Ideas in Mathematics, Fall 2023, Weekly worksheet 4

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1. Given sets A, B, C, is it always true that $B \cap C$ is a subset of $A \cap (B \cup C)$? Why or why not?

2. Given sets B, C, is it always true that $B \cap C$ is a subset of $B \cup C$? Why or why not?

3. An integer is called even if it can be written in the form $2n$ for n some other integer. An integer is called odd if it is not even. Show that every odd integer can be written in the form $2n + 1$ for some other integer n.

4. Show that if a is an even integer and b is an odd integer, then $a + b$ is an odd integer. You can use the results of the previous question.