

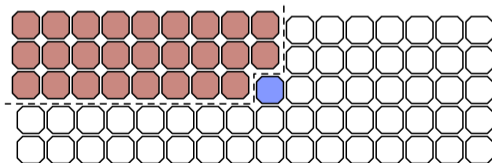
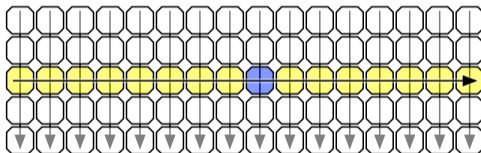
## 11.4.4

Median of medians is a good median

# Median of Medians: Proof of Lemma

## Proposition

There are at least  $3n/10 - 6$  elements smaller than the median of medians  $b$ .



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## Proof.

At least half of the  $\lfloor n/5 \rfloor$  groups have at least 3 elements smaller than  $b$ , except for the group containing  $b$  which has 2 elements smaller than  $b$ . Hence number of elements smaller than  $b$  is:

$$3 \lfloor \frac{\lfloor n/5 \rfloor + 1}{2} \rfloor - 1 \geq 3n/10 - 6$$

□

# Median of Medians: Proof of Lemma

## Proposition

There are at least  $3n/10 - 6$  elements smaller than the median of medians  $b$ .

## Corollary

$$|A_{\text{greater}}| \leq 7n/10 + 6.$$

Via symmetric argument,

## Corollary

$$|A_{\text{less}}| \leq 7n/10 + 6.$$

# THE END

...

# (for now)