

Clicker Questions

For each of these, please use the following multiple choice answers:

- A: $O(1)$
- B: $O(\log n)$
- C: $O(n)$
- D: $O(n \log n)$
- E: $O(n^2)$

Question 1: Inserting an element into a multiset with n elements.

Question 2: Inserting n elements into an empty multiset.

Question 3: Inserting n elements into a multiset with n elements.

Question 4: Erasing the first element of a vector with n elements.

Question 5: `for (i = 0; i < n; i++) for (j = 0; j < i; j++) k++;`

Question 6: Calling `push_back()` on a vector with n elements.

Question 7: Creating Pascal's triangle with n levels.

Clicker Answers:

Question 1: *B: $O(\log n)$* : Basic operation on a set/map/multiset/multimap.

Question 2: *D: $O(n \log n)$* : Just memorize this for now. Actually, you can prove it by using the answer to Question 3 to show that inserting the second half of elements is $O(n \log n)$.

Question 3: *D: Still $O(n \log n)$* . This is easier -- you are doing n operations, and each of them is between $O(\log n)$ and $O(\log 2n)$. Since $\log 2n$ is equal to $(\log n)+1$, we have that the n operations are bounded by $O(n \log n + n)$, which is $O(n \log n)$.

Question 4: *C: $O(n)$* : This is why you should never use this method on a vector.

Question 5: *E: $1 + 2 + 3 + 4 + \dots + n = O(n^2)$* .

Question 6: *A: $O(1)$* : Basic operation on a vector.

Question 7: *E: Each level i has i entries -- this is the same as Question 5: $O(n^2)$*