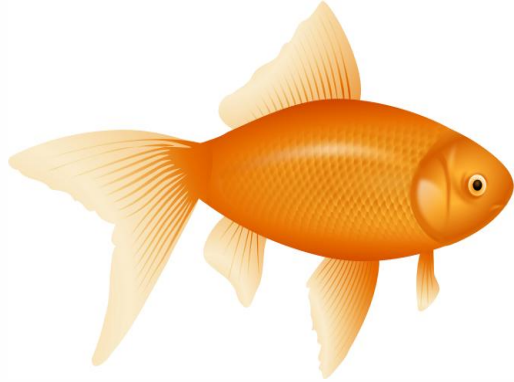


Mathematical challenges for able pupils

Year 6 D Counting, partitioning and calculating



A bit fishy



A goldfish costs £1.80.
An angel fish costs £1.40.



Nasreen paid exactly £20 for some fish.

How many of each kind did she buy?



Learning Objective:

- Solve problems involving ratio and proportion.
- Choose and use efficient calculation strategies to solve a problem.
- Explain methods and reasoning.

Solution to A bit fishy

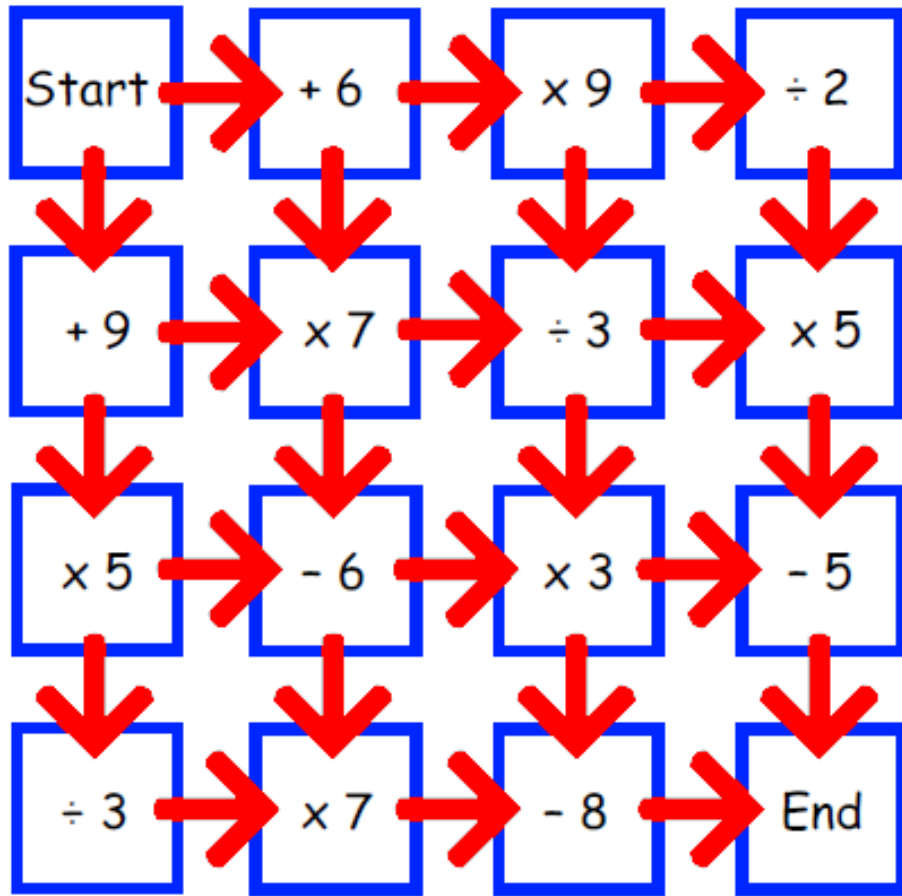
Nasreen bought **4 angel fish**
and **8 goldfish**.



Learning Objective:

- Solve problems involving ratio and proportion.
- Choose and use efficient calculation strategies to solve a problem.
- Explain methods and reasoning.

Maze



Start with zero.

Find a route from 'Start' to 'End' that totals 100 exactly.

Which route has the highest total?

Which has the lowest total?

Now try some different starting numbers.



Learning Objective:

- Solve mathematical problems or puzzles.
- Add and subtract two-digit numbers mentally.
- Multiply and divide by single-digit numbers.

Solution to Maze problem

There are two routes that total 100 exactly:

$$+ 6 \times 7 - 6 \times 3 - 8 = 100$$

$$+ 9 \times 7 \div 3 \times 5 - 5 = 100$$

The route giving the highest total is:

$$+ 9 \times 7 - 6 \times 7 - 8 = 391$$

The route giving the lowest total is:

$$+ 6 \times 7 \div 3 \times 3 - 8 = 34$$



Learning Objective:

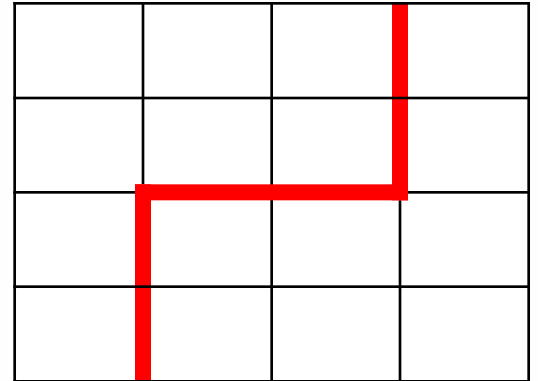
- Solve mathematical problems or puzzles.
- Add and subtract two-digit numbers mentally.
- Multiply and divide by single-digit numbers.

