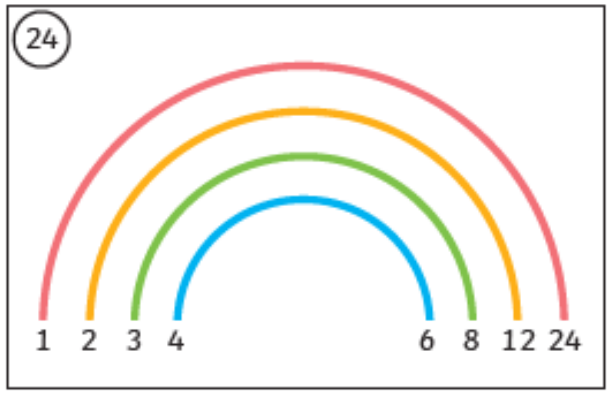
1) Sort these numbers into the correct columns.
Remember: they might be factors of more than one number.

2, 5, 8, 12, 4, 10, 9, 3

Factors of 12	Factors of 40	Factors of 36	Factors of 24

2) Look at the table from question 1. Which factors are still missing for each number?
Draw factor rainbows, like the example, to help you identify missing factors and then add them to the table.



3) Tatsiana wants to use a systematic way to identify factors to make sure she doesn't miss any. Can you show a systematic way of identifying all the factors of 48?
You could use a factor rainbow or a different method.

1) Alfie is identifying the factors of 36. He says 20 is factor of 36. Can you explain what mistake he has made?

2) Are these statements true or false? Explain your thinking.

a) Factors come in pairs so all numbers have an even number of factors.

b) 48 has more factors than any other number below 100.

c) Larger numbers have more factors.

1) Rebecca says, "This year, my sister's age is a factor of 36. Next year, her age will be a factor of 30." How old could she be?

2) Rafael says,

"I am thinking of 3 consecutive numbers less than 100. The first number has 5 as one of its factors, the second number has 1 as a factor and the third number has 2 as one of its factors."

a) What could the three consecutive numbers be? Can you find all possible sets of numbers?

b) Can you explain how you solved the problem?

ANSWERS

1)

Factors of 12	Factors of 40	Factors of 36	Factors of 24
2 4 3 12	2 5 8 4 10	2 12 4 9 3	2 8 12 4 3

2)

Factors of 12	Factors of 40	Factors of 36	Factors of 24
1 6	1 20 40	1 36 18 6	1 24 6

1) Alfie has made a mistake because 20 multiplied by any number will not give a product of 36. 20 is over half of 36 and therefore could not be a factor of this number. 18 is the greatest factor of 36 apart from 36 and 1.

2) a) This is false. Square numbers have an odd number of factors because one of their factors is always multiplied by itself and we only count each number as a factor once. 9 is a square number and its factors are 1, 9 and 3.

b) This is false. 48 has 10 factors, but 60, 72, 84, 90 and 96 all have 12 factors.

c) This is false. 96 has 12 factors, but 113 only has 2 factors – 1 and itself, 113.

1) Factors of 36 – 1, 2, 3, 4, 6, 9, 12, 18, 36
Factors of 30 – 1, 2, 3, 5, 6, 10, 15, 30
Rebecca's sister could be 2, 4 or 9 years old.

2) a) Possible numbers are:

10, 11 and 12	40, 41 and 42	70, 71 and 72
20, 21 and 22	50, 51 and 52	80. 81 and 82
30, 31 and 32	60, 61 and 62	90, 91 and 92

b) Look for explanations where children identify that only multiples of 5 are going to have 5 as a factor. All numbers will have 1 as a factor. However, only even numbers will have 2 as a factor, therefore the multiples of 5 must be those that end with a 0 as the third number (and therefore the first number) must be even.