Mathematical challenges for able pupils

Year 3 E Securing number facts, relationships and calculating
Spaceship

Some Tripods and Bipods flew from planet Zeno.

There were at least two of each of them. Tripods have 3 legs. Bipods have 2 legs.
There were 23 legs altogether.
How many Tripods were there? How many Bipods?
Find two different answers.

Learning Objective:
• Solve mathematical problems or puzzles.
• Count on in steps of 2 or 3 or 4.
• Know multiplication facts for 2 and 3 and 4 times tables.
What if Tripods with 3 legs and Quadrupods with 4 legs are on the spaceship?

Find two different ways to make 23 legs.

Learning Objective:
- Solve mathematical problems or puzzles.
- Count on in steps of 2 or 3 or 4.
- Know multiplication facts for 2 and 3 and 4 times tables.
Spaceship

3 Tripods (9 legs) and 7 Bipods (14 legs), or 5 Tripods (15 legs) and 4 Bipods (8 legs) or 1 Tripod (3 legs) and 10 Bipods (20 legs)

5 Tripods (15 legs) and 2 Quadrapods (8 legs). 1 Tripod (3 legs) and 5 Quadrapods (20 legs).

Learning Objective:
- Solve mathematical problems or puzzles.
- Count on in steps of 2 or 3 or 4.
- Know multiplication facts for 2 and 3 and 4 times tables.
1. Susie the snake has **up to 20** eggs.

She counted her eggs in fours.
She had 3 left over.
She counted them in fives.
She had 4 left over.
How many eggs has Susie got?

Learning Objective:
- Solve mathematical problems or puzzles.
- Recognise multiples of 3 and 5.
- Add mentally a pair of two-digit numbers.
2. Sam the snake has **up to** 30 eggs.

She counted her eggs in fours.
She had 1 left over.
She counted them in fives.
She had 1 left over.
How many eggs has Sam got?

Learning Objective:
- Solve mathematical problems or puzzles.
- Know multiplication facts for 4 and 5 times tables.
- Find remainders after division.
1. Susie has 19 eggs.

2. Sam has 21 eggs.

Learning Objective:
• Solve mathematical problems or puzzles.
• Know multiplication facts for 4 and 5 times tables.
• Find remainders after division.
Maisie the mouse

Maisie had between 30 and 50 breadcrumbs.

She counted the breadcrumbs in fours. There were 2 left over.

She counted them in fives. There was 1 left over.

How many breadcrumbs did Maisie have?

Learning Objective:
• Solve mathematical problems or puzzles.
• Know multiplication facts for 4 and 5 times tables.
• Find remainders after division.
Solution to Maisie the mouse

Maisie had 46 breadcrumbs.
The problem can be solved by experiment. Alternatively, list all the multiples of 4. Add 2 to each number in the list. Now list all the multiples of 5. Add 1 to each number in the list. Now look for a number lying between 30 and 50 that is common to both lists.

To adapt the problem, group the breadcrumbs in 5s and 6s, or 7s and 9s.

Learning Objective:
• Solve mathematical problems or puzzles.
• Know multiplication facts for 4 and 5 times tables.
• Find remainders after division.
Three monkeys ate a total of 25 nuts. Each of them ate a different odd number of nuts.

How many nuts did each of the monkeys eat?

Find as many different ways to do it as you can.

Learning Objective:
• Solve mathematical problems or puzzles.
• Recognise odd and even numbers.
• Add three or four small numbers mentally.
Solution to three monkeys

There are 10 possibilities:

1, 3, 21  3, 5, 17
1, 5, 19  3, 7, 15
1, 7, 17  3, 9, 13
1, 9, 15  5, 7, 13
1, 11, 13  5, 9, 11

Learning Objective:
• Solve mathematical problems or puzzles.
• Recognise odd and even numbers.
• Add three or four small numbers mentally.
The end, thank you!
Thank You

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

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