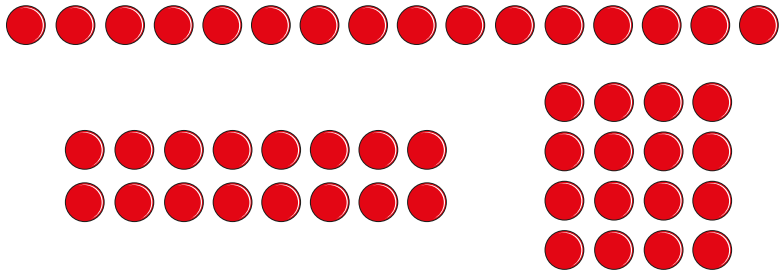
Square numbers

1 **a)** Use 16 counters to make these arrays.



b) What do you notice about the shape of one of the arrays?

c) Is 16 a square number? How do you know?

2 **a)** Is it possible to make a square array with 8 counters?

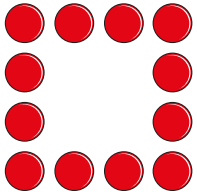
b) Is it possible to make a square array with 9 counters?

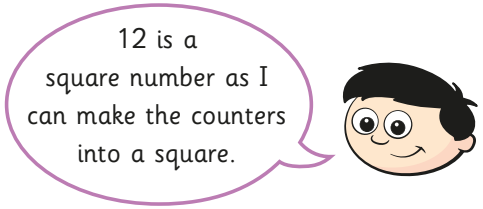
c) Which number is a square number?
How do you know?

3 Which of these numbers are square numbers?

4 **10** **18** **25**

Dexter makes a square using 12 counters.





What mistake has Dexter made?

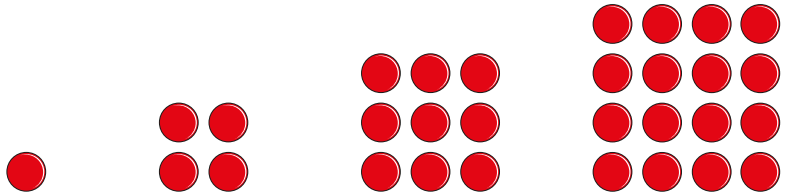
5 Whitney is working out a calculation.

$8 \times 8 = 16$

What mistake has Whitney made?

6 The arrays below show a sequence.

a) Complete the number sentences. Use the arrays to help you.



$1 \times 1 =$ ☐ $2 \times 2 =$ ☐ $3 \times$ ☐ $=$ ☐ ☐ $\times$ ☐ $=$ ☐

b) What do these numbers have in common?

c) Draw the next two numbers in the sequence and write a number sentence for each.

d) What would the next four numbers in the sequence be?

7 Complete the statements.

a) $6^2 =$ ☐

b) $12^2 =$ ☐

c) ☐ $= 9^2$

d) $0^2 =$ ☐

e) ☐$^2 = 100$

f) $64 =$ ☐^{2}

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$8 \times 8 = 16$

What mistake has Whitney made?

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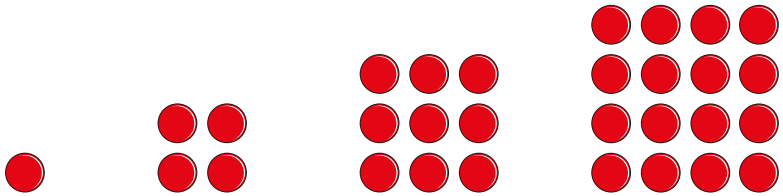

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8 **a)** Write the numbers in the table.

0 **3** **4** **11** **49**

	Factor of 24	Not a factor of 24
Square number		
Prime number		

b) Write a different number in each part of the table.

9 Dani is thinking of a square number with 2 digits.

The digits add together to make another square number.

What could the number be?

10 Huan is celebrating his birthday.

His age is a square number.

Last year he was a multiple of 12

Next year he will be a multiple of 10

How old is Huan?