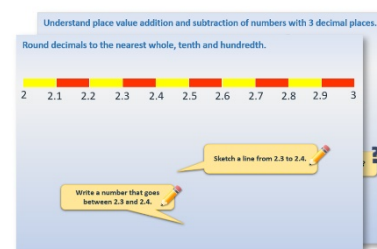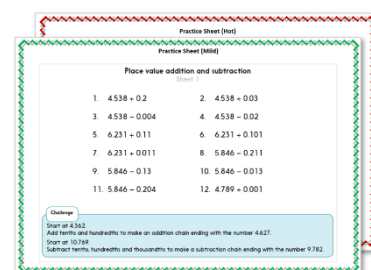# Year 6: Week 2, Day 1
Multiply and divide 2-place decimals

Each day covers one maths topic. It should take you about 1 hour or just a little more.
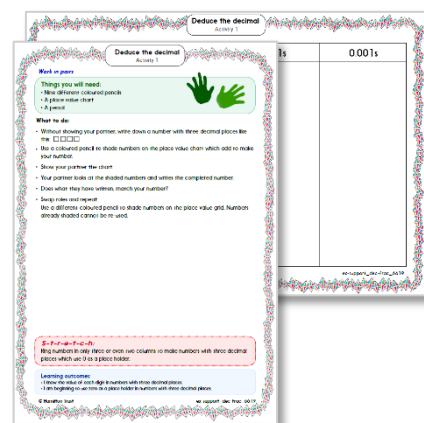
1. Start by reading through the **Learning Reminders**.
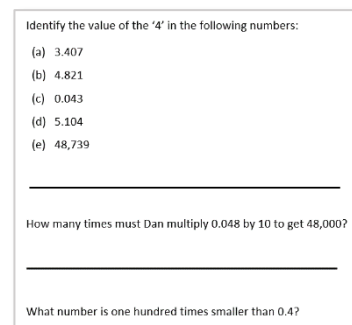They come from our *PowerPoint* slides.

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

Use place value and tables facts to multiply and divide numbers with up to 2 decimal places.

Learning Reminders

Use place value and tables facts to multiply and divide numbers with up to 2 decimal places.

$4.2 \div 6$

> We know $42 \div 6$.
> The answer to $4.2 \div 6$ will be $\frac{1}{10}$ of the answer to $42 \div 6$.

> What about $1.8 \div 6$...

$18 \div 6 = 3$
So, $1.8 \div 6 = 0.3$

> Count on 6 steps of 0.3 to check: 0.3, 0.6, 0.9....

Use place value and tables facts to multiply and divide numbers with up to 2 decimal places.

> Now solve $0.48 \div 6$.

> $0.48 \div 6$ is $\frac{1}{100}$ of the answer to $48 \div 6$.

$48 \div 6 = 8$
$4.8 \div 6 = 0.8$
So, $0.48 \div 6 = 0.08$

> What is $0.24 \div 6$?

> What is $0.54 \div 6$?

> What is $0.12 \div 6$?

> What is $0.18 \div 6$?

> What is $0.36 \div 6$?

> What is $0.42 \div 6$?

Learning Reminders

Use partitioning to mentally multiply numbers with 1 and 2 decimal places, e.g. 4 × 3.6 and 4 × 0.36

Using **partitioning...**

4 x 3.6

$4 \times 3.6 = (4 \times 3) + (4 \times 0.6)$

$= \quad 12 \quad + \quad 2.4$

$= \quad 14.4$

We can partition 3.6, and multiply each part.

And now for 3 × 4.7, recording the steps as above...

3 x 0.47

$3 \times 0.47 = (3 \times 0.4) + (3 \times 0.07)$

$= \quad 1.2 \quad + \quad 0.21$

$= \quad 1.41$

The answer is $^1/_{10}$ of the answer to 3 x 4.7.
Another way to calculate 3 x 0.47 would be to find 3 x 47 and divide by 100...

Practice Sheet Mild
Mental decimal multiplication and division

5×6	5×0.6	5×0.06
4×7	4×0.7	4×0.07
8×9	8×0.9	8×0.09
$15 \div 3$	$1.5 \div 3$	$0.15 \div 3$
$45 \div 5$	$4.5 \div 5$	$0.45 \div 5$
$48 \div 8$	$4.8 \div 8$	$0.48 \div 8$

Challenge

Find the missing numbers:

$\boxed{} \times 0.8 = 5.6$　　　$3.2 \times \boxed{} = 0.4$　　　$\boxed{} \div 9 = 0.07$

Mental decimal multiplication

Use partitioning to work out the answers to these multiplications.

