Odd Numbers
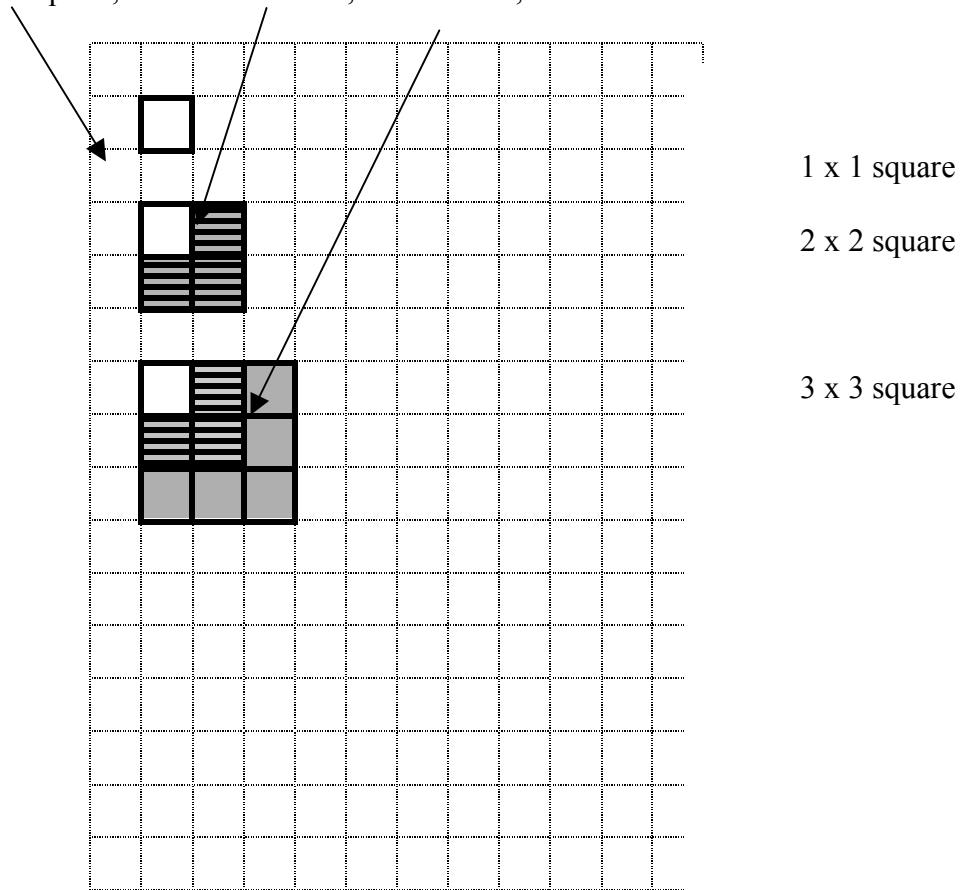
This problem gives you the chance to:
• work with shapes to make a number pattern

Kate makes a pattern of squares.

She starts with 1 square, then adds 3 more, then 5 more, and so on.

1 x 1 square

2 x 2 square

3 x 3 square

1. Draw the next shape in Kate's pattern.

2. How many new squares did you add?   _____

3. What size square did you make?   _____

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The numbers of squares make a number pattern.

$$1 = 1 \times 1 = 1$$
$$1 + 3 = 2 \times 2 = 4$$
$$1 + 3 + 5 = 3 \times 3 = 9$$

4. Write the next two lines of the number pattern.

_____

_____

5. Use the number pattern to total the numbers.

$1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19$ _____

Show your work.

6. Write down the number pattern that gives a total of 169.
Explain your work.

_____

_____

_____

_____

Odd Numbers		Rubric
The core elements of performance required by this task are: • work with shapes to make a number pattern Based on these, credit for specific aspects of performance should be assigned as follows	points	section points
1. Draws a correct shape.	1	1
2. Gives correct answer: **7**	1	1
3 Gives correct answer: **4 x 4** Accept 16	1	1

4. Writes correct lines:
   1 + 3 + 5 + 7 = 4 x 4 = 16
   1 + 3 + 5 + 7 + 9 = 5 x 5 = 25
	1
	
	1
		2

5. Gives correct answer: **100**
   and
   Shows correct work = 10 x 10
	1	1

6. Gives correct answer:
   1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 + 21 + 23 + 25
 	
   and
 	
   Gives correct explanation such as: $169 = 13^2$ so the number pattern contains the sum of 13 odd numbers>
	1	1

Total Points		**7**

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