Math 10B, Quiz 2

Instructions:	For the	first	question,	make s	sure to	show	your	work	and	${\rm explain}$	your	answer.	For t	he f	inal	$_{ m three}$
questions vo	u do not	need	to show.	any wor	rk bu	t vou v	zill red	ceive -	-1 n	oints for	an ii	ncorrect	answe	er		

1.	(12 points) How many ways are there to arrange the letters a , b , c , d , e , and f such that a is not directly followed by either b or c ? (For example 'abdefc' and 'acdefb' are both not valid, but 'adbcef' is valid.)
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۷.	(1 point) When using inclusion-exclusion to find the size of the union of 5 sets, you need to subtract the size of the triple intersections.
	○ True ○ False
3.	(1 point) The number of nine digit numbers that start with the digit 3 is greater than the number of nine digit numbers in which no digit is repeated.
	○ True ○ False
4.	(1 point) On an exam, a question asks "How many strings of 5 letters are there that contain the letter 'z' exactly three times?" One student gives the answer $1 \cdot 1 \cdot 1 \cdot 25 \cdot 25$, reasoning that the three ones are for the three z's and the two 25's are for the other two spots, each of which can be any letter besides z. The student is:
	O Undercounting (i.e. their answer is too small)
	○ Correct

 \bigcirc Overcounting (i.e. their answer is too large)