THIRD SPACE
LEARNING

Converting To and From Standard Form - Worksheet

Skill

Group A - Positive powers

Write these numbers in standard form:

1) 700   **2)** 7 000   **3)** 7 000 000

4) 70   **5)** 7   **6)** 720

7) 7 200   **8)** 7 200 000   **9)** 72

10) 702   **11)** 700 200   **12)** 7 021 000

Group B - Negative powers

Write these numbers in standard form:

1) 0.07 **2)** 0.0007 **3)** 0.0008

4) 0.3 **5)** 0.09 **6)** 0.72

7) 0.072 **8)** 0.0072 **9)** 0.721

10) 0.702 **11)** 0.0702 **12)** 0.07002

Group C - Positive powers

Convert these numbers to ordinary numbers:

1) 4×10^3 **2)** 4×10^2 **3)** 4×10^5

4) 4.7×10^3 **5)** 4.7×10^2 **6)** 4.7×10^5

7) 4.7×10^6 **8)** 4.7×10^1 **9)** 4.7×10^0

10) 4.72×10^3 **11)** 4.07×10^3 **12)** 4.027×10^7

Converting To and From Standard Form - Worksheet

Group D - Negative powers

Convert these numbers to ordinary numbers:

1) 4×10^{-3}

2) 4×10^{-2}

3) 4×10^{-5}

4) 4.7×10^{-3}

5) 4.7×10^{-2}

6) 4.7×10^{-5}

7) 4.7×10^{-6}

8) 4.7×10^{-1}

9) 4.7×10^{-4}

10) 4.72×10^{-3}

11) 4.07×10^{-3}

12) 4.027×10^{-7}

Group E - Adjusting numbers to standard form

Write these numbers in standard form:

1) 63×10^{5}

2) 63×10^{4}

3) 630×10^{4}

4) 631×10^{5}

5) 6031×10^{3}

6) 0.63×10^{5}

7) 0.063×10^{2}

8) 60.3×10^{4}

9) 63×10^{-5}

10) 63×10^{-4}

11) 630×10^{-4}

12) 0.063×10^{-6}

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Converting To and From Standard Form - Worksheet

Applied

1)   Spot the mistake and explain the error.

   (a)   Sam has carried out a calculation and written his answer in standard form. The answer he has written is 24×10^{5}.

   (b) $6.1 \times 10^{3} = 61\,000$

2)   **(a)**   Billy says that 6.2×10^{-5} is higher than 6.2×10^{-4}. Is he correct? Explain your reason.

   (b)   The distance from the Earth to the Sun is $1.49 \times 10^{8}\ km.$ Write this distance as an ordinary number.

3)   Place an inequality sign between these numbers to make the statement true:

3.8×10^{6} .... 4.2×10^{5}

4)   **(a)**   The population of Vietnam is 9.6×10^{7} to 2 significant figures. The population of Japan is 1.3×10^{8} to 2 significant figures. Which country has the greater population?

   (b)   The population of the United States is $330\,000\,000$ to 2 significant figures. Write this number in standard form.

Converting To and From Standard Form - Exam Questions

1) **(a)** Write 8.24×10^{-5} as an ordinary number.

....
(1)

(b) Write 0.00568 in standard form.

....
(1)
(2 marks)

---

2) **(a)** Write 430 700 in standard form.

....
(1)

(b) Anna is asked to compare the following numbers.

$$A = 5.72 \times 10^{7}$$
$$B = 6.28 \times 10^{5}$$

She says, "6.28 is bigger than 5.72 so B is bigger than A".

Is Anna correct?
You must give a reason for your answer.

....
(1)
(2 marks)

---

3) **(a)** Put these numbers in order of size. Start with the smallest.

$$0.0034 \qquad 4.1 \times 10^{-4} \qquad 0.24 \times 10^{-5} \qquad 0.00062$$

....
(3 marks)

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Converting To and From Standard Form - Exam Questions

4) **(a)** This table shows the weights of some planets.

Planet	Mass (kg)
Earth	5.972×10^{24}
Saturn	5.683×10^{26}
Mercury	3.285×10^{23}
Mars	6.39×10^{23}
Venus	4.867×10^{24}

Which planet in this list has the greatest mass?

....

(1)

(b) Which planet in this list has the least mass?

....

(1)

(2 marks)

Converting To and From Standard Form - Answers

	Question	Answer
	Skill questions	
Group A	Write these numbers in standard form: **1)** 700 **2)** 7 000 **3)** 7 000 000 **4)** 70 **5)** 7 **6)** 720 **7)** 7200 **8)** 7 200 000 **9)** 72 **10)** 702 **11)** 700 200 **12)** 7 021 000	**1)** 7×10^{2} **2)** 7×10^{3} **3)** 7×10^{6} **4)** 7×10^{1} **5)** 7×10^{0} **6)** 7.2×10^{2} **7)** 7.2×10^{3} **8)** 7.2×10^{6} **9)** 7.2×10^{1} **10)** 7.02×10^{2} **11)** 7.002×10^{5} **12)** 7.021×10^{6}
Group B	Write these numbers in standard form: **1)** 0.07 **2)** 0.0007 **3)** 0.0008 **4)** 0.3 **5)** 0.09 **6)** 0.72 **7)** 0.072 **8)** 0.0072 **9)** 0.721 **10)** 0.702 **11)** 0.0702 **12)** 0.07002	**1)** 7×10^{-2} **2)** 7×10^{-4} **3)** 8×10^{-4} **4)** 3×10^{-1} **5)** 9×10^{-2} **6)** 7.2×10^{-1} **7)** 7.2×10^{-2} **8)** 7.2×10^{-3} **9)** 7.21×10^{-1} **10)** 7.02×10^{-1} **11)** 7.02×10^{-2} **12)** 7.002×10^{-2}

