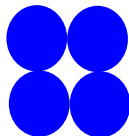


(1) Consider the following patterns:

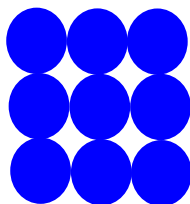
P 1



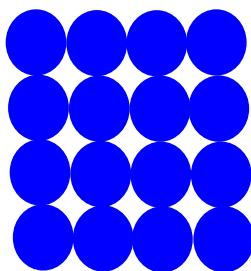
P 2



P 3



P 4



(a) Write down a sequence which represents the number of circles in each pattern.

(b) Write the sequence in (a) in words.

(c) Write a general rule for the sequence in (a).

(d) How many circles will there be in pattern 8?

(e) Which pattern will consist of 121 circles?

(2) Consider the following sequence and answer the questions: $\frac{2}{7}$; $\frac{5}{3}$; $\frac{8}{-1}$; $\frac{11}{-5}$;

(a) Write down the 5th and 6th terms.

(b) Write an algebraic rule to describe the pattern sequence.

Hint: The numerator and denominator have different rules.

(c) Calculate the 25th term.

(d) For which term in the sequence will the numerator be equal to 89?
