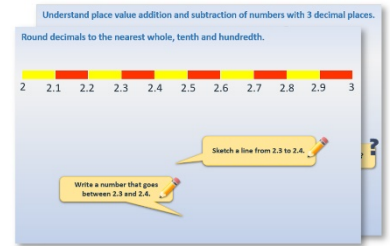


Week 14, Day 3

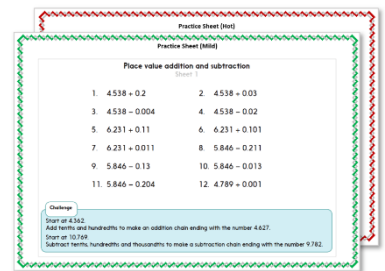
Number puzzles (1)

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

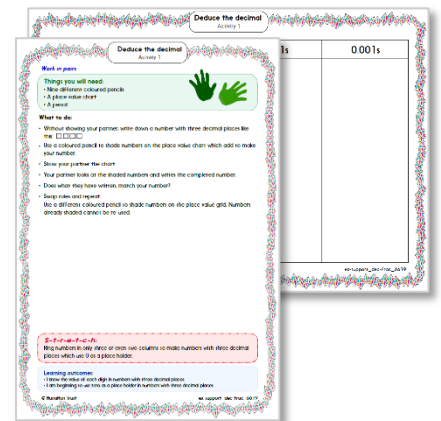
1. Start by reading through the **Learning Reminders**.



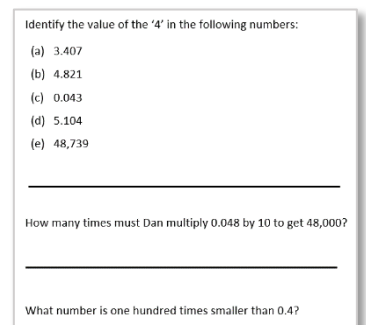
2. Tackle the questions on the **Practice Sheet**.
There might be a choice of either **Mild** (easier) or **Hot** (harder)!
Check the answers.



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

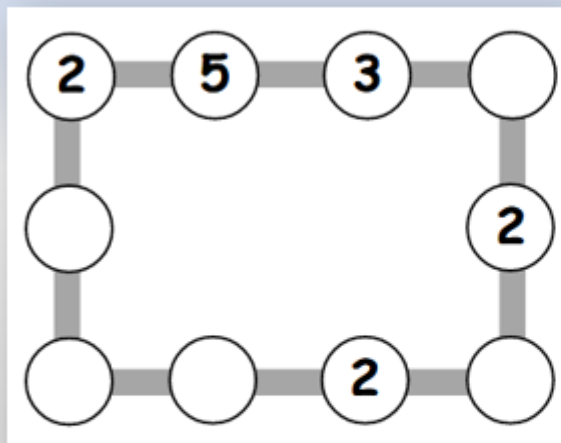


4. Have I mastered the topic? A few questions to **Check your understanding**.
Fold the page to hide the answers!



Learning Reminders

Use number facts and logic to solve number puzzles.



Each line in this puzzle adds up to 16. Our task is to work out the missing numbers.

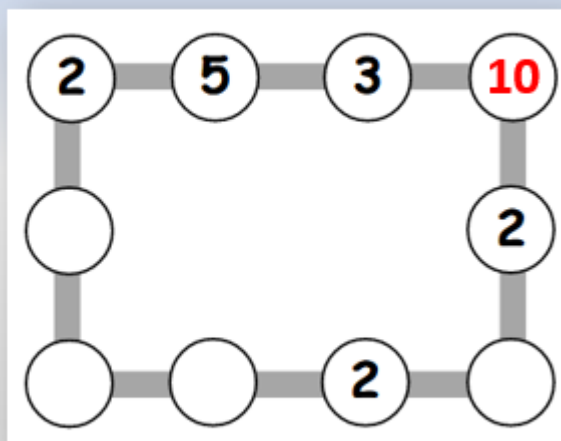
Where might be a good place to start?



The top line only has one missing number, so let's start there.

$2 + 5 + 3 + \square = 16$
 $10 + \square = 16$
So the missing number is 6.

Use number facts and logic to solve number puzzles.

