Problem of the Week
Problem A and Solution
Skipping at School

Problem

Sophia is an excellent skipper and skips every morning recess with her friends at school. At the end of each recess, she counts how many times she has jumped.

Sophia rarely misses her jumps or gets caught on the skipping rope, and so she averages 60 jumps every minute.

(a) If recess is 10 minutes long, how many jumps do you expect Sophia to complete in a single recess?

(b) How many days will it take for Sophia to complete at least 5000 jumps, if she jumps for one recess every day?

Solution

(a) Since Sophia jumps an average of 60 times in 1 minute, and recess is 10 minutes long, we can expect Sophia to complete $60 \times 10 = 600$ jumps in a single recess.

(b) From part (a) we expect Sofia to complete 600 jumps in one recess. Since she jumps for one recess every day, then in two days, we would expect her to complete $600 + 600 = 1200$ jumps. We can make a table to determine how long it will take Sophia to complete at least 5000 jumps.

Days	Total Jumps
1	600
2	$600 + 600 = 1200$
3	$1200 + 600 = 1800$
4	$1800 + 600 = 2400$
5	$2400 + 600 = 3000$
6	$3000 + 600 = 3600$
7	$3600 + 600 = 4200$
8	$4200 + 600 = 4800$
9	$4800 + 600 = 5400$

After 8 days, we would expect Sophia to have completed 4800 jumps, and after 9 days we would expect Sophia to have completed 5400 jumps. Therefore, it will take Sophia 9 days to complete at least 5000 jumps.