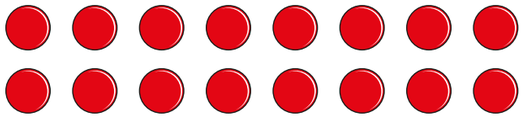
Factors

1 Alex arranges 16 counters in different ways.

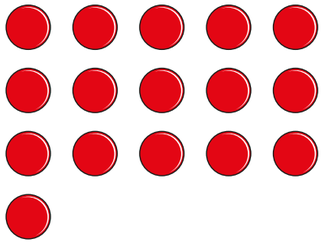
She is trying to work out some factors.



a) Use the array to complete the sentence.

2 and 8 are both factors of 16

b) Alex rearranges the counters.



How does this array show that 5 is not a factor of 16?

The bottom row isn't complete.

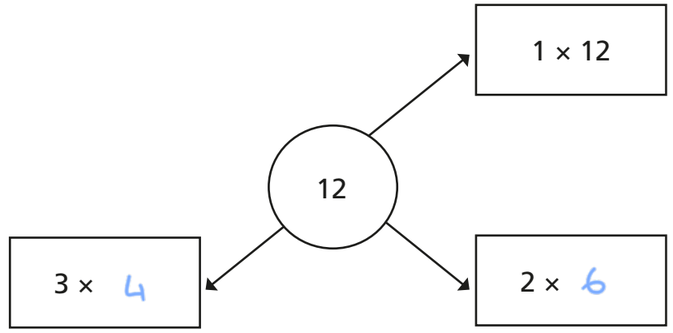
2 Use 20 counters.

a) Show that 2 and 10 are factors of 20

b) Rearrange the counters to show why 4 and 5 are also factors of 20

c) Show why 6 is not a factor of 20

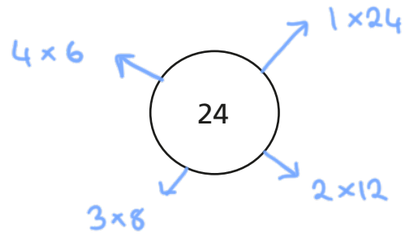
3 **a)** Complete the diagram to show the pairs of numbers that multiply to make 12



List all the factors of 12

1, 2, 3, 4, 6, 12

b) Draw a similar diagram to show the pairs of numbers that multiply to make 24



List all the factors of 24

1, 2, 3, 4, 6, 8, 12, 24

4 **a)** List all the factors of 32

1, 2, 4, 8, 16, 32

b) How can you check that you have found all the factors?

5 **a)** Circle the factors of 30

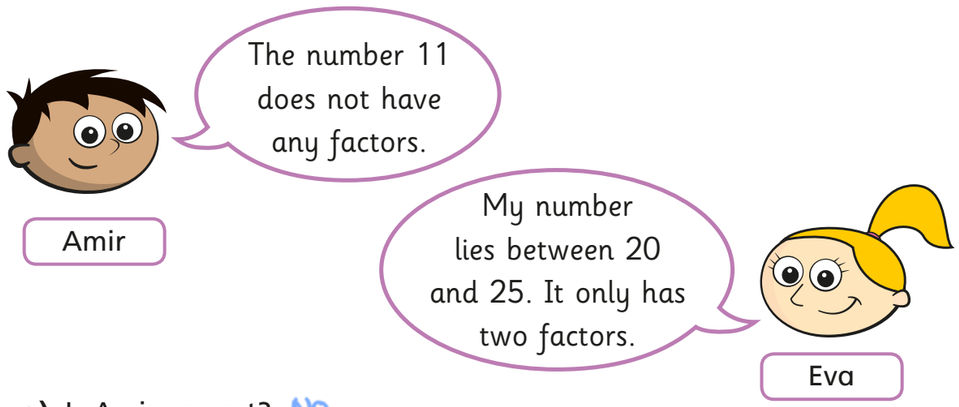
5 **15** **25** **3** **30** **4** **2** **12** **60** **0**

b) These numbers are all factors of a 2-digit number.

1 **3** **5** **9**

What could the number be? 45

6 Amir and Eva are describing numbers using factors.



a) Is Amir correct? No

Explain your answer.

1×11=11 so 1 and 11 are factors

b) What number is Eva thinking of? 23

7 Which number has the most factors? Tick your answer.

64	48 ✓

8 Look at each statement.

Explain the mistakes that have been made.

a) 20, 30 and 40 are all factors of 10

These are multiples not factors.

b) 0.5 is a factor of 8 as 16 halves equals 8

Factors have to be integers.

9 How do we know that these statements are true?

a) 5 is a factor of 195 but not a factor of 196

195 ends in 5 so 5 is a factor. 196 is one more than a multiple of 5 so 5 isn't a factor.

b) 3 is a factor of 177 but not a factor of 178

1+7+7=15 15 is a multiple of 3 so 3 is a factor of 177 therefore not a factor of 178

c) 20 is a factor of 180 but not a factor of 190

180÷20=9 190 is 10 more than 180 so 20 can't be a factor.

10 Is this statement always, sometimes or never true?

A number will always have an even number of factors because factors come in factor pairs.