ADD AND SUBTRACT NUMBERS IN STANDARD FORM

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

Add or subtract units that are the same size, just like counting objects.



2 thousand + 4 thousand = 6 thousand = 6000

1 Count the cards. Fill in the boxes.

a) 100 100 100 100 100 + 100 100 = ☐ hundreds = ☐

b) 1000 1000 1000 1000 ~~1000~~ ~~1000~~ Take away 2

6 thousand – 2 thousand = ☐ thousand = ☐

2 Fill in the boxes.

a) 4 thousand + 3 thousand = ☐ thousand

b) 8 million – 5 million = ☐ million

c) 6 hundredths + 2 hundredths = ☐ hundredths = ☐

3 When you have 10 of one unit, swap them for 1 of the next unit up.



10 thousands = 1 ten thousand

a) 13 thousand = 1 ten thousand and 3 thousand = ☐

b) 8 thousand + 5 thousand = ☐ thousand = ☐

4 Add the numbers in each place value chart. Write the answer in the bottom row.

a)

	TTh	Th	H	T	O
40 000	4	0	0	0	0
+ 3000		3	0	0	0

b)

	O	t	h	th
0.05	0	0	5	
+ 0.004	0	0	0	4

ADD AND SUBTRACT NUMBERS IN STANDARD FORM

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Same power: add the numbers, keep the power.

$(3 \times 10^4) + (5 \times 10^4)$

$= 8 \times 10^4$

3 ten thousands + 5 ten thousands

Different powers: use ordinary numbers.

$(2 \times 10^3) + (6 \times 10^2)$

$= 2000 + 600 = 2600$

$= 2.6 \times 10^3$

1 The powers are the same. Work out each answer.

a) $(2 \times 10^5) + (6 \times 10^5) =$ ☐ $\times 10^5$

b) $(9 \times 10^3) - (4 \times 10^3) =$ ☐ $\times 10^3$

c) $(1.5 \times 10^{-2}) + (2.3 \times 10^{-2}) =$ ☐ $\times 10^{-2}$

2 Work out each answer. Then write it in standard form.

a) $(6 \times 10^3) + (7 \times 10^3) =$ ☐ $\times 10^3 =$ ☐ $\times 10^{\square}$

b) $(9 \times 10^{-4}) + (4 \times 10^{-4}) =$ ☐ $\times 10^{-4} =$ ☐ $\times 10^{\square}$

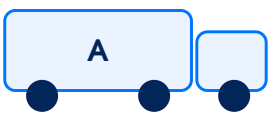
13 is too big! Divide it by 10 and add 1 to the power.

3 The powers are different. Change to ordinary numbers first.

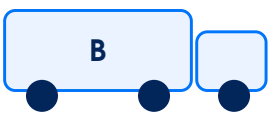
a) $(4 \times 10^4) + (3 \times 10^3) =$ ☐ + ☐ = ☐ = ☐ $\times 10^{\square}$

b) $(5 \times 10^3) - (2 \times 10^2) =$ ☐ − ☐ = ☐ = ☐ $\times 10^{\square}$

4 Two lorries carry these loads. Give your answers in standard form.



2.4×10^4 kg



1.8×10^4 kg

a) What is the total mass of the two loads? ☐ kg

b) How much heavier is load A than load B? ☐ kg

ADD AND SUBTRACT NUMBERS IN STANDARD FORM

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Same power: $(A \times 10^n) + (B \times 10^n) = (A + B) \times 10^n$, then adjust if needed.

Different powers: write the numbers as ordinary numbers (or with the same power) first.