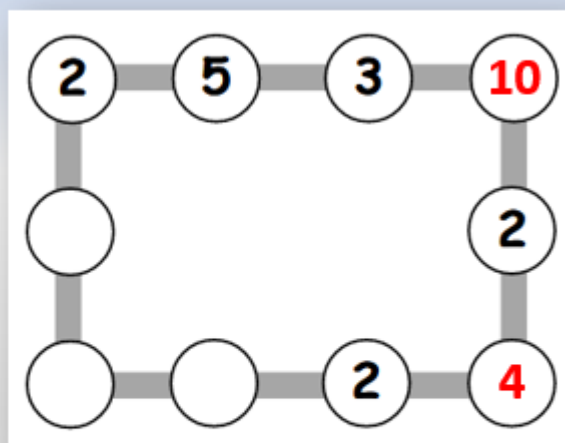


The right line only has one missing number, so let's complete that next.

$10 + 2 + \square = 16$
 $12 + \square = 16$
So the missing number is 4.

Learning Reminders

Use number facts and logic to solve number puzzles.



What should we do next?



What numbers could go in the bottom line?

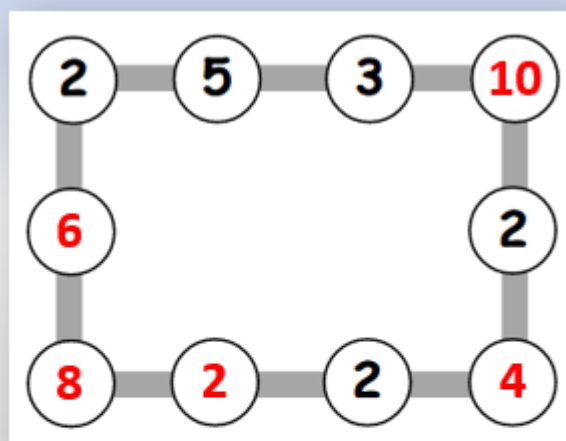


$$4 + 2 + \square + \square = 16$$

$$6 + \square + \square = 16$$

So the two numbers need to add up to 10. Let's try 8 and 2.

Use number facts and logic to solve number puzzles.

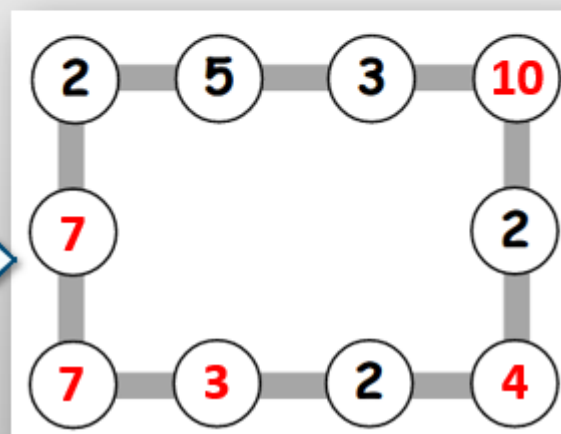


So what's the only missing number now? 6



This puzzle has more than one solution, as other pairs to 10 could have worked on the bottom line.

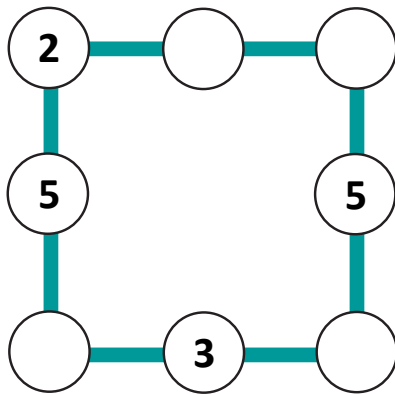
This solution works too!
You might be able to think of others.



