

Mathematical challenges for able pupils

Year 1 E Securing number facts,
relationships and calculating



Pick a pair

Choose from these numbers.

1. Pick a pair of numbers.

Add them together.

Write the numbers and the answer.

Pick a different pair of numbers.

Write the numbers and the answer.

Keep doing it. How many different answers can you get?

2. Now take one number from the other.

How many different answers can you get now?

Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.

Solution to the Pick a pair problem.

There are six different sums and six different (positive) differences.

1. $1 + 2 = 3$

$1 + 4 = 5$

$2 + 4 = 6$

$1 + 8 = 9$

$2 + 8 = 10$

$4 + 8 = 12$

2. $2 - 1 = 1$

$4 - 2 = 2$

$4 - 1 = 3$

$8 - 4 = 4$

$8 - 2 = 6$

$8 - 1 = 7$

Adapt the puzzle by using larger numbers.

Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.

Sum up

Choose from these four cards.

Make these totals:



What other totals can you make from the cards?

Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts to at least 10.
- Add three small numbers mentally.

Solution to the Sum Up problem.

If each number can be used only once:

$$9 = 2 + 3 + 4$$

$$10 = 2 + 8$$

$$11 = 3 + 8$$

$$12 = 4 + 8$$

$$13 = 2 + 3 + 8$$

$$14 = 2 + 4 + 8$$

$$15 = 3 + 4 + 8$$

Other solutions are possible if numbers can be repeated.

Other totals:

$$5 = 2 + 3$$

$$6 = 2 + 4$$

$$7 = 3 + 4$$

$$17 = 2 + 3 + 4 + 8$$

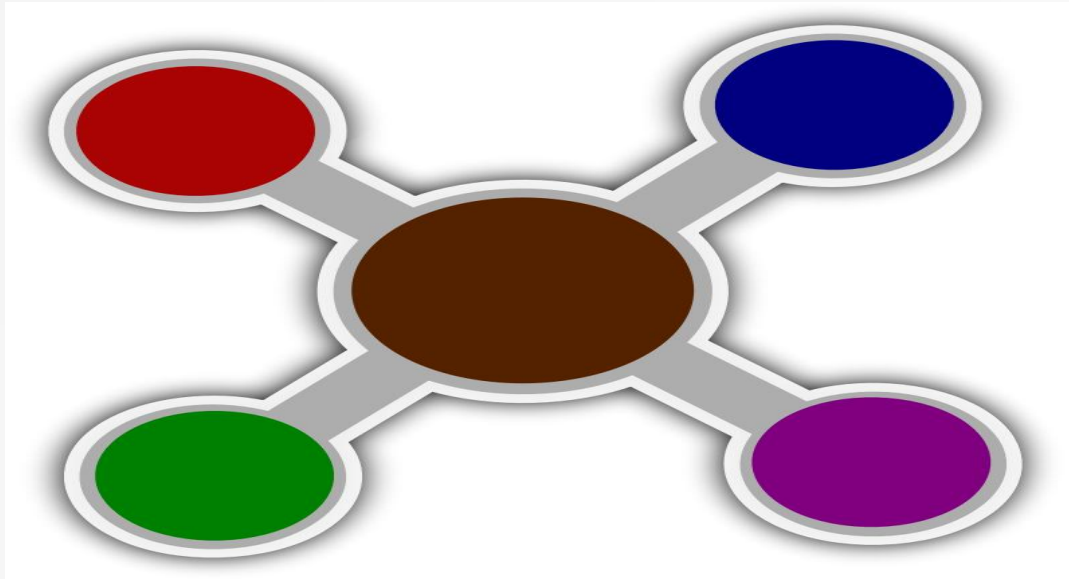
Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts to at least 10.
- Add three small numbers mentally.

Cross Roads

Use 15 counters.

Put a different number on each plate.



Do it
Make each
again.
line add
up to 10.
make
each line
add up to
8.

