Name:

## Insertion Sorting with Dice

You have been given two dice to help you complete this worksheet. For each number listed below you will roll your dice and sort the resulting number in the spaces provided. This must be done following the insertion sorting algorithm. To do so, you will have 10 total rolls to generate all ten numbers you need. After you find the 9 numbers, sort the numbers from largest to smallest. An example is shown below...

repeats that exist.



Once 4 is properly positioned we move on to the next number in the set which is 1. We compare this to the element directly to the left which is 7. Since 1 is less than 7 itll move to the left, then it will need to be compared with 4. 1 is less than 4 again so it will move to the left

1	4	7	9
-	- -	,	-

The final number we must compare is 9. We take 9 and compare it to the element directly to the left of it once again. Since 9 is greater than 7, it will stay in the position it is currently in. We now have no numbers left in our set to compare so we know the set is now sorted.

Now try it with your dice and create the sequence yourself! Once you generate the 9 numbers, see who can get the most points by sorting each number. Roll the dice. The highest number gets to pick if they sort the even or the odd numbers. They will put their initials in the odd or even places below the numbers to be sorted. The other player places their initials on the other places.

Numbers:									—	
Player assig	ned:	2	3	4	5	6	7	8	9	
Sort 1: Look shift the othe	at num er numl	nber 2. ber afte	ls it s er it. If	maller not, le	than nu ave it w	umber where it	1, if so t is.	make i	t the first num	iber and
	—	—				_		Numbe	<sup>r</sup> of places mo	oved2
Sort 2: Look move it wher	at nun e it be	nber 3. Iongs a	Is it s and shi	maller ft the c	than th other nu	ie seco umber a	nd nun after it.	nber or If not,	the first numb leave it where	per, if so e it is.
		—				—		Numbe	r of places mo	oved3
Sort 3: Look number, if so where it is.	at nun move	nber 4. it whe	ls it s re it be	maller longs	than th and sh	e third, ift the c	secor	nd numb umber a	per or the first after it. If not,	leave it
			_					Numbe	of places mo	oved 4
Sort 4: Look number, if so where it is.	at nun move	nber 5. it whe	ls it s re it be	maller longs	than th and sh	ie fourtl ift the c	h, third other ni	, secon umber a	d number or t after it. If not,	the first leave it
								Numbe	of places mo	oved5
Sort 5: Look first number, leave it wher	at num if so m e it is.	nber 6. nove it	ls it s where	maller it belo	than th ngs an	ie fifth, d shift f	fourth, he oth	third, s er numl	econd numbe per after it. If	er or the not,

\_\_\_\_\_ Number of places moved \_\_\_\_\_ 6

Sort 6: Look at number 7. Is it smaller than the sixth, fifth, fourth, third, second number or the first number, if so move it where it belongs and shift the other number after it. If not, leave it where it is.

Number of places moved

7 Sort 7: Look at number 8. Is it smaller than the seventh, sixth, fifth, fourth, third, second number or the first number, if so move it where it belongs and shift the other number after it. If not, leave it where it is.

\_\_\_\_\_ Number of places moved \_\_\_\_\_ 8

Sort 7: Look at number 9. Is it smaller than the eighth, seventh, sixth, fifth, fourth, third, second number or the first number, if so move it where it belongs and shift the other number after it. If not, leave it where it is.

\_\_\_\_\_ Number of places moved \_\_\_\_\_ 9

Add up your moves:

	+		+		+		=	
2		4		6		8		Total
	+		+		+		=	
3		5		7		9		Total

Try it again with a new group of 9 numbers. Use the back of this page as your workspace.