An example of a simultaneous equation in a competence-based assessment item

**Question:**

A farmer has two types of animal feed: Feed A and Feed B. Each bag of Feed A contains 3 kg of protein and 4 kg of fiber, while each bag of Feed B contains 5 kg of protein and 2 kg of fiber. The farmer needs a total of 26 kg of protein and 20 kg of fiber for his animals.

Let:

* x*x* = number of bags of Feed A
* y*y* = number of bags of Feed B

Write and solve a pair of simultaneous equations to help the farmer determine how many bags of each feed he should use.

**Solution Steps:**

1. **Define the equations based on the given information:**
   * For protein: 3x+5y=263*x*+5*y*=26
   * For fiber: 4x+2y=204*x*+2*y*=20
2. **Solve the equations using an appropriate method** (e.g., substitution or elimination).
3. **Interpret the solution in the context of the problem**, checking that the values satisfy both conditions.

This item assesses students’ ability to:

* Formulate equations from real-life scenarios.
* Solve simultaneous equations.
* Interpret mathematical solutions in practical contexts, demonstrating competence in applying algebra to everyday problems.