Never add the powers: $(2 \times 10^3) + (4 \times 10^3)$ is 6×10^3, not 6×10^6

FLUENCY

1 Work out. Give each answer in standard form.

a) $(3.6 \times 10^7) + (5.9 \times 10^7) =$ ☐

b) $(7.2 \times 10^{-3}) - (4.8 \times 10^{-3}) =$ ☐

c) $(8.5 \times 10^5) + (2.7 \times 10^5) =$ ☐

d) $(4 \times 10^{-6}) - (3.6 \times 10^{-6}) =$ ☐

2 The powers are different. Give each answer in standard form.

a) $(6.3 \times 10^5) + (4 \times 10^4) =$ ☐

b) $(2 \times 10^{-3}) - (7 \times 10^{-5}) =$ ☐

c) $(5.1 \times 10^6) - (9 \times 10^5) =$ ☐

REASONING

3 Circle the correct answer to this calculation.

$(7 \times 10^{-6}) + (6 \times 10^{-6})$

13×10^{-6} 1.3×10^{-5} 1.3×10^{-7} 13×10^{-12}

Choose one wrong answer. Explain the mistake that leads to it.

4 Work out A and B. Give each answer in standard form.

A $(6 \times 10^5) + (5 \times 10^5)$ ☐ B $(6 \times 10^5) + (5 \times 10^3)$ ☐

Why is B harder to work out than A?

ADD AND SUBTRACT NUMBERS IN STANDARD FORM

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

All numbers are positive and in standard form. Give an example for one 'sometimes' statement.

a) $(A \times 10^n) + (B \times 10^n) = (A + B) \times 10^n$ ALWAYS SOMETIMES NEVER

b) Adding two numbers with the same power keeps that power. ALWAYS SOMETIMES NEVER

c) The power of a sum is at least the greater of the two powers. ALWAYS SOMETIMES NEVER

d) Subtracting two numbers with the same power keeps that power. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 Give each answer in standard form.

Mass of the Earth ≈ 6.0×10^{24} kg **Mass of the Moon ≈ 7.3×10^{22} kg**

a) Work out the total mass of the Earth and the Moon. _____ kg

b) How much heavier is the Earth than the Moon? _____ kg

3 Find the integers a and b.

a) $(3.5 \times 10^a) + (6 \times 10^b) = 6.35 \times 10^4$ a = _____ b = _____

b) $(8 \times 10^a) - (5 \times 10^b) = 7.95 \times 10^{-2}$ a = _____ b = _____

★ CHALLENGE FOR ALL

4 Here is a rectangle. Give each answer in standard form.



a) Perimeter = _____ mm

b) Length – width = _____ mm

c) Area = _____ mm^2

ADD AND SUBTRACT NUMBERS IN STANDARD FORM – ANSWERS

ANSWERS

BUILDING BLOCKS

1) a) 7 hundreds = 700 b) 4 thousand = 4000
2) a) 7 thousand b) 3 million c) 8 hundredths = 0.08
3) a) 13 000 b) 13 thousand = 13 000
4) a) 43 000 b) 0.054

SUPPORT

1) a) 8×10^5 b) 5×10^3 c) 3.8×10^{-2}
2) a) $13 \times 10^3 = 1.3 \times 10^4$ b) $13 \times 10^{-4} = 1.3 \times 10^{-3}$
3) a) $40\,000 + 3000 = 43\,000 = 4.3 \times 10^4$ b) $5000 - 200 = 4800 = 4.8 \times 10^3$
4) a) 4.2×10^4 kg b) 6×10^3 kg

CORE

1) a) 9.5×10^7 b) 2.4×10^{-3} c) 1.12×10^6 d) 4×10^{-7}
2) a) 6.7×10^5 b) 1.93×10^{-3} c) 4.2×10^6
3) 1.3×10^{-5}. 13×10^{-6} is not in standard form; 13×10^{-12} adds the powers; 1.3×10^{-7} changes the power the wrong way
4) A: 1.1×10^6 B: 6.05×10^5. In B the powers are different, so convert first

GREATER DEPTH

1) a) always b) sometimes ($6 \times 10^4 + 7 \times 10^4 = 1.3 \times 10^5$) c) always d) sometimes ($5 \times 10^3 - 4.5 \times 10^3 = 5 \times 10^2$)
2) a) 6.073×10^{24} kg b) 5.927×10^{24} kg
3) a) $a = 3, b = 4$ b) $a = -2, b = -4$
4) a) 1.04×10^6 mm b) 3.8×10^5 mm c) 3.15×10^{10} mm^2