Name _____ Date _____

Filling in Patterns Guided Lesson Explanation

The best way to attack these types of problem is to look at what operation(s) is/are going on between successive integers. Since it is a pattern, the same operations are being applied to all integers.

1. The only operation that works between the starting integers is taken the square of the previous number. We will apply that to 16 to find the integer.

2		4		16		265
	2 + 2 = 4 2 x 2 = 4 $2^2 = 4$		4 + 12 = 16 4 x 4 = 16 $4^2 = 16$		$16^2 = 256$	

Final Pattern = 2, 4, 16, 256

2. The only operation that fits the successive numbers (-12, -6) (6, 12, 18) is to add 6.

-12		-6		0		6		12		18		24
	+6 =		+6 =		+6 =		+6 =		+6 =		+6 =	

Final Pattern = -12, -6, 0, 6, 12, 18, 24

3. This problem differs from the other two because we are told that each integer undergoes two operations. We do have a lot to work off of here, because the first four integers are in succession. Let's see what operations would work for those first four digits. We tell that since the values increase, the addition and multiplication operations will be in play. If the values were to decrease, we would have thought subtraction and division.

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Let's see how we move ahead with addition and multiplication.

4		10		22		46
	(4 x 2) + 2 = 10		(10 x 2) + 2 = 22		(22 x 2) + 2 = 46	

It looks the general rule to get the next number is to multiply by 2 and add 2.

We will apply this to the missing values.

a) Starting with 46: (46 x 2) + 2 = 94

b) Starting from 94: (94 x 2) + 2 = 190

We can also do check our math by seeing is we get 398 as our last box of the pattern from what we have determined.

Starting from 190: (190 x 2) + 2 = 382

Yes we can see that our math was correct.

The final pattern will be: 4, 10, 22, 48, 98, 198, 382

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