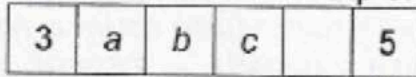
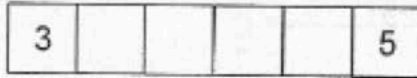


11 a The diagram below shows a strip of paper six squares long.

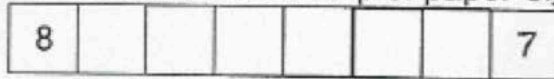


The squares are filled in with positive whole numbers, using the rule: the sum of the numbers in each set of three consecutive squares is 15.

- What must the sum of the numbers in squares a and b be?
- What must the number in square c be?
- Copy the diagram below, filling in the numbers which must appear in each of the four empty boxes.



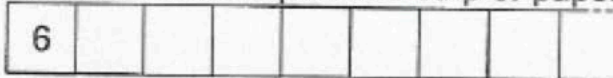
b The diagram below shows a strip of paper eight squares long.



The squares are filled in with positive whole numbers, using the rule: the sum of the numbers in each set of three consecutive squares is 17.

Copy the diagram, filling in the numbers which must appear in each of the six empty boxes. Explain carefully how you deduced these numbers.

c The diagram below shows part of a strip of paper which is a hundred squares long.

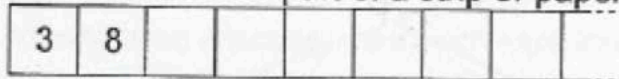


The squares are filled in with positive whole numbers, using the rule: the sum of the numbers in each set of three consecutive squares is 19.

What number must appear in the hundredth box?

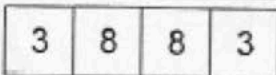
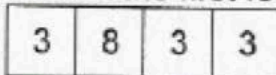
Explain carefully how you made your deduction.

d The diagram below shows part of a strip of paper which is a hundred squares long.



The squares are filled in with positive whole numbers, using the rule: the sum of the numbers in each set of three consecutive squares is *either* 14 *or* 19.

This means that the first four boxes can only be filled in in the following three ways



- Write out all the ways that the first five boxes can be filled.
- What numbers can appear in the hundredth box? Explain carefully how you made your deduction.