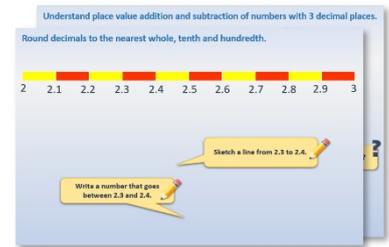


# Week 7, Day 4

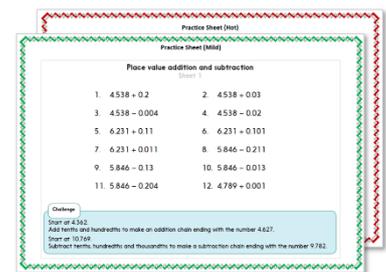
## Algebra puzzles

Each day covers one maths topic. It should take you about 1 hour or just a little more.

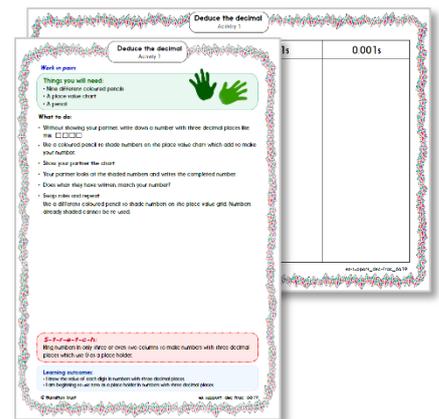
1. Start by reading through the **Learning Reminders**. They come from our *PowerPoint* slides.



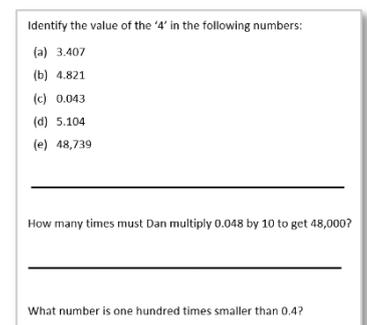
2. Tackle the questions on the **Practice Sheet**. There might be a choice of either **Mild** (easier) or **Hot** (harder)! Check the answers.



3. Finding it tricky? That's OK... have a go with a grown-up at **A Bit Stuck?**



4. Have I mastered the topic? A few questions to **Check your understanding**. Fold the page to hide the answers!



## Learning Reminders

Express missing number problems algebraically.

The outside red numbers are multiplied to give the blue numbers in the central part of the table. Our challenge is to work out what letters 'a', 'b' and 'c' represent.

What do we multiply by 3 to give 21?

$\times$	3	$b$
$a$	21	56
$c$	12	32

$$3a = 21, \text{ so } a = 7$$

$$ab = 56 \text{ but we know } a = 7, \text{ so}$$
$$7b = 56, \text{ so } b = 8$$

How can we work out what c represents?

$$3c = 12$$
$$\text{So } c = 4$$

We can check  $bc = 32$ .  
 $8 \times 4 = 32$ .

## Learning Reminders

Express missing number problems algebraically.

What do the letters *d*, *e*  
and *f* represent?

$\times$	<i>d</i>	<i>e</i>
<i>f</i>	60	36
8	40	24

24	40	8
36	60	12
3	5	$\times$

## Practice Sheet Mild

### Algebra puzzles

The pairs of letters/numbers on the outside of the table are added to give the numbers inside the table. Work out what numbers the letters represent.

+	<b>a</b>	<b>b</b>	<b>c</b>
<b>45</b>	54	65	68
<b>30</b>	39	50	53
<b>26</b>	35	46	49

a =

b =

c =

+	<b>d</b>	<b>e</b>	<b>22</b>
<b>46</b>	76	65	68
<b>24</b>	54	42	46
<b>f</b>	130	119	122

d =

e =

f =

+	<b>g</b>	<b>40</b>	<b>h</b>
<b>51</b>	76	91	102
<b>43</b>	68	83	94
<b>i</b>	100	115	126

g =

h =

i =

## Practice Sheet Hot

### Algebra puzzles

Work out what numbers the letters represent in these puzzles and problems.

1.

X	a	b
4	20	48
c	35	84

2.

X	e	f
d	24	28
9	54	63

3.

X	12	g
3	36	30
h	72	i

- Jason has  $k$  trading cards. Sally has 32. Altogether they have 60 trading cards. How many trading cards does Jason have?
- Maya has 57 books. Eva has  $m$  more books than Maya. Altogether they have 120 books. How many more books does Eva have?
- Chef has bought  $n$  buns at 20p each. He spent £40. How many buns did he buy?
- Marcus collected 40 shells. He gave  $p$  shells to his sister. He was left with 32 shells. How many did he give to his sister?

## Practice Sheet Answers

### Algebra puzzles (mild)

$$\begin{array}{lll} a = 9 & b = 20 & c = 23 \\ d = 30 & e = 19 & f = 100 \\ g = 25 & h = 51 & i = 75 \end{array}$$

### Algebra puzzles (hot)

1.  $a = 5$        $b = 12$        $c = 7$
2.  $d = 4$        $e = 6$        $f = 7$
3.  $g = 10$        $h = 6$        $i = 60$
4.  $k = 28$
5.  $m = 63$
6.  $n = 200$
7.  $p = 8$

## A Bit Stuck? Algebra puzzles

These puzzles were taken from [https://www.mathplayground.com/algebra\\_puzzle.html](https://www.mathplayground.com/algebra_puzzle.html), where you can try out lots more!

Your challenge is to work out what number each symbol represents in each puzzle.

			13
			28
			14
21	12	22	

### Hint!

Start with the column of guitars.  
3 lots of what make 12...?  
Now choose one of the rows to work on...

			36
			48
			45
43	46	40	

### Hint!

Which row would be good to start with?

			12
			30
			24
21	27	18	

### Hint!

Which column would be useful to start with?

## A Bit Stuck? Algebra puzzles

These puzzles were taken from [https://www.mathplayground.com/algebra\\_puzzle.html](https://www.mathplayground.com/algebra_puzzle.html), where you can try out lots more!

Your challenge is to work out what number each symbol represents in each puzzle.

			35
			22
			42
16	29	54	

### Hint!

Which row would it be helpful to start with?

## Check your understanding

### Questions

+	a	b	10
c	18	16	21
8	15	13	18
d	13	11	16

The pairs of letters/ numbers on the 'outside' of the table are **added** to give the numbers inside the table.

Work out what numbers the letters represent.

x	6	e	f
g	54	72	27
h	42	56	21
9	54	72	27

The pairs of letters/ numbers on the outside of the table are **multiplied** to give the numbers inside the table.

Work out what numbers the letters represent.

*Fold here to hide answers*

---

## Check your understanding

### Answers

+	a	b	10
c	18	16	21
8	15	13	18
d	13	11	16

a = 7  
b = 5  
c = 11  
d = 6

x	6	e	f
g	54	72	27
h	42	56	21
9	54	72	27

e = 8  
f = 3  
g = 9  
h = 7