

Inductive Reasoning

Inductive reasoning—a process that includes looking for patterns and making conjectures

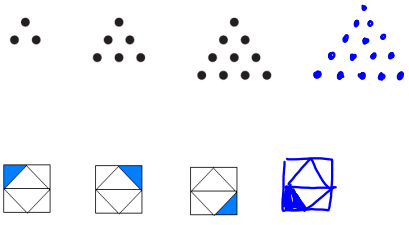
Conjecture—an unproven statement that is based on observations

- To prove that a conjecture is true, you need to prove it is true in all cases.
- To prove that a conjecture is false, you need to provide a single counterexample.

title

inductive reasoning

Sketch the next figure in the pattern.



examples

Predict the next two numbers in the sequence of numbers.
Describe a pattern in the sequence of numbers.

5, 3, 1, -1, ... *-3, -5*
-2

1, 9, 81, 729, ... *6561, 59049*
x9

^{1 2 3}
-10, -9, -7, -4, ... *0, 5*
+n

an 0, 1, 1, 2, 3, 5, 8, ... *13, 21*
an + an-1
8 + 5
Add the 2 terms before

examples

Show the conjecture is false by finding a counterexample.

If $x^2 = 4$, then $x = 2$.

$$x = -2 \quad (-2)^2 = 4$$

The value of $2x$ is always greater than the value of x .

$$x = -6 \quad 2(-6) = -12$$
$$-6 > -12$$

examples

Conclusion

1. What is inductive reasoning?

Patterns

2. How do you prove something is true?

Must be true in all cases

3. How do you prove something is false?

Counterexample

4. Questions???

Sep 25-9:12 AM

Assignment

Inductive Wkst

Sep 25-9:13 AM