Discrete Mathematics

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Problem

- **Inquiry 1.13.** Suppose that a and b are odd integers. What can be said about their sum a+b? Explain your reasoning.
- **Inquiry 1.14.** What can be said about the sum of two even integers? Explain.

Inquiry 1.13.

- a and b are odd integers -> a+b is an even integer
- odd integer -> $2k+1$ ($k = 0,1,2,3\ldots$)
- $a+b = (2k_1+1)+(2k_2+1) = 2k_1+2k_2+2$
- because $k_1, k_2 = 0,1,2,3\ldots$ and 2 is an even integer
- we know $2k_1+2k_2+2$ is an even integer -> a+b is an even integer

Inquiry 1.14.

- Suppose a and b are even integers -> a+b is an even integer
- even integer -> 2k (k = 0,1,2,3…)
- $a+b = (2k_1)+(2k_2) = 2k_1+2k_2$
- because $k_1, k_2 = 0,1,2,3…$ and 2 is an even integer
- we know $2k_1+2k_2$ is an even integer -> a+b is an even integer

Thank you for your listening!