

# Reasoning and Problem Solving – Partitioning Numbers

## National Curriculum Objectives:

Mathematics Year 1: (1N4) [Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than \(fewer\), most and least](#)

## Differentiation:

Questions 1, 4 and 7 (Problem Solving)

**Developing** Arrange 3 or 4 10p or 1p coins to make all possible totals (all frames drawn for children to complete.)

**Expected** Arrange between 5 and 7 10p or 1p coins to make all possible totals.

**Greater Depth** Arrange between 8 and 10 10p or 1p coins to make all possible totals.

Questions 2, 5 and 8 (Reasoning)

**Developing** Recognise greater than and less than a 2-digit number and explain errors (numbers made from a single ten and multiple ones.)

**Expected** Recognise greater than and less than any 2-digit number and explain errors.

**Greater Depth** Recognise greater than, less than and numbers in between, and explain errors.

Questions 3, 6 and 9 (Problem Solving)

**Developing** Use place value counters to create numbers which have more or less than a given number of tens or ones. Find three possibilities.

**Expected** Use place value counters to create numbers which have more or less than a given number of tens and ones. Find five possibilities.

**Greater Depth** Use place value counters to create numbers which are between two given numbers of tens and ones. Find all possibilities.

More [Year 1 Place Value](#) resources.

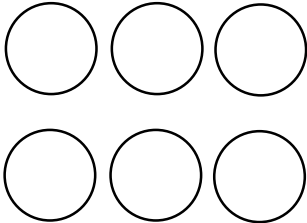
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# Reasoning and Problem Solving – Partitioning Numbers

1a. Susie has 3 coins.  
Some are 10p coins and some are 1p coins.



Can you find the different amounts she could have?

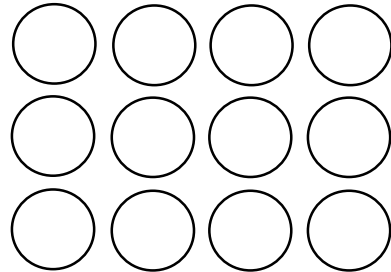


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1b. Sulyman has 4 coins.  
Some are 10p coins and some are 1p coins.



Can you find the different amounts he could have?

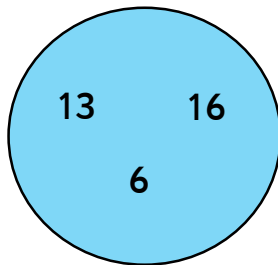
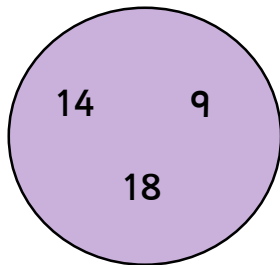


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2a. Harrison has completed the diagram. Do you think he has done it correctly. Explain how you know.

Greater than 15

Less than 15

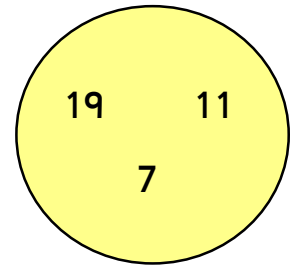
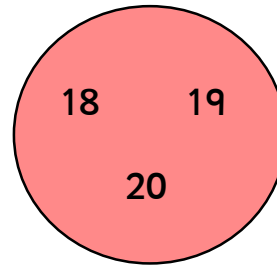


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2b. Freddie has completed the diagram. Do you think he has done it correctly. Explain how you know.

Greater than 18

Less than 18



R

3a. Use place value counters to make a number which has more than 8 tens and less than 4 ones.

Tens	Ones

Can you find three different answers?



PS

3b. Use place value counters to make a number which has less than 2 tens and more than 6 ones.

Tens	Ones

Can you find three different answers?



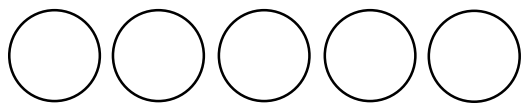
PS

# Reasoning and Problem Solving – Partitioning Numbers

4a. Ebony has 5 coins.  
Some are 10p coins and some are 1p coins.



What total amount could she have?



Can you find all possible amounts?

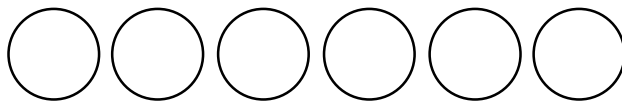


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4b. Hamza has 6 coins.  
Some are 10p coins and some are 1p coins.



What total amount could he have?



Can you find all possible amounts?

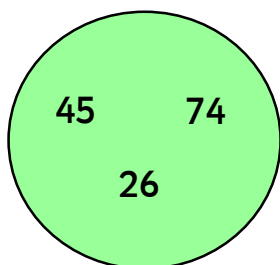
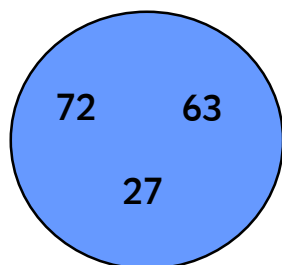


PS

5a. Jayden has completed the diagram.  
Do you think he has done it correctly.  
Explain how you know.

