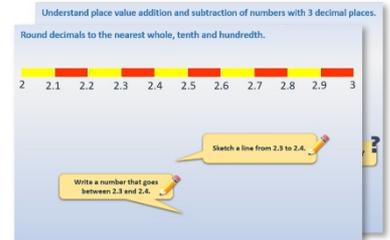# Year 5: Week 5, Day 1
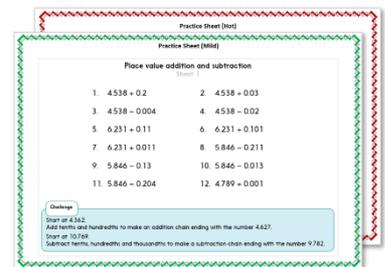## Addition and subtraction of numbers with 2 decimal places
Each day covers one maths topic. It should take you about 1 hour or just a little more.
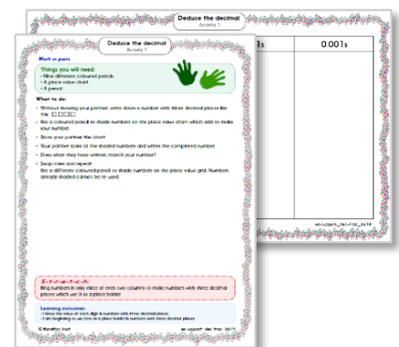
1. Start by reading through the **Learning Reminders**.
    They come from our *PowerPoint* slides.

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. Think you've cracked it? Whizzed through the Practice Sheets? Have a go
    at the **Investigation**...

Learning Reminders

Here is a 'Place Value' chart. It shows us how changing the PLACE of a digit in a number affects its VALUE.

Remind yourself about the value of each row in the chart before having a go at the few questions below.

hundredths	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
tenths	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
ones	1	2	3	4	5	6	7	8	9
tens	10	20	30	40	50	60	70	80	90
hundreds	100	200	300	400	500	600	700	800	900

So, the 4 in 0.4 is worth 4 tenths, the 9 in 0.09 is worth 9 hundredths and so on…

What values do the underlined digits have: **5**00   **2**.7   10.0**8**   0.6**3**   **4**1.1

Learning Reminders

This time, have a go at filling in the answers, then check them at the bottom of the page.

Place value addition and subtraction of numbers with two decimal places.

Write 8.34 at the top of your page.

Which digit is in the hundredths place? And the tenths? **?**

Think carefully about which digits change as you add or subtract.

8.34

+ 0.3

- 0.2

+ 0.11

+ 0.05

- 1.1

+ 1.2

You should have 8.7 – check back through if you have a different answer!

Practice Sheet Mild
Place value addition and subtraction

1. $4 + 0.53$

2. $6.07 + 0.5$

3. $5.78 - 0.08$

4. $8.64 - 0.6$

5. $8.23 + 0.1$

6. $4.56 + 0.01$

7. $8.47 - 0.01$

8. $9.35 - 0.1$

9. $6.21 + 0.2$

10. $9.34 - 0.2$

11. $8.25 + 0.03$

12. $7.38 - 0.03$

Practice Sheet Hot
Place value addition and subtraction

1. $6.21 + 0.2$

2. $9.34 - 0.2$

3. $8.25 + 0.03$

4. $7.38 - 0.03$

5. $9.34 + 0.11$

6. $8.53 - 0.11$

7. $4.73 + 1.01$

8. $8.14 - 1.01$

9. $4.27 + 1.2$

10. $8.75 - 1.02$

11. $3.24 + 1.23$

12. $9.87 - 1.81$

Challenge

Start at 4.36. Add or subtract tenths and hundredths to make an addition and subtraction chain ending with the number 5.02.

Practice Sheets Answers

Place value addition and subtraction (mild)

1. $4 + 0.53 = 4.53$
2. $6.07 + 0.5 = 6.57$
3. $5.78 - 0.08 = 5.7$
4. $8.64 - 0.6 = 8.04$
5. $8.23 + 0.1 = 8.33$
6. $4.56 + 0.01 = 4.57$
7. $8.47 - 0.01 = 8.46$
8. $9.35 - 0.1 = 9.25$
9. $6.21 + 0.2 = 6.41$
10. $9.34 - 0.2 = 9.14$
11. $8.25 + 0.03 = 8.28$
12. $7.38 - 0.03 = 7.35$

Place value addition and subtraction (hot)

1. $6.21 + 0.2 = 6.41$
2. $9.34 - 0.2 = 9.14$
3. $8.25 + 0.03 = 8.28$
4. $7.38 - 0.03 = 7.35$
5. $9.34 + 0.11 = 9.45$
6. $8.53 - 0.11 = 8.42$
7. $4.73 + 1.01 = 5.74$
8. $8.14 - 1.01 = 7.13$
9. $4.27 + 1.2 = 5.47$
10. $8.75 - 1.02 = 7.73$
11. $3.24 + 1.23 = 4.47$
12. $9.87 - 1.81 = 8.06$

Challenge

Different answers are possible, e.g. $4.36 + 0.06 = 4.42$, $4.42 - 0.1 = 4.32$, $4.32 + 0.7 = 5.02$

Remember that moving one square to the right on this 0.1 to 10 grid adds 0.1, and to the left subtracts 0.1.

So, moving two squares right/ left will add/subtract 0.2, and so on...

0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2
2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3
3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4
4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5
5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6
6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7
7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8
8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9	9
9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	10

Use the grid to answer the following:

1.   1.5 + 0.1
2.   2.2 – 0.1
3.   5.9 + 0.1
4.   4.7 – 0.1
5.   8.4 + 0.2
6.   5.6 – 0.3
7.   9.7 – 1 (careful!)
8.   8.5 + 0.4
9.   6.8 + 0.3
10.   2.2 – 0.4

Explore more Hamilton Trust Learning Materials at https://wrht.org.uk/hamilton

Investigation
Talisman Squares

A Talisman Square has consecutive numbers. This one has the numbers 0.1 to 1.6. The difference between any two neighbouring numbers is always more than one unit, so here it is always greater than one tenth or 0.1

0.1	0.5	0.3	0.7
0.9	1.1	1.3	1.5
0.2	0.6	0.4	0.8
1	1.2	1.4	1.6

1. Find the difference between each pair of numbers along the top row of this square. So between 0.1 and 0.5, then between 0.5 and 0.3, then between 0.3 and 0.7, and so on.
2. Repeat this for the second row, and the third and fourth rows.
3. Now find the difference between each pair of numbers in the first column. So between 0.1 and 0.9, then between 0.9 and 0.2 and then between 0.2 and 1.
4. Repeat this for the second, third and fourth columns.

0.5 - 0.1 = 0.4

0.5 - 0.3 =

What is the greatest difference?
What is the smallest difference?
Are all the differences greater than 0.1?

5. Draw a 3 x 3 grid.
6. Use the numbers: 0.1, 0.2, 0.3... up to 0.9.
7. Can you arrange these on the grid to create a Talisman Square where all the neighbouring numbers have a difference greater than 0.1?

What do you notice?
Do you think this is possible?
Can you explain your answer?

Challenge

Create a new 4 x 4 grid, which is a Talisman Square using consecutive numbers. Remember that all the differences between neighbouring numbers must be greater than 0.1.