 \times 10^3)$ 2) $(8 \times 10^5) \div (2 \times 10^3)$ 3) $(8 \times 10^5) \div (4 \times 10^3)$
4) $(9 \times 10^7) \div (3 \times 10^2)$ 5) $(6 \times 10^7) \div (3 \times 10^2)$ 6) $(6 \times 10^7) \div (2 \times 10^2)$
7) $(9 \times 10^{-8}) \div (3 \times 10^{-5})$ 8) $(9 \times 10^8) \div (2 \times 10^{-5})$ 9) $(5 \times 10^{-8}) \div (2 \times 10^5)$
10) $(8.1 \times 10^9) \div (0.9 \times 10^4)$ 11) $(6.4 \times 10^9) \div (4 \times 10^4)$ 12) $(6 \times 10^9) \div (0.5 \times 10^4)$
-

Group C - Squaring and cubing

Complete the calculation, writing each answer in standard form:

- 1) $(3 \times 10^4)^2$ 2) $(3 \times 10^5)^2$ 3) $(3 \times 10^7)^2$
4) $(4 \times 10^3)^2$ 5) $(4 \times 10^5)^2$ 6) $(4 \times 10^6)^2$
7) $(2 \times 10^{-4})^3$ 8) $(2 \times 10^{-5})^3$ 9) $(2 \times 10^{-7})^3$
10) $(0.3 \times 10^2)^3$ 11) $(0.2 \times 10^4)^3$ 12) $(0.5 \times 10^5)^2$

Multiplying and dividing standard form - Worksheet

Applied

- 1) (a)** Work out $(2.6 \times 10^4) \times (2 \times 10^3)$. Write your answer in standard form.
- (b)** Work out $(2.6 \times 10^4) \div (2 \times 10^3)$. Write your answer in standard form.
- 2)** Let $p = 4 \times 10^{-2}$ and $q = 2 \times 10^{-3}$.
- (a)** Work out pq . Write your answer in standard form.
- (b)** Work out $p \div q$. Write your answer in standard form.
- 3) (a)** Work out $(9 \times 10^5) \times (2 \times 10^{-2})$. Write your answer in standard form.
- (b)** Work out $(9 \times 10^5) \div (2 \times 10^{-2})$. Write your answer in standard form.

Multiplying and dividing standard form - Exam Questions

- 1) Work out $(5 \times 10^3) \times (3 \times 10^2)$.

Circle the correct answer.

$$1.5 \times 10^5 \quad 1.5 \times 10^6 \quad 1.5 \times 10^7 \quad 1.5 \times 10^8$$

(1 mark)

-
- 2) Work out:

$$\frac{9.6 \times 10^7}{3.2 \times 10^3}$$

Give your answer in standard form.

.....
(2 marks)

-
- 3) The side of a square is 1.2×10^3 m.

Calculate the area of the square.

Give your answer in standard form.

..... m^2
(2 marks)

Multiplying and dividing standard form - Exam Questions

- 4) Here are the radii of some planets:

Planet	Radius (km)
Earth	6.4×10^3
Jupiter	7.0×10^4
Mars	3.4×10^3
Neptune	2.5×10^4
Saturn	5.8×10^4

- (a) Which planet has the smallest radius?

.....
(1)

- (b) Work out the circumference of the Earth. Write your answer in standard form correct to 3 significant figures.

.....km
(3)

- (c) How many times bigger is Jupiter's radius than the radius of Mars? Give your answer to the nearest whole number.

.....
(2)
(6 marks)

Multiplying and dividing standard form - Answers

	Question	Answer
	Skill Questions	
Group A	<p>Complete the calculation, writing each answer in standard form:</p> <p>1) $(2 \times 10^2) \times (3 \times 10^3)$</p> <p>2) $(2 \times 10^2) \times (6 \times 10^3)$</p> <p>3) $(7 \times 10^2) \times (6 \times 10^3)$</p> <p>4) $(3 \times 10^3) \times (2 \times 10^4)$</p> <p>5) $(7 \times 10^3) \times (2 \times 10^4)$</p> <p>6) $(7 \times 10^3) \times (8 \times 10^4)$</p> <p>7) $(4 \times 10^{-2}) \times (2 \times 10^4)$</p> <p>8) $(4 \times 10^{-2}) \times (3 \times 10^{-4})$</p> <p>9) $(9 \times 10^2) \times (3 \times 10^{-4})$</p> <p>10) $(2.2 \times 10^5) \times (4.2 \times 10^3)$</p> <p>11) $(8.1 \times 10^5) \times (4 \times 10^3)$</p> <p>12) $(8 \times 10^5) \times (3.2 \times 10^3)$</p>	<p>1) 6×10^5</p> <p>2) 1.2×10^6</p> <p>3) 4.2×10^6</p> <p>4) 6×10^7</p> <p>5) 1.4×10^8</p> <p>6) 5.6×10^8</p> <p>7) 8×10^6</p> <p>8) 1.2×10^{-5}</p> <p>9) 2.7×10^{-1}</p> <p>10) 9.24×10^8</p> <p>11) 3.24×10^9</p> <p>12) 2.56×10^9</p>
Group B	<p>Complete the calculation, writing each answer in standard form:</p> <p>1) $(6 \times 10^5) \div (2 \times 10^3)$</p> <p>2) $(8 \times 10^5) \div (2 \times 10^3)$</p> <p>3) $(8 \times 10^5) \div (4 \times 10^3)$</p> <p>4) $(9 \times 10^7) \div (3 \times 10^2)$</p> <p>5) $(6 \times 10^7) \div (3 \times 10^2)$</p> <p>6) $(6 \times 10^7) \div (2 \times 10^2)$</p> <p>7) $(9 \times 10^{-8}) \div (3 \times 10^{-5})$</p> <p>8) $(9 \times 10^8) \div (2 \times 10^{-5})$</p>	<p>1) 3×10^2</p> <p>2) 4×10^2</p> <p>3) 2×10^2</p> <p>4) 3×10^5</p> <p>5) 2×10^5</p> <p>6) 3×10^5</p> <p>7) 3×10^{-3}</p> <p>8) 4.5×10^{13}</p>