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Converting To and From Standard Form - Answers

Group C	Convert these numbers to ordinary numbers:	
	1) 4×10^3	**1)** 4000
	2) 4×10^2	**2)** 400
	3) 4×10^5	**3)** 400 000
	4) 4.7×10^3	**4)** 4 700
	5) 4.7×10^2	**5)** 470
	6) 4.7×10^5	**6)** 470 000
	7) 4.7×10^6	**7)** 4 700 000
	8) 4.7×10^1	**8)** 47
	9) 4.7×10^0	**9)** 4.7
	10) 4.72×10^3	**10)** 4 720
	11) 4.07×10^3	**11)** 4 070
	12) 4.027×10^7	**12)** 40 270 000
Group D	Convert these numbers to ordinary numbers:	
	1) 4×10^{-3}	**1)** 0.004
	2) 4×10^{-2}	**2)** 0.04
	3) 4×10^{-5}	**3)** 0.00004
	4) 4.7×10^{-3}	**4)** 0.0047
	5) 4.7×10^{-2}	**5)** 0.047
	6) 4.7×10^{-5}	**6)** 0.000047
	7) 4.7×10^{-6}	**7)** 0.0000047
	8) 4.7×10^{-1}	**8)** 0.47
	9) 4.7×10^{-4}	**9)** 0.00047
	10) 4.72×10^{-3}	**10)** 0.00472
	11) 4.07×10^{-3}	**11)** 0.00407
	12) 4.027×10^{-7}	**12)** 0.0000004027

Converting To and From Standard Form - Answers

Group E	Write these numbers in standard form:	
	1) 63×10^{5}	**1)** 6.3×10^{6}
	2) 63×10^{4}	**2)** 6.3×10^{5}
	3) 630×10^{4}	**3)** 6.3×10^{6}
	4) 631×10^{5}	**4)** 6.31×10^{7}
	5) 6031×10^{3}	**5)** 6.031×10^{6}
	6) 0.63×10^{5}	**6)** 6.3×10^{4}
	7) 0.063×10^{2}	**7)** 6.3×10^{0}
	8) 60.3×10^{4}	**8)** 6.03×10^{5}
	9) 63×10^{-5}	**9)** 6.3×10^{-4}
	10) 63×10^{-4}	**10)** 6.3×10^{-3}
	11) 630×10^{-4}	**11)** 6.3×10^{-2}
	12) 0.063×10^{-6}	**12)** 6.3×10^{-8}

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Converting To and From Standard Form - Answers

	Question	Answer
	Applied Questions	
1)	**a)** Spot the mistake and explain the error. Sam has carried out a calculation and written his answer in standard form. The answer he has written is 24×10^5. **b)** $6.1 \times 10^3 = 61\,000$	**a)** The first part of the number is not $1 \leq n < 10$ **b)** The number has been multiplied by $10,000$ not 1000.
2)	**a)** Billy says that 6.2×10^{-5} is higher than 6.2×10^{-4}. Is he correct? Explain your reason. **b)** The distance from the Earth to the Sun is $1.49 \times 10^8 \, km$. Write this distance as an ordinary number.	**a)** No, -5 is lower than -4 **b)** $149\,000\,000 \, km$
3)	Place an inequality sign between these numbers to make the statement true: 3.8×10^6 .... 4.2×10^5	$3.8 \times 10^6 > 4.2 \times 10^5$
4)	**a)** The population of Vietnam is 9.6×10^7 to 2 significant figures. The population of Japan is 1.3×10^8 to 2 significant figures. Which country has the greater population? **b)** The population of the United States is $330\,000\,000$ to 2 significant figures. Write this number in standard form.	**a)** Japan **b)** 3.3×10^8

Converting To and From Standard Form - Mark Scheme

		Question	Answer	
		Exam Questions		
1)	(a)	Write 8.24×10^{-5} as an ordinary number.	(a) 0.0000824	(1)
	(b)	Write 0.00568 in standard form.	(b) 5.68×10^{-3}	(1)
2)	(a)	Write $430\ 700$ in standard form.	(a) 4.307×10^5	(1)
	(b)	Anna is asked to compare the following numbers. $$A = 5.72 \times 10^7$$ $$B = 6.28 \times 10^5$$ She says, *"6.28 is bigger than 5.72 so B is bigger than A"*. Is Anna correct? You must give a reason for your answer.	(b) Anna is wrong because she did not compare the indices. A is 10^7 which has a larger place value than B.	(1)
3)		Put these numbers in order of size. Start with the smallest. 0.0034 4.1×10^{-4} 0.24×10^{-5} 0.00062	0.24×10^{-5} 4.1×10^{-4} 0.00062 0.0034 Correctly converts all numbers to the same format for comparison. 3 numbers are correctly placed.	(1) (1) (1)

Converting To and From Standard Form - Mark Scheme

4) (a)	This table shows the weights of some planets.	(a) Saturn	(1)
	Planet / **Mass (kg)** table below		
(b)	Which planet in this list has the least mass?	**(b)** Mercury	**(1)**

4) (a) This table shows the weights of some planets.

Planet	Mass (kg)
Earth	5.972×10^{24}
Saturn	5.683×10^{26}
Mercury	3.285×10^{23}
Mars	6.39×10^{23}
Venus	4.867×10^{24}

Which planet in this list has the greatest mass?

(a) Saturn — (1)

(b) Which planet in this list has the least mass?

(b) Mercury — **(1)**

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