

Practice 1-1

Example Exercises

Example 1

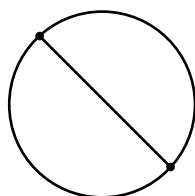
The number of students absent on each of four consecutive days at the Great Avenue School was as follows:

Monday 53 Tuesday 50 Wednesday 46 Thursday 41

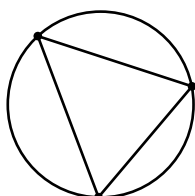
1. What pattern do you observe?
2. Using inductive reasoning, predict the number of absences for Friday.
3. Can the pattern continue indefinitely? Explain.

Example 2

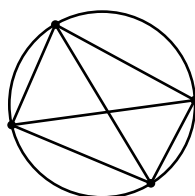
4. If six points are on a circle, how many segments can be drawn connecting a pair of points?



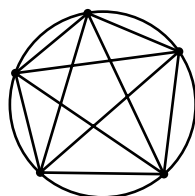
Two points



Three points



Four points



Five points

?

Six points

5. Using the pattern you developed in Exercise 4, make a conjecture regarding the number of segments for ten points on a circle. How can you verify your conjecture?

Example 3

6. Let n be any positive integer. Find the sum of all the integers from $-n$ to n by observing what happens for $n = 1, 2, 3, \dots$ and then making a conjecture.

Allan made the following argument to show that an integer p is always less than 1,000. "Look: If $p = 1$, then $p < 1,000$; if $p = 2$, then $p < 1,000$; if $p = 3$, then $p < 1,000$; and so on. See? p is always less than 1,000."

7. Is Allan using inductive reasoning?
8. Is Allan's conclusion true?
9. How would you respond to Allan?
10. Using an inductive argument, explain why there is no largest number.