Practice worksheet | Mathematical induction

Recognising incomplete or invalid induction arguments

Name: _____ Date: _____

6 questions | 15 marks

1. A student assumes the result at $k+1$ and rearranges it to the hypothesis at k. Explain the logical gap. [3 marks]

2. Why do correct checks for the first one hundred positive integers not constitute induction? [2 marks]

3. The step is proved only for k at least 5 and the student checks $P(3)$. What is missing to establish every n at least 3? [3 marks]

4. Refute the claim that $n^2 + n + 41$ is prime for every positive integer n. [3 marks]

5. A sum of odd numbers proof adds $2k - 1$ to the assumed total k^2. Correct the next term. [2 marks]

6. A divisibility proof concludes $A(k+1) = d(q + \frac{1}{2})$ with integer q. Explain the problem. [2 marks]