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## What's the distance between these points?

1. Points  $A$ ,  $B$ ,  $C$ , and  $D$  are on the same line. The distance between  $A$  and  $B$  is 1, the distance between  $B$  and  $C$  is 2, and the distance between  $C$  and  $D$  is 4. What can be the distance between  $A$  and  $D$ ? List all possible cases.
2. Points  $E$  and  $F$  are also on the same line. The distance between  $D$  and  $E$  is 8, and the distance between  $E$  and  $F$  is 16. What can be said about the distance between  $A$  and  $F$ ?

## Hints

### Hints to problem 1.

- Nothing in the problem is said about *the order* of the points on the line.
- What values can expression  $4 \circ 2 \circ 1$  have if instead of each “ $\circ$ ” you put either “+” or “-”? This question has something to do with problem 1.

## Answers

1. The distance between  $A$  and  $D$  can be 1, 3, 5, or 7.
2. The distance between  $A$  and  $F$  can be any odd number of units from 1 to 31.