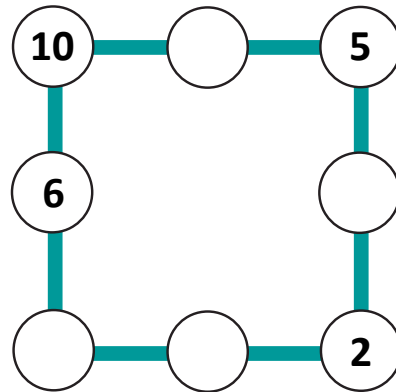
Practice Sheet Mild

Number puzzles

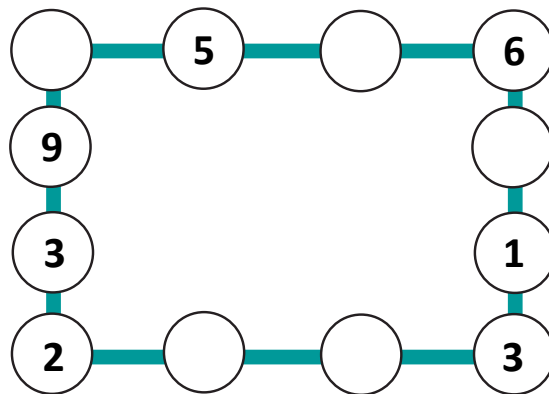
1. Make each line add up to 10.



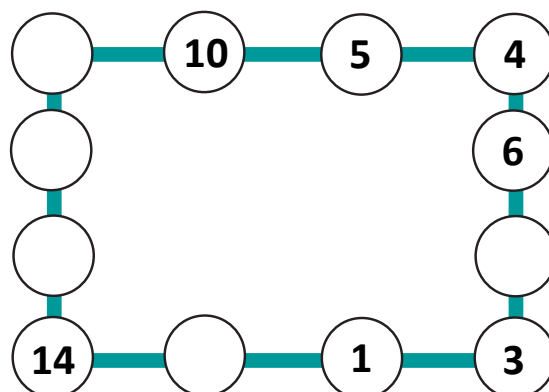
2. Make each line add up to 20.



3. Make each line add up to 15.



4. Make each line add up to 20.



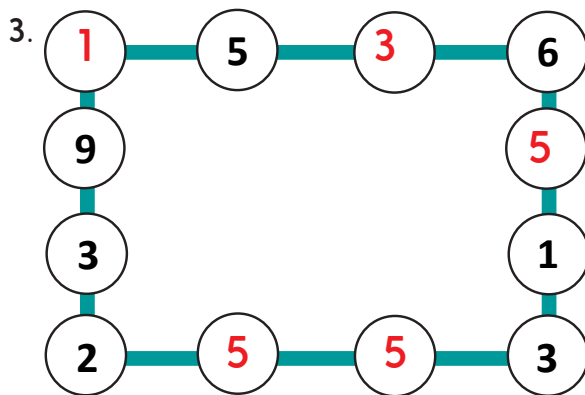
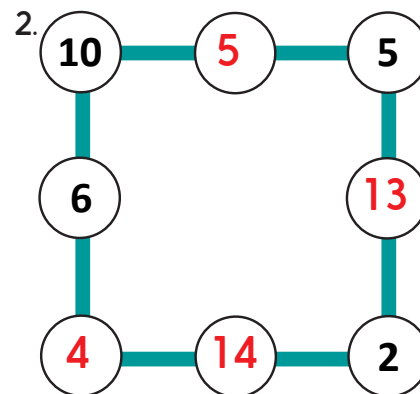
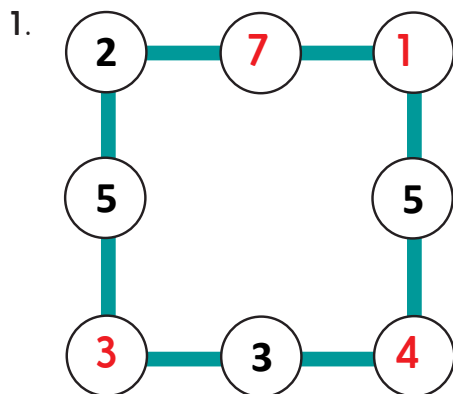
Practice Sheet Hot

Challenge

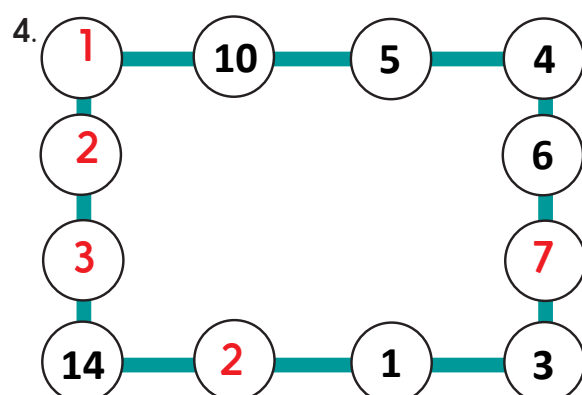
Now can you draw your own rectangle where the total on every side is 20?