1. 3 × 2.4

    = (3 × 2) + (3 × 0.4)

    =   +

    =

2. 6 × 2.4

3. 5 × 4.3

4. 7 × 4.3

5. 4 × 7.2

6. 8 × 10.7

7. 9 × 8.6

8. 6 × 5.8

Practice Sheet Hot
Mental decimal multiplication and division

5 × 0.6	5 × 0.06
4 × 0.7	4 × 0.07
8 × 0.9	8 × 0.09
1.5 ÷ 3	0.15 ÷ 3
4.5 ÷ 5	0.45 ÷ 5
4.8 ÷ 8	0.48 ÷ 8

Challenge

Write your own multiplications with an answer of 3.6.
Write your own divisions with an answer of 0.06.

Practice Sheet Hot
Mental decimal multiplication

Use partitioning to work out the answers to these multiplications.

1. 5×4.3

2. 5×0.43

3. 4×7.2

4. 4×0.72

5. 8×6.7

6. 7×8.4

7. 3×0.26

8. 3×0.72

9. 6×0.64

10. 4×0.58

Challenge

Write three multiplications of the form ☐ x ☐ . ☐ with an answer between 35 and 45.

You can only use each digit 1 to 9 once!

Practice Sheets Answers

Mental decimal multiplication and division (mild)

5 × 6 = 30	5 × 0.6 = 3	5 × 0.06 = 0.3
4 × 7 = 28	4 × 0.7 = 2.8	4 × 0.07 = 0.28
8 × 9 = 72	8 × 0.9 = 7.2	8 × 0.09 = 0.72
15 ÷ 3 = 5	1.5 ÷ 3 = 0.5	0.15 ÷ 3 = 0.05
45 ÷ 5 = 9	4.5 ÷ 5 = 0.9	0.45 ÷ 5 = 0.09
48 ÷ 8 = 6	4.8 ÷ 8 = 0.6	0.48 ÷ 8 = 0.06

Challenge

Find the missing numbers:

7 x 0.8 = 5.6   3.2 x 0.125 = 0.4   0.63 ÷ 9 = 0.07

Mental decimal multiplication (mild)

1.   3 × 2.4
    = (3 × 2) + (3 × 0.4)
    =   6   +   1.2
    = 7.2

2.   6 × 2.4
    = (6 × 2) + (6 × 0.4)
    =   12   +   2.4
    = 14.4

3.   5 × 4.3
    = (5 × 4) + (5 × 0.3)
    =   20   +   1.5
    = 21.5

4.   7 × 4.3
    = (7 × 4) + (7 × 0.3)
    =   28   +   2.1
    = 30.1

5.   4 × 7.2
    = (4 × 7) + (4 × 0.2)
    =   28   +   0.8
    = 28.8

6.   8 × 10.7
    = (8 × 10) + (8 × 0.7)
    =   80   +   5.6
    = 85.6

Mental decimal multiplication (mild) continued

7.   9 × 8.6
      = (9 × 8) + (9 × 0.6)
      =   72   +   5.4
      = 77.4

8.   6 × 4.8
      = (6 × 4) + (6 × 0.8)
      =   24   +   4.8
      = 28.8

Mental decimal multiplication and division (hot)

5 × 0.6 = 3   5 × 0.06 = 0.3
4 × 0.7 = 2.8   4 × 0.07 = 0.28
8 × 0.9 = 7.2   8 × 0.09 = 0.72
1.5 ÷ 3 = 0.5   0.15 ÷ 3 = 0.05
4.5 ÷ 5 = 0.9   0.45 ÷ 5 = 0.09
4.8 ÷ 8 = 0.6   0.48 ÷ 8 = 0.06

Challenge

Answers could include: *1.2 x 3 = 3.6, 1.8 x 2 = 3.6 or 6 x 0.6 = 3.6,*
and
3.6 ÷ 6 = 0.6, 1.8 ÷ 0.3 = 0.6 or 1.2 ÷ 2 = 0.6

Mental decimal multiplication (hot)

