

- **Definition of a group: A set G with a binary operation • such that (G, •) satisfies the group axioms: closure, associativity, identity, and inverses.**
- **Example 1: The integers Z under addition (+) form a group.**
- **Example 2: The integers Z under multiplication (•) do not form a group because 0 does not have an inverse.**
- **Example 3: The set of integers Z under addition (+) is a subgroup of the group of real numbers R under addition (+).**
- **Example 4: The set of even integers 2Z under addition (+) is a subgroup of the group of integers Z under addition (+).**
- **Example 5: The set of integers Z under multiplication (•) is not a subgroup of the group of integers Z under multiplication (•) because 0 does not have an inverse.**
- **Example 6: The set of integers Z under multiplication (•) is not a subgroup of the group of integers Z under multiplication (•) because 0 does not have an inverse.**
- **Example 7: The set of integers Z under multiplication (•) is not a subgroup of the group of integers Z under multiplication (•) because 0 does not have an inverse.**
- **Example 8: The set of integers Z under multiplication (•) is not a subgroup of the group of integers Z under multiplication (•) because 0 does not have an inverse.**
- **Example 9: The set of integers Z under multiplication (•) is not a subgroup of the group of integers Z under multiplication (•) because 0 does not have an inverse.**

9 **Questions for Oral Answers**

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