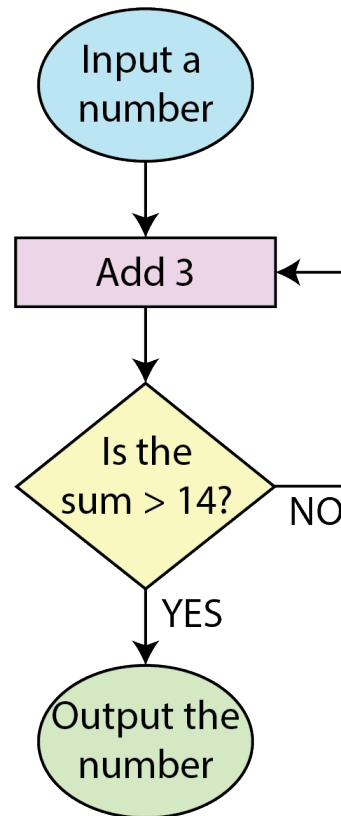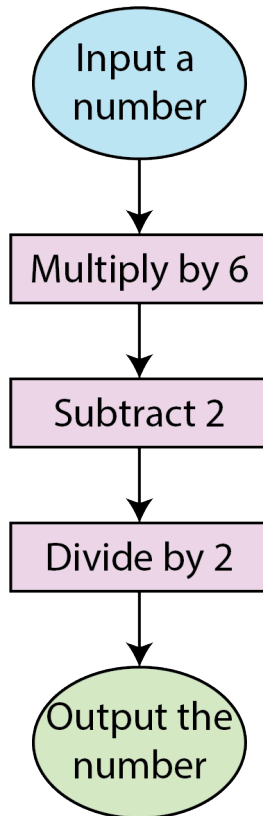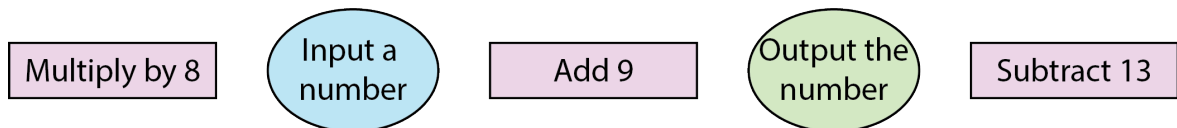# Problem of the Week
Problem B and Solution
Nice Flow

Problem

(a) For each flowchart below, determine the output value when the number 13 is the input number and when the number 10 is the input number.

(b) Using the symbols below, create all possible flowcharts.

(c) Which of the flowcharts in part (b) give an output of 248 for an input of 35?

Solution

(a) For the flowchart on the left:

When we input 13, we first multiply by 6 to get 78.
Then, we subtract 2 to get 76.
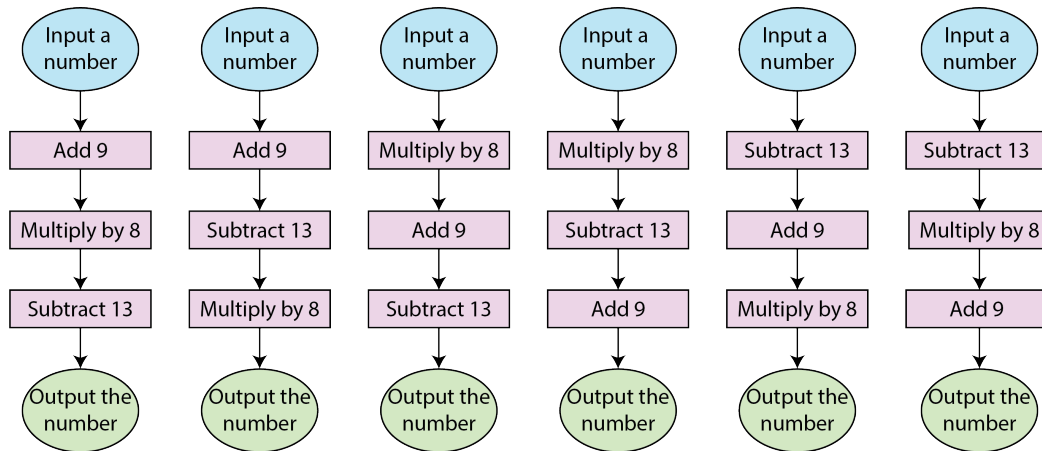Finally, we divide 76 by 2 to get 38.
Thus, the output is 38.

When we input 10, we first multiply by 6 to get 60.
Then, we subtract 2 to get 58.
Finally, we divide 58 by 2 to get 29.
Thus, the output is 29.

For the flowchart on the right:

When we input 13, we first add 3 to get 16.
Since $16 > 14$, the output is 16.

When we input 10, we first add 3 to get 13.
Since 13 is not greater than 14, we add 3 again to get 16.
Since $16 > 14$, the output is 16.

(b) Here are the six possible flowcharts:

(c) Here are the two flowcharts that work: