

Ada Lovelace Day maths for CBSE Class 10

CBSE Math Revision · CBSE Class 10 (Class 9 can try most of it) · Student sheet

Name _____

Class _____

Date _____

No calculator. Every answer works out exactly.

Starter (5 minutes)

1. Find the 10th term of the AP 7, 12, 17, ...
2. Find the sum of the first 20 natural numbers.
3. An AP has first term 4 and 8th term 39. Find the common difference.
4. Is 101 a term of the AP 5, 9, 13, ...? If so, which term?

Main activity (35 minutes)

Task A: Follow the algorithm

Step 1: set $n = 1$ and $S = 0$. Step 2: add $(2n - 1)$ to S . Step 3: if $n = 15$, write down S and stop; otherwise increase n by 1 and go back to step 2.

- a. Which numbers are added to S ? What is written down at the end?
- b. What is written down if ' $n = 15$ ' in step 3 is changed to ' $n = 40$ '?
- c. Instead, the algorithm stops as soon as S is more than 500. What is written down?

Task B: A loop that counts down

A program starts with $x = 120$. While x is positive it repeats: 'write down x , then subtract 7 from x '.

- a. What is the 10th number written down?
- b. How many numbers are written down?
- c. Find the sum of all the numbers written down.

Task C: Two loops race

Loop P starts at 3 and adds 8 each step. Loop Q starts at 63 and adds 5 each step. Both write down their starting number first.

- a. After how many steps do the two loops write down the same number? What is it?
- b. Find the sum of the first 20 numbers written down by loop P.
- c. If loop P never stopped, how many three-digit numbers would it write down?

Extension

1. The sum $1 + 2 + 3 + \dots + n$ is a three-digit number with all three digits the same. Find n .
2. Find the sum of all two-digit multiples of 7.