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# Busy at Maths

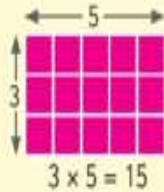
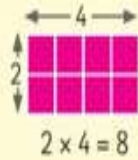
Number Theory

27/04 - 01/05

# Numbers with shape



A **rectangular number** can be arranged into the shape of a rectangle. Both factors must be greater than 1.



1. Draw rectangles for these rectangular numbers.

- (a) 6      (b) 10      (c) 20      (d) 40  
 (e) 14      (f) 16      (g) 30      (h) 42

Some numbers have more than one rectangular shape.  
 Example:  $12 = 6 \times 2$  and  $3 \times 4$ .



2. Draw at least two rectangular shapes for each of these rectangular numbers.

- (a) 18      (b) 24      (c) 36      (d) 48      (e) 12      (f) 72      (g) 100

3. Circle the rectangular numbers.

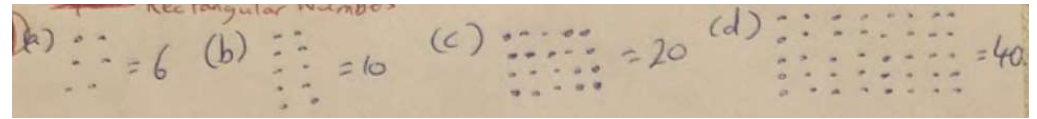
- (a) 3, 5, 7, 10, 11, 14, 21, 35.      (b) 15, 17, 18, 19, 23, 29, 38, 63.  
 (c) 31, 33, 35, 37, 39, 41, 46, 54.      (d) 45, 47, 49, 51, 53, 59, 77, 93.

4. Circle the numbers that **are not** rectangular.

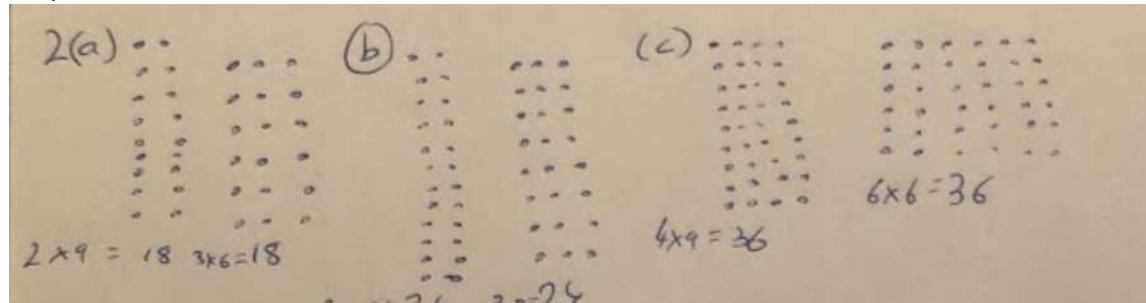
- (a) 6, 11, 15, 17, 21, 25, 37, 43.      (b) 32, 34, 39, 43, 52, 57, 61, 67.  
 (c) 61, 63, 67, 39, 71, 75, 79, 83.      (d) 79, 81, 84, 89, 91, 97, 99, 101.