Greater than 60

Less than 47

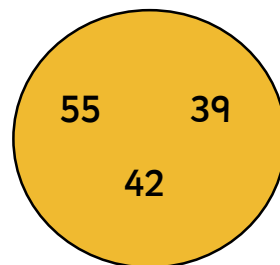
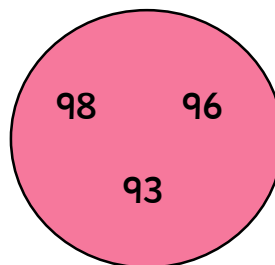


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5b. Priya has completed the diagram.  
Do you think she has done it correctly.  
Explain how you know.

Greater than 95

Less than 40



R

6a. Use place value counters to make a  
number which has more than 7 tens  
and less than 3 ones.

Tens	Ones

Can you find five different answers?



PS

6b. Use place value counters to make a  
number which has less than 5 tens and  
more than 6 ones.

Tens	Ones

Can you find five different answers?



PS

# Reasoning and Problem Solving – Partitioning Numbers

7a. Saffron has a mixture of 10p coins and 1p coins.



She chooses 8 coins. What total amount could she have?



Can you find all possible amounts?

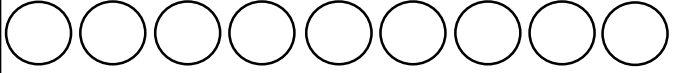


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7b. Jerry has a mixture of 10p coins and 1p coins.



He chooses 9 coins. What total amount could he have?



Can you find all possible amounts?

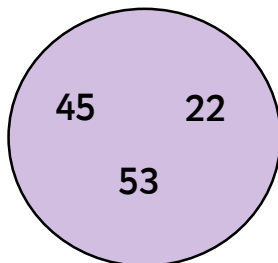
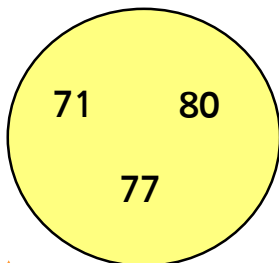


PS

8a. Josie has completed the diagram. Do you think she has done it correctly. Explain how you know.

Between 74 and 82

Less than 56 but Greater than 38

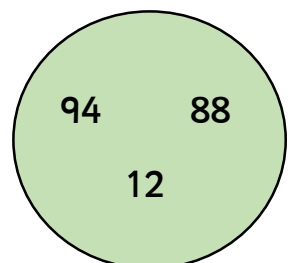
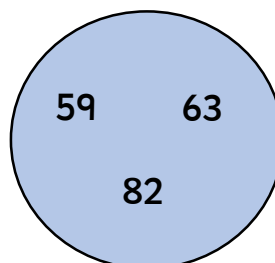


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8b. Laura has completed the diagram. Do you think she has done it correctly. Explain how you know.

Between 56 and 78

Less than 95 but Greater than 83



R

9a. Use place value counters to make a number which has between 5 and 7 tens and more than 4 ones.

Tens	Ones

Can you find all possible answers?



PS

9b. Use place value counters to make a number which has less than 4 tens and between 4 and 6 ones.

Tens	Ones

Can you find all possible answers?



PS

# Reasoning and Problem Solving – Partitioning Numbers

## Developing

- 1a. The possible answers are 12p and 21p.
- 1b. The possible answers are 13p, 22p and 31p.
- 2a. Harrison is incorrect. 9 is not greater than 15 and 16 is not less than 15.
- 2b. Freddie is incorrect. 18 is not greater than 18 and 19 is not less than 18.
- 3a. The three possible numbers are: 93, 92 and 91.
- 3b. The three possible numbers are 17, 18 and 19.

## Expected

- 4a. The possible answers are 41p, 32p, 23p and 14p.
- 4b. The possible answers are 51p, 42p, 33p, 24p and 15p.
- 5a. Jayden is incorrect. 27 is not greater than 60 and 74 is not less than 47.
- 5b. Priya is incorrect. 93 is not greater than 95 and 55 and 52 are not less than 40.
- 6a. The possible answers are: 82, 81, 80, 92, 91 and 90.
- 6b. The possible answers are: 47, 48, 49, 37, 38, 39, 27, 28, 29, 17, 18 and 19.

## Greater Depth

- 7a. The possible answers are 17p, 26p, 35p, 44p, 53p, 62p, 71p, 80p and 8p.
- 7b. The possible answers are 18p, 27p, 36p, 45p, 54p, 63p, 72p, 81p, 90p and 9p.
- 8a. Josie is incorrect. 71 is not between 74 and 82. 22 is less than 56 but not greater than 38.
- 8b. Laura is incorrect. 82 is not between 56 and 78. 12 is less than 95 but not greater than 83.
- 9a. The possible answers are 55, 56, 57, 58, 59, 65, 66, 67, 68, 69, 75, 76, 77, 78 and 79.
- 9b. The possible answers are 34, 35, 36, 24, 25, 26, 14, 15, 16, 4, 5 and 6.