Multiplying and dividing standard form - Answers

Group B contd	9) $(5 \times 10^{-8}) \div (2 \times 10^5)$ 10) $(8.1 \times 10^9) \div (0.9 \times 10^4)$ 11) $(6.4 \times 10^9) \div (4 \times 10^4)$ 12) $(6 \times 10^9) \div (0.5 \times 10^4)$	9) 2.5×10^{-13} 10) 9×10^5 11) 1.6×10^5 12) 1.2×10^6
Group C	<p>Complete the calculation, writing each answer in standard form:</p> 1) $(3 \times 10^4)^2$ 2) $(3 \times 10^5)^2$ 3) $(3 \times 10^7)^2$ 4) $(4 \times 10^3)^2$ 5) $(4 \times 10^5)^2$ 6) $(4 \times 10^6)^2$ 7) $(2 \times 10^{-4})^3$ 8) $(2 \times 10^{-5})^3$ 9) $(2 \times 10^{-7})^3$ 10) $(0.3 \times 10^2)^3$ 11) $(0.2 \times 10^4)^3$ 12) $(0.5 \times 10^5)^2$	1) 9×10^8 2) 9×10^{10} 3) 9×10^{14} 4) 1.6×10^7 5) 1.6×10^{11} 6) 1.6×10^{13} 7) 8×10^{-12} 8) 8×10^{-15} 9) 8×10^{-21} 10) 2.7×10^4 11) 8×10^9 12) 2.5×10^9

Multiplying and dividing standard form - Answers

	Question	Answer
	Applied Questions	
1)	a) Work out $(2.6 \times 10^4) \times (2 \times 10^3)$. Write your answer in standard form. b) Work out $(2.6 \times 10^4) \div (2 \times 10^3)$. Write your answer in standard form.	a) 5.2×10^7 b) 1.3×10^1
2)	Let $p = 4 \times 10^{-2}$ and $q = 2 \times 10^{-3}$. a) Work out pq . Write your answer in standard form. b) Work out $p \div q$. Write your answer in standard form.	a) 8×10^{-5} b) 2×10^1
3)	a) Work out $(9 \times 10^5) \times (2 \times 10^{-2})$. Write your answer in standard form. b) Work out $(9 \times 10^5) \div (2 \times 10^{-2})$. Write your answer in standard form.	a) 1.8×10^4 b) 4.5×10^7

Multiplying and dividing standard form - Mark Scheme

	Question	Answer													
	Exam Questions														
1)	Work out $(5 \times 10^3) \times (3 \times 10^2)$. Circle the correct answer. 1.5×10^5 1.5×10^6 1.5×10^7 1.5×10^8	1.5×10^6	(1)												
2)	Work out: $\frac{9.6 \times 10^7}{3.2 \times 10^3}$ Give your answer in standard form.	3 or 30 000 3×10^4	(1) (1)												
3)	The side of a square is $1.2 \times 10^3 m$. Calculate the area of the square. Give your answer in standard form.	$(1.2 \times 10^3)^2$ or 1.44 1.44×10^6	(1) (1)												
4)	Here are the radii of some planets: <table><tr><th>Planet</th><th>Radius (km)</th></tr><tr><td>Earth</td><td>6.4×10^3</td></tr><tr><td>Jupiter</td><td>7.0×10^4</td></tr><tr><td>Mars</td><td>3.4×10^3</td></tr><tr><td>Neptune</td><td>2.5×10^4</td></tr><tr><td>Saturn</td><td>5.8×10^4</td></tr></table>	Planet	Radius (km)	Earth	6.4×10^3	Jupiter	7.0×10^4	Mars	3.4×10^3	Neptune	2.5×10^4	Saturn	5.8×10^4		
Planet	Radius (km)														
Earth	6.4×10^3														
Jupiter	7.0×10^4														
Mars	3.4×10^3														
Neptune	2.5×10^4														
Saturn	5.8×10^4														
(a)	Which planet has the smallest radius?	(a) Mars	(1)												
(b)	Work out the circumference of the Earth. Write your answer in standard form correct to 3 significant figures.	(b) Diameter: $2 \times (6.4 \times 10^3) = 12800$ Circumference: $\pi \times 12800$ 4.02×10^4	(1) (1) (1)												
(c)	How many times bigger is Jupiter's radius than the radius of Mars? Give your answer to the nearest whole number.	(c) $(7.0 \times 10^4) \div (3.4 \times 10^3)$ = 20.58... 21 times	(1) (1)												

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