Selection Sort Unplugged Activity

1. Shuffle the deck of 10 cards (The algorithm refers to sorting n items so in this example n is 10)

2. Place the cards one at a time in a single row on the table. The positions of the cards are 0 through 9 read left to right. For example if after placing the cards in a row you have the following

8 10 3 4 Ace 7 5 9 2 6

then 8 is in position 0, 10 is in position 1, 3 is in position 2, etc.

3. Sort the cards using the Selection Sort algorithm. To do the work required by the step that says "find the location of the smallest value in positions i through n -1" you must keep track of the position of the card that has the smallest value in positions i through n-1. Do this by following the steps shown below

```
call the position of the smallest value s
s = i
j = i + 1
repeat the following until j has the value n
        if the value at position j is less than the value at position s  **
        change the value of s to j
        j = j + 1
```

4. Record the total number of times two cards are compared. This is the total number of times the statement labeled ** is used.

5. Repeat steps 1 through 4 a second time

6. Was the value you calculated in step 4 the same for the both times.

7. Can you create a formula in terms of the number of cards to be sorted whose value is the same as that found in step 4. (i.e. You found a value when you sorted 10 cards. What would the value be if you sorted 50 cards or in general what would the value be if you sorted n cards)