

Observe the following patterns, fill in the missing numbers in the blank.

1. 7, 9, 11, 13, 15, 17, (), ()
2. 75, 70, 65, 60, (), (), 45, ()
3. 1, 2, 4, 7, 11, 16, (), ()
4. 320, 160, 80, 40, (), (), ()
5. 2, 4, 8, 14, 22, 32, (), ()
6. 1, 2, 6, 24, 120, (), ()
7. 1, 6, 7, 12, 13, 18, 19, ()
8. 1, 3, 6, 8, 16, 18, (), ()
9. 1, 4, 3, 8, 5, 12, 7, (), ()
10. 1000, 864, 200, 144, 40, 24, (), ()
11. 1, 1, 2, 3, 5, 8, 13, (), ()
12. 1, 1, 1, 3, 5, 9, 17, (), ()

For each term, we add the preceding 3 terms: $5 + 9 + 17 = 31$ and $9 + 17 + 31 = 57$.

13. 1, 1, 1, 1, 4, 7, 13, ()
14. 0, 1, 3, 8, 21, 55, (), ()
15. 1, 2, 5, 13, 34, 89, (), ()

Each number is twice the previous number plus the sum of all numbers before that number:

$$\begin{aligned}
 2 \times 1 &= 2 \\
 1 + 2 \times 2 &= 5 \\
 1 + 2 + 2 \times 5 &= 13 \\
 1 + 2 + 5 + 2 \times 13 &= 34 \\
 1 + 2 + 5 + 13 + 2 \times 34 &= 89 \\
 1 + 2 + 5 + 13 + 34 + 2 \times 89 &= 233 \\
 1 + 2 + 5 + 13 + 34 + 89 + 2 \times 233 &= 610
 \end{aligned}$$