Four by four

You need some squared paper.

This 4 by 4 grid is divided into two identical parts.
Each part has the same area and the same shape.

Find five more ways of dividing the grid into two identical parts by drawing along the lines of the grid.



Rotations and reflections do not count as different!

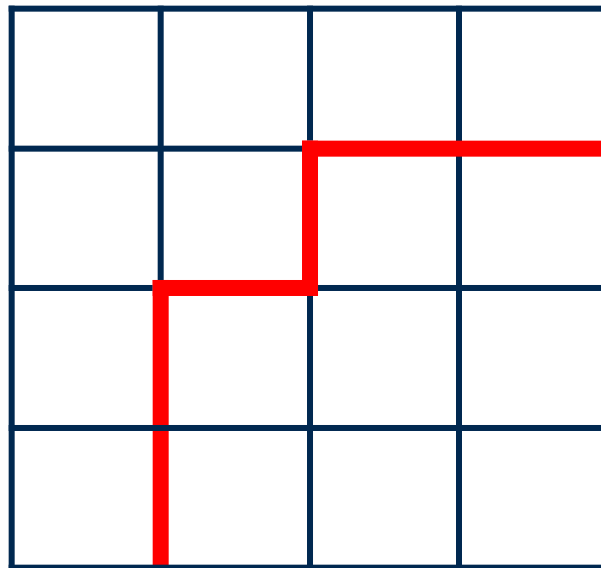


Learning Objective:

- Solve mathematical problems or puzzles.
- Visualise 2-D shapes.
- Find fractions of shapes.

Four by four

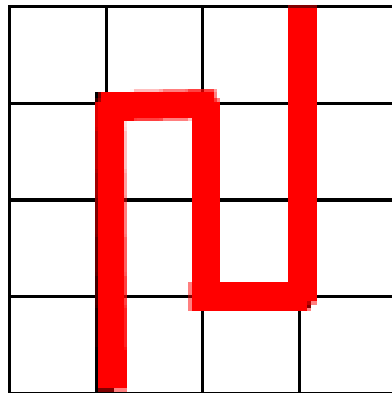
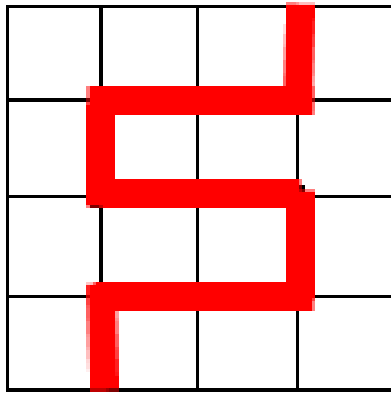
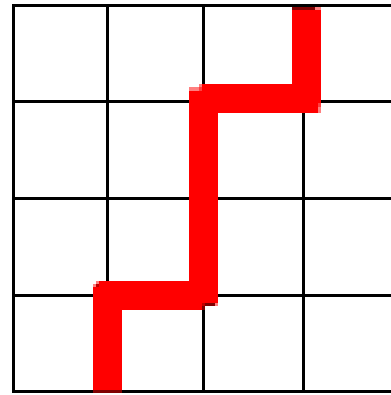
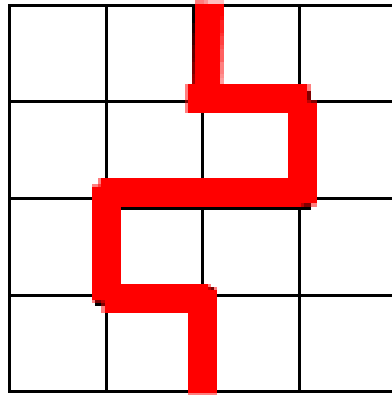
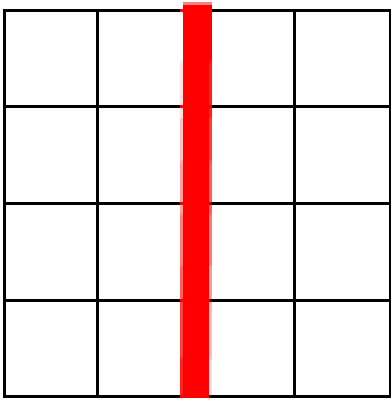
Explore ways of dividing a 4 by 4 grid into two parts with equal areas but different shapes.



Learning Objective:

- Solve mathematical problems or puzzles.
- Visualise 2-D shapes.
- Find fractions of shapes.

Solution to Four by four



**Did you find
any more?**



Learning Objective:

- Solve mathematical problems or puzzles.
- Visualise 2-D shapes.
- Find fractions of shapes.

The end,thank you!



References and additional resources.

The questions from this PowerPoint came from:

Mathematical challenges for able pupils in Key Stages 1 and 2

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Thank You

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

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These units were organised using advice given at:

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

