

Reasoning and Problem Solving

Step 4: Related Facts

National Curriculum Objectives:

Mathematics Year 2: (2N2a) [Read and write numbers to at least 100 in numerals and in words](#)

Mathematics Year 2: (2C1) [Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100](#)

Mathematics Year 2: (2C3) [Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems](#)

Mathematics Year 2: (2N4) [Identify, represent and estimate numbers using different representations, including the number line](#)

Mathematics Year 2: (2N6) [Use place value and number facts to solve problems](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Explain whether the number families are related, using related addition facts to 100.

Expected Explain whether the number families are related, using related addition and subtraction facts to 100.

Greater Depth Explain whether the number families are related, using related addition and subtraction facts beyond 100.

Questions 2, 5 and 8 (Reasoning)

Developing Spot the odd one out of four representations of a fact family, using related addition facts to 100.

Expected Spot the odd one out of four representations of a fact family, related addition and subtraction facts to 100.

Greater Depth Spot the odd one out of four representations of a fact family, using related addition and subtraction facts beyond 100.

Questions 3, 6 and 9 (Problem Solving)

Developing Fill in the missing numbers in the pattern, using related addition facts to 100.

Expected Fill in the missing numbers in the pattern, related addition and subtraction facts to 100.

Greater Depth Fill in the missing numbers in the pattern, using related addition and subtraction facts beyond 100.

[More resources](#) which follow the same small steps as White Rose.

Did you like this resource? Don't forget to [review](#) it on our website.

Reasoning and Problem Solving – Related Facts

1a. Pete says,

I know that $1 + 2 = 3$
so $10 + 20 = 30$



Is he correct? Explain why.



R

1b. Zoe says,

I know that $4 + 1 = 5$
so $40 + 10 = 50$



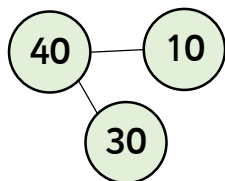
Is she correct? Explain why.



R

2a. Spot the odd one out.

$$3 + 1 = 4$$



4	
3	1

$$20 + 10 = 30$$

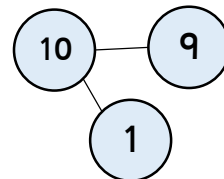
Explain your choice.



R

2b. Spot the odd one out.

$$2 + 3 = 5$$



50	
20	30

$$3 + 2 = 5$$

Explain your choice.



R

3a. Fill in the missing numbers in the pattern.

$$\begin{aligned} 1 + 4 &= 5 \\ 2 + 3 &= 5 \\ _ + _ &= 5 \end{aligned}$$



PS

3b. Fill in the missing numbers in the pattern.

$$\begin{aligned} 1 + 3 &= 4 \\ 2 + 2 &= 4 \\ _ + _ &= 4 \end{aligned}$$



PS

Reasoning and Problem Solving – Related Facts

4a. Jonny says,

I know that $40 + 30 = 70$ so $4 + 2 = 6$



Is he correct? Explain why.



R

4b. Laylah says,

I know that $50 - 10 = 40$ so $5 - 1 = 4$



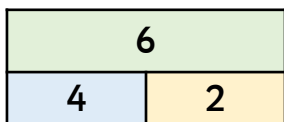
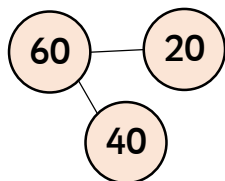
Is she correct? Explain why.



R

5a. Spot the odd one out.

$$40 + 20 = 60$$



$$60 - 20 = 10$$

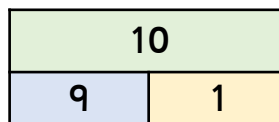
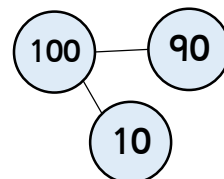
Explain your choice.



R

5b. Spot the odd one out.

$$10 + 90 = 100$$



$$80 - 20 = 60$$

Explain your choice.



R

6a. Fill in the missing numbers in the pattern.

$$10 + 90 = 100$$

$$20 + 80 = 100$$

$$\underline{\quad} + \underline{\quad} = 100$$

$$\underline{\quad} + \underline{\quad} = 100$$

$$50 + 50 = 100$$



PS

6b. Fill in the missing numbers in the pattern.

$$20 + 80 = 100$$

$$30 + 70 = 100$$

$$\underline{\quad} + \underline{\quad} = 100$$

$$\underline{\quad} + \underline{\quad} = 100$$

$$60 + 40 = 100$$



PS

Reasoning and Problem Solving – Related Facts

7a. Vicky says,

I know that $50 + 70 = 120$ so $5 + 5 = 10$



Is she correct? Explain why.



R

7b. Josh says,

I know that $150 - 60 = 90$ so $15 - 6 = 9$



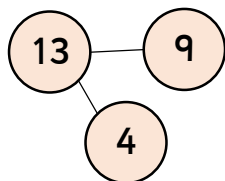
Is he correct? Explain why.



R

8a. Spot the odd one out.

$$40 + 90 = 130$$



130	
40	90

$$110 - 20 = 90$$

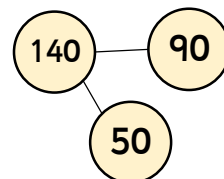
Explain why.



R

8b. Spot the odd one out.

$$50 + 90 = 140$$



14	
9	5

$$8 - 2 = 6$$

Explain why.



R

9a. Fill in the missing numbers in the pattern.

$$30 + 90 = 120$$

$$40 + 80 = 120$$

$$\underline{\quad} + \underline{\quad} = 120$$

$$\underline{\quad} + \underline{\quad} = 120$$

$$70 + 50 = 120$$



PS

9b. Fill in the missing numbers in the pattern.

$$50 + 80 = 130$$

$$60 + 70 = 130$$

$$\underline{\quad} + \underline{\quad} = 130$$

$$\underline{\quad} + \underline{\quad} = 130$$

$$90 + 40 = 130$$



PS

Reasoning and Problem Solving – Related Facts

Developing

- 1a. Pete is correct, the two number sentences have related facts.
- 1b. Zoe is correct, the two number sentences have related facts.
- 2a. Example answer: $20 + 10 = 30$ is the odd one out as the others use related addition facts for 4.
- 2b. Example answer: $9 + 1 = 10$ is the odd one out as the others use related addition facts for 5.
- 3a. $3 + 2 = 5$
- 3b. $3 + 1 = 4$

Expected

- 4a. Jonny's calculations are correct but the two number sentences do not have related number facts.
- 4b. Laylah is correct, the two number sentences have related facts.
- 5a. Example answer: $60 - 20 = 10$ is the odd one out as the others use related addition facts for 6 and the calculation is also incorrect.
- 5b. Example answer: $80 - 20 = 60$ is the odd one out as the others use related addition facts for 10.
- 6a. $30 + 70 = 100$, $40 + 60 = 100$
- 6b. $40 + 60 = 100$, $50 + 50 = 100$

Greater Depth

- 7a. Vicky's calculations are correct but the two number sentences do not have related number facts.
- 7b. Josh is correct, the two number sentences have related facts.
- 8a. Example answer: $110 - 90 = 20$ is the odd one out as the others use related addition facts for 13.
- 8b. Example answer: $8 - 2 = 6$ is the odd one out as the others use related addition facts for 14.
- 9a. $50 + 70 = 120$, $60 + 60 = 120$
- 9b. $70 + 60 = 130$, $80 + 50 = 130$