Practice Sheet Answers

Practice Sheet (Mild)



Check that children have filled the circles in the bottom row of 3. above with a pair of numbers that add to 10.

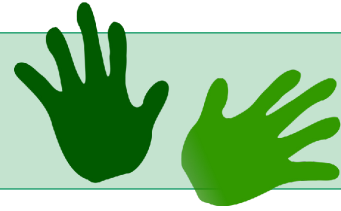


Check that children have filled the circles in the left hand column of 4. above with three numbers that add to 6. But, the top left corner circle must be a 1 as it adds up to 20 with the other numbers in the top row.

A Bit Stuck? Cross counters

Things you will need:

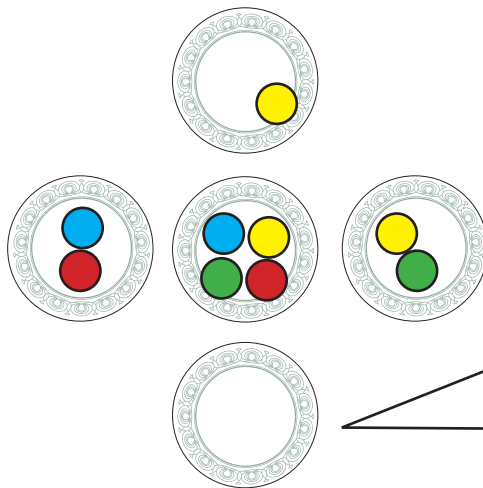
- 5 small plates or similar, counters (you could use coins, pieces of pasta etc.)



What to do:

- Arrange 5 small plates in a 'cross'.
- You are going to arrange 12 counters on the plates, BUT each line of plates 'across' and 'down' must have 8 counters.

Here is one way. Can you find another way?
Write the additions for each line.



across:
$2 + 4 + 2 = 8$
down:
$1 + 4 + 3 = 8$

How many counters need to go on this plate?

- Experiment with different ways to arrange the counters to solve the puzzle.
- Write the additions for each line to check.

*You could try 3 in the middle and 3 at the top.
What would need to be at the bottom?
Now, what pairs of numbers could go in the horizontal line?
We could try 1 and 4...*

- Did you find any combinations where there were 0 counters on one or more plates?

S-t-r-e-t-c-h:

Now try using 15 counters with a total of 10 in each line.

HINT: if you get stuck, try putting 5 counters on the middle plate.

Check your understanding:

Questions

Write the possible pairs of missing numbers:

20		
11	?	?

How many different ways are there of writing numbers in the two boxes in this addition?

$$\square + \bigcirc = 10$$

What if the total of the two missing numbers = 9? Or = 8?

You have 21 cards: 0 to 20.

How many pairs of numbers can you create which make 20? Write these.

Write the pair you cannot create.

Answers on the next page

Check your understanding:

Answers

Write the possible pairs of missing numbers.

20		
11	?	?

5 + 4 (or 4 + 5); 6 + 3 (or 3 + 6); 7 + 2 (or 2 + 7); 8 + 1 (or 1 + 8);
9 + 0 (or 0 + 9). Errors may arise when children fail to recognise 9 as the difference between 20 and 11.

For this, and the following questions, consider how systematically children have listed the possibilities and challenge them to do so if they have missed some of the answers.

How many different ways are there of writing numbers in the two boxes in this addition?

$$\square + \bigcirc = 10$$

11 possibilities 10 + 0, 9 + 1, 8 + 2 ... 1 + 9, 0 + 10

What if the total of the two missing numbers = 9? Or = 8?

10 possibilities if the total is 9; 9 possibilities if the total is 8.

You have 21 cards: 0 to 20.

How many pairs of numbers can you create which make 20? Write these.

Write the pair you cannot create.

10 pairs:

20 + 0, 19 + 1, 18 + 2, 17 + 3, 16 + 4, 15 + 5, 14 + 6, 13 + 7,
12 + 8, 11 + 9.

The missing pair is 10 + 10 (since there is only one 10 card).