

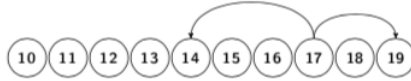


# Problem of the Week

## Problem C and Solution

### Last One Counts

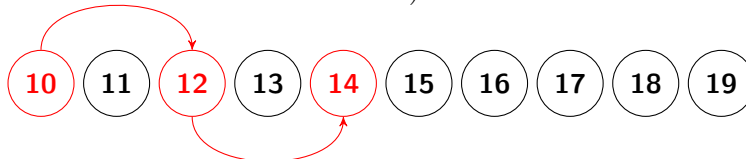
#### Problem



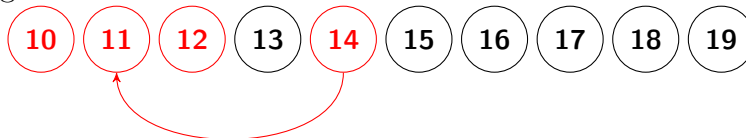
Jayden has ten circles in a row. The circles are numbered from 10 to 19, in order. Once Jayden is on a circle, she can move two circles to the right or three circles to the left, as long as doing so lands her on one of the circles in the row. If Jayden starts on circle 10 and visits every circle exactly once, what is the number on the last circle that she visits?

#### Solution

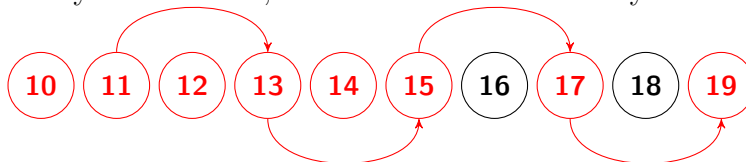
Starting on circle 10, she can only move two circles to the right to circle 12. From circle 12, she can still only move two circles to the right to circle 14. Her first two moves are shown. (Note that once a circle has been visited it turns to red.)



From circle 14 she has two choices; she can move two circles to the right to circle 16, or she can move three circles to the left to circle 11. However, the only way to get to circle 11 is from circle 14. Since she is not allowed to visit a circle twice, she can never come back to circle 14 and therefore must go to circle 11 now. This move is added below.



From circle 11 she can only move two circles to the right to circle 13. Since circle 10 has already been visited, from circle 13 she moves two circles to the right to circle 15. From here, since circle 12 has already been visited, she can only move two circles to the right to circle 17. Since circle 14 has already been visited, from circle 17 she can only move two circles to right to circle 19.



She now only has the option move three circles to the left to circle 16. From here she must move two circles to the right to circle 18.



At this point all of the circles have been visited exactly once. Therefore, circle number 18 is the last circle she will visit.

**Extension:** If the circles were numbered from 25 to 299, inclusive, what would be the number on the last circle visited?

