

## Our Standard Problem-Solving Process

1. Read and understand the problem
2. Generate examples
3. **Come up with a baseline** *<particularly important for D&C*
4. Brainstorm and analyze possible algorithms
5. Write the algorithm
6. Show the algorithm is correct
7. Optimize and analyze the running time

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## Our First Problem

**Given:** A list of points in 2-dimensions

**Return:** The distance between the two points that are closest to each other.



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## An Easier Version

**Given:** A list of points in 1-dimension

**Return:** The distance between the two points that are closest to each other.



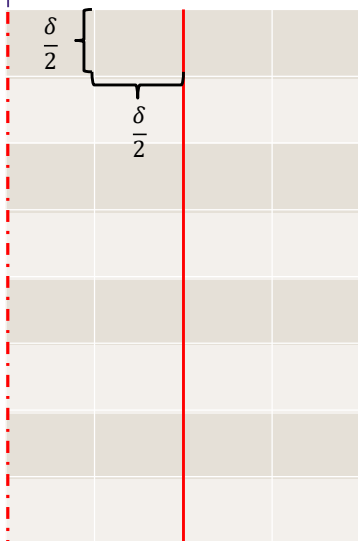
Your input will be a list of `doubles` (in no particular order).

What's your algorithm?

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## Prove the Lemma

If  $\text{dist}(P[i], P[j]) \leq \delta$  and  $P[i], P[j]$  are both in the middle strip, then  $|i - j| \leq 11$



Place a grid of  $\delta/2 \times \delta/2$  squares on the strip.

Strip is 4 squares wide.

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