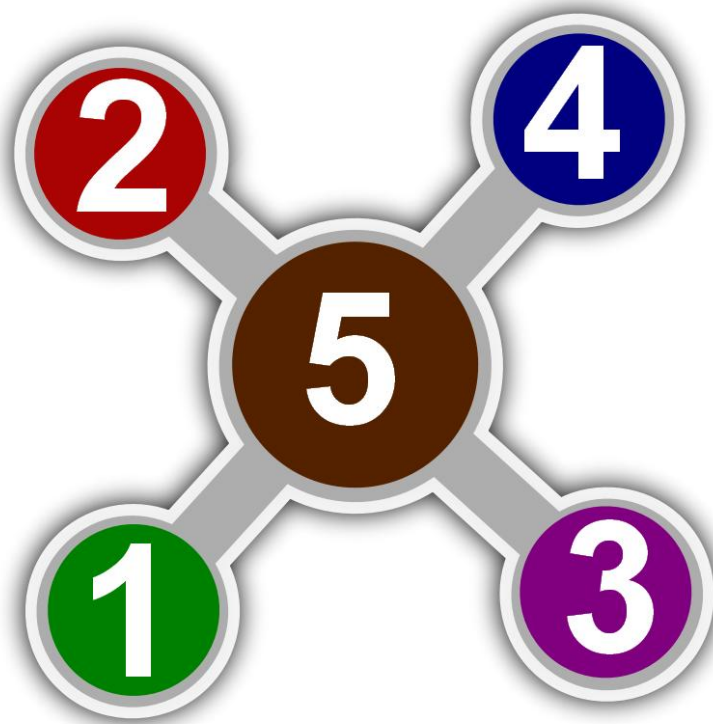
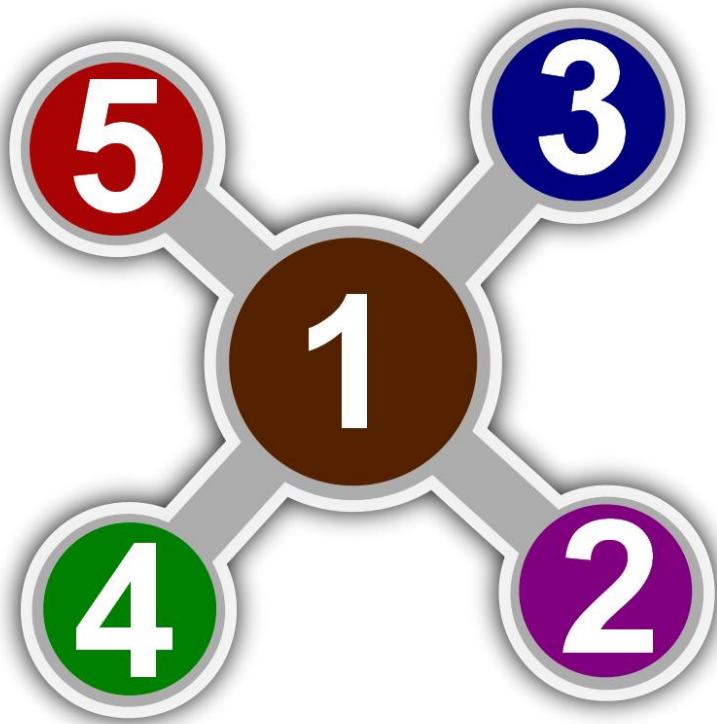
Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.
- Add three small numbers mentally.

Solution to Cross Roads

Each line adds
up to 10.

Each line
adds up to 8.

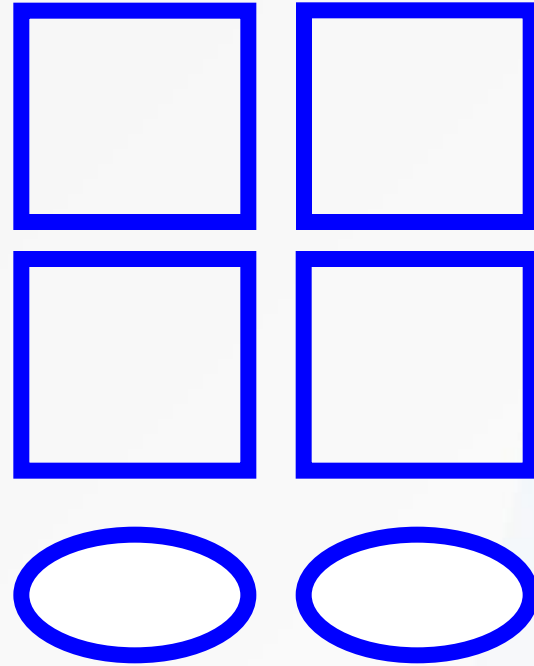


Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.
- Add three small numbers mentally.

Coloured shapes

- What colour is each shape?
- Write it on the shape.



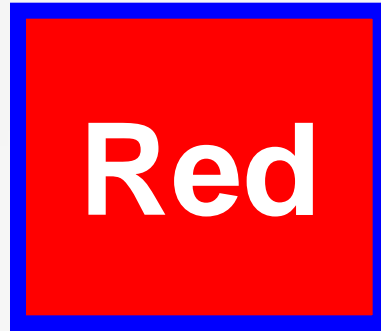
•Clues

- **Red** is not next to **grey**.
- **Blue** is between white and **grey**.
- **Green** is not a square.
- **Blue** is on the right of **pink**.

Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.
- Add three small numbers mentally.

Solution for coloured shapes



Learning Objective:

- Solve mathematical problems or puzzles.
- Know addition and subtraction facts up to 10.
- Add three small numbers mentally.

Thank You

The background is a smooth gradient of blue, transitioning from a darker shade on the left to a lighter, cyan shade on the right. At the bottom, there are several overlapping, wavy bands. The topmost band is a bright yellow, followed by a light blue band, and then a white band at the very bottom. The overall design is clean and modern.

References and additional resources.

These units were organised using advice given at:

http://www.edu.dudley.gov.uk/numeracy/problem_solving/Challenges%20and%20Blocks.doc

PowerPoint template published by www.ksosoft.com

These Mental Maths challenges can be found as a PDF file at :

http://www.edu.dudley.gov.uk/numeracy/problem_solving/Mathematical%20Challenges%20Book.pdf

The questions from this PowerPoint came from:

Mathematical challenges for able pupils in Key Stages 1 and 2

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