

Reasoning and Problem Solving

Step 2: Numbers from 11 to 20

National Curriculum Objectives:

Mathematics Year 1: (1N2c) [Read and write numbers from 1 to 20 in numerals and words](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Read two simple statements describing an unknown number and decide which is correct. Numbers between 1 and 10.

Expected Read two simple statements describing an unknown number and decide which is correct. Numbers between 11 and 20.

Greater Depth Read two simple statements describing an unknown number and decide which is correct. Numbers between 20 and 30.

Questions 2, 5 and 8 (Reasoning)

Developing Given three numbers between 1 and 10 arranged in ascending order, determine which one is out of order or missing.

Expected Given four numbers between 11 and 20 arranged in either ascending or descending order, determine which one is out of order or missing.

Greater Depth Given four numbers between 20 and 30 arranged in either ascending or descending order, determine which numbers are out of order or missing.

Questions 3, 6 and 9 (Problem Solving)

Developing Find two or three possible missing numbers within given parameters between 1 and 10.

Expected Find three or four possible missing numbers within given parameters between 11 and 20.

Greater Depth Find three or four possible missing numbers within given parameters between 20 and 30.

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

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Reasoning and Problem Solving – Numbers from 11 to 20

1a. Sophia is thinking of a number. She says the number is between 1 and 5.

The number could be 3.



Grace

The number must be 6.



Frankie



Who is correct? Why?

R

1b. Vladimir is thinking of a number. He says the number is between 7 and 10.

The number could be 4.



Charlie

The number is definitely not 4.



Ellie



Who is correct? Why?

R

2a. Georgia puts some number cards in order so that they count forwards.

3

4

5



Is Georgia correct? How do you know?

R

2b. Kieron puts some number cards in order so that they count forwards.

8

10

9



Is Kieron correct? How do you know?

R

3a. Tyler is guessing the code to unlock a secret safe. He knows the first two numbers.

2

1

?

The last number is more than 2 and less than 5.

What could the missing number be?
Give your answer as a number and a word.



PS

3b. Jack cannot remember the passcode for his mobile phone. He knows the first two numbers.

5

3

?

The last number is more than 5 and less than 8.

What could the missing number be?
Give your answer as a number and a word.



PS

Reasoning and Problem Solving – Numbers from 11 to 20

4a. Delta is thinking of a number. She says the number is between 11 and 16.

The number might be 13.



Josie

The number must be 12.



Lincoln



Who is correct? Why?

R

4b. Leigh is thinking of a number. He says the number is between 14 and 19.

The number definitely can't be 15.



Ezra

The number could be 18.



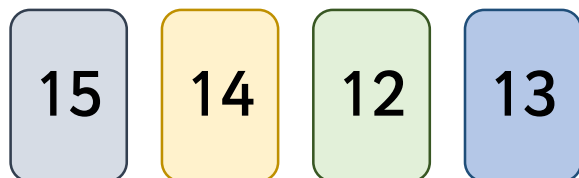
Claire



Who is correct? Why?

R

5a. Isiah puts some number cards in order so that they count backwards.

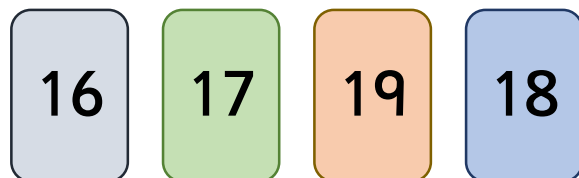


Is Isiah correct? How do you know?



R

5b. Patty puts some number cards in order so that they count forwards.



Is Patty correct? How do you know?



R

6a. Leo is guessing the age of three of his friends. He knows the first two numbers.



The last number is more than fourteen and less than nineteen.

What could the missing number be?
Give your answer as a number and a word.



PS

6b. Samira is guessing how many sweets three of her friends have. She knows the first two numbers.



The last number is more than sixteen and less than twenty.

What could the missing number be?
Give your answer as a number and a word.



PS

Reasoning and Problem Solving – Numbers from 11 to 20

7a. Suzanna is thinking of a number. She says the number is between 24 and 29.

The number can't be 23.



Alex

The number could be 28.



Jack



Who is correct? Why?

R

7b. Dalton is thinking of a number. He says the number is between 22 and 27.

The number could be 26.



Wes

The number must be 25.



Dani



Who is correct? Why?

R

8a. Megan puts some number cards in order so that they count backwards.

30

28

27

26

Is Megan correct? How do you know?



R

8b. Josh puts some number cards in order so that they count forwards.

21

22

23

24

Is Josh correct? How do you know?



R

9a. Grace is guessing the age of three of her friends. She knows the first two numbers.

29

26

?

The last number is more than twenty and less than twenty-five.

What could the missing number be?
Give your answer as a number and a word.



PS

9b. Adam is guessing the number of beads on three pieces of string. He knows the first two numbers.

22

25

?

The last number is less than twenty-eight and more than twenty-three.

What could the missing number be?
Give your answer as a number and a word.



PS

Reasoning and Problem Solving – Numbers from 11 to 20

Developing

- 1a. Grace is correct because 3 is between 1 and 5. Frankie is incorrect because 6 comes after 5.
- 1b. Ellie is correct because 4 is not between 7 and 10. Charlie is incorrect because 4 is not between 7 and 10.
- 2a. Georgia is correct – the numbers are in order.
- 2b. Kieron is wrong. He has the 9 and 10 the wrong way round. It should be 8, 9, 10.
- 3a. Possible answers: 3, three; 4, four.
- 3b. Possible answers: 6, six; 7, seven.

Expected

- 4a. Josie is correct because 13 is between 11 and 16 and she recognises there are more possibilities (12, 14, 15). Lincoln is incorrect because he thinks there can only be one answer.
- 4b. Claire is correct because 18 is between 14 and 19 and she recognises there are more possibilities (15, 16, 17). Ezra is incorrect because he thinks 15 is not between 14 and 19.
- 5a. Isiah is incorrect. He has 12 and 13 the wrong way round. It should be 15, 14, 13, 12.
- 5b. Patty is incorrect. She has the 19 and 18 the wrong way round. It should be 16, 17, 18, 19.
- 6a. Possible answers: 15, fifteen; 16, sixteen; 17, seventeen; 18, eighteen.
- 6b. Possible answers: 17, seventeen; 18, eighteen; 19, nineteen.

Greater Depth

- 7a. Both Alex and Jack are correct. Alex is correct because 23 comes before 24. Jack is correct because 28 is one of the numbers between 24 and 29.
- 7b. Wes is correct because 26 is between 22 and 27 and has recognised there could be other possibilities (23, 24, 25). Dani is incorrect because he thinks that the only possibility is 25.
- 8a. Megan is incorrect because she has missed out 29.
- 8b. Josh is correct – the numbers are in order.
- 9a. Possible answers: 21, twenty-one; 22, twenty-two; 23, twenty-three; 24, twenty-four.
- 9b. Possible answers: 24, twenty-four; 25, twenty-five; 26, twenty-six; 27, twenty-seven.