1.   5 × 4.3
      = (5 × 4) + (5 × 0.3)
      =   20   +   1.5
      = 21.5

2.   5 × 0.43
      = (5 × 0.4) + (5 × 0.03)
      =   2   +   0.15
      = 2.15

3.   4 × 7.2
      = (4 × 7) + (4 × 0.2)
      =   28   +   0.8
      = 28.8

Mental decimal multiplication (hot) continued

4. 4×0.72
     $= (4 \times 0.7) + (4 \times 0.02)$
     $=$ 2.8 $+$ 0.08
     $=$ 2.88

5. 8×6.7
     $= (8 \times 6) + (8 \times 0.7)$
     $=$ 48 $+$ 5.6
     $=$ 53.6

6. 7×8.4
     $= (7 \times 8) + (7 \times 0.4)$
     $=$ 56 $+$ 2.8
     $=$ 58.8

7. 3×0.26
     $= (3 \times 0.2) + (3 \times 0.06)$
     $=$ 0.6 $+$ 0.18
     $=$ 0.78

8. 3×0.72
     $= (3 \times 0.7) + (3 \times 0.02)$
     $=$ 2.1 $+$ 0.06
     $=$ 2.16

9. 6×0.64
     $= (6 \times 0.6) + (6 \times 0.04)$
     $=$ 3.6 $+$ 0.24
     $=$ 3.84

10. 4×0.58
     $= (4 \times 0.5) + (4 \times 0.08)$
     $=$ 2 $+$ 0.32
     $=$ 2.32

Challenge

Using digits 1 to 9 once only to give answers between 35 and 45 could include:

$8 \times 5.2 = 41.6$ $9 \times 4.1 = 36.9$ $7 \times 6.3 = 44.1$ or

$8 \times 5.3 = 42.4$ $4 \times 9.1 = 36.4$ $7 \times 6.2 = 43.4$

A Bit Stuck?

Use partitioning to mentally multiply numbers with 1 decimal place, e.g. 4 × 3.6.

- Let's solve 3 × 2.5
  Remember that we can partition 2.5 into 2 and 0.5 to calculate the answer.

- Write the answer to 3 × 2
  Write the answer to 3 × 0.5 [The answer to 3 × 0.5 is $^1/_{10}$ of the answer to 3 × 5. If unsure, you could count in steps of 0.5]

- Recombine the two answers to give 6 + 1.5 = 7.5

- Now have a go at finding the answers to these similar multiplications (*check them at the bottom of the page*):

     6 × 2.5   = (6 x 2) + (6 x 0.5)

                = ____ **+** _____

                =

     4 × 5.6   = (4 x   ) + (4 x   )

     3 × 8.4   =

     7 × 2.8

     8 × 3.4

     3 × 7.9

© Hamilton Trust

Check your understanding
Questions

Write the first six facts in the 0.5 times table...
1 x 0.5 = 0.5
2 x 0.5 =

What is 4.5 divided by 0.5?

A metal tag is 0.7cm long.

How many tags can be cut from a strip of metal 6.3cm long.

How many tags could be cut from a strip of metal 70cm long

Use partitioning to find 28 x 6. Now explain how to multiply
2.8 by 6.

Finally, write the answer to 0.28 x 6 without doing any further multiplication!

Fold here to hide answers:

Check your understanding
Answers

Write the first six facts in the 0.5 times table...
1 x 0.5 = 0.5
2 x 0.5 = 1
3 x 0.5 = 1.5
4 x 0.5 = 2
5 x 0.5 = 2.5
6 x 0.5 = 3

What is 4.5 divided by 0.5?   9   Complete the 0.5 table (above) to find that 9 x 0.5 = 4.5. Answers of 0.45 or 45 show confusion over place value related times table facts.

A metal tag is 0.7cm long.

How many tags can be cut from a strip of metal 6.3cm long?   9 since 0.7 x 9 = 6.3

How many tags could be cut from a strip of metal 70cm long?   100 since 0.7 x 100 = 70

Use partitioning to find 28 x 6. Now explain how to multiply 2.8 by 6.

28 x 6 = (20 x 6) + (8 x 6) = 120 + 48 = 168.

2.8 x 6 is 10 times smaller, i.e. 16.8

Finally, write the answer to 0.28 x 6 without doing any further multiplication! 0.28 x 6 is 10 times smaller than 2.8 x 6, i.e. 1.68