## Rectangular Number

Q.1 a-d



Q.2 a-d



Q.3 a-d

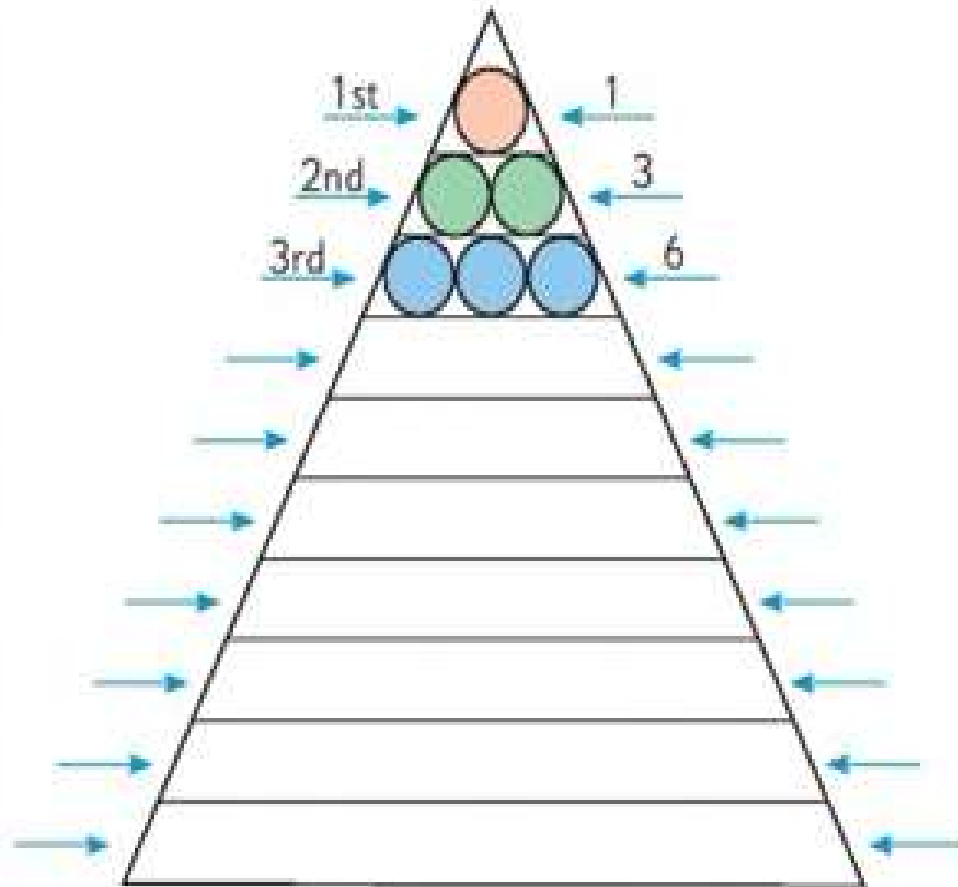
- (a) 10, 14, 21, 35  
 (b) 15, 18, 38, 63  
 (c) 33, 35, 39, 46, 54  
 (d) 45, 49, 51, 77, 93

Q.4 a-d

- (a) 11, 17, 37, 43  
 (b) 43, 61, 67  
 (c) 61, 67, 71, 79, 83  
 (d) 79, 89, 97, 101

6. Complete this table showing triangular numbers. Follow the pattern. Complete the diagram.

1st	= 1	→	1
2nd	= 1 + 2	→	3
3rd	= 1 + 2 + 3	→	6
4th	= 1+2+3+4	→	10
5th	= 1+2+3+4+5	→	15
6th	= 1+2+3+4+5+6	→	21
7th	= 1+2+3+4+5+6+7	→	28
8th	= 1+2+3+4+5+6+7+8	→	36
9th	= 1+2+3+4+5+6+7+8+9	→	45
10th	= 1+2+3+4+5+6+7+8+9+10	→	55

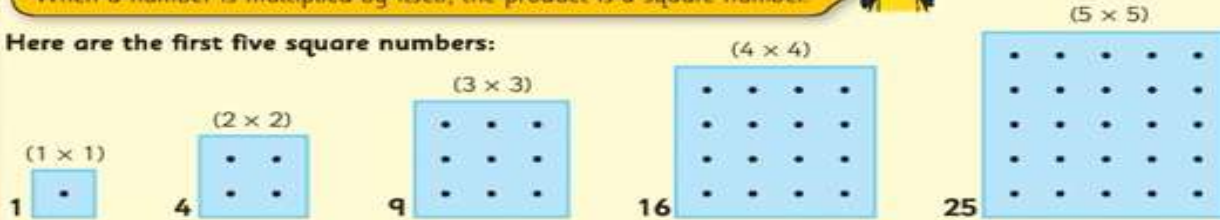


## Square numbers

When a number is multiplied by itself, the product is a square number.



Here are the first five square numbers:



Can you see a pattern that makes it easy to calculate square numbers?

1. Now draw these six square numbers using dots as above.

(a)  $6 \times 6$

(b)  $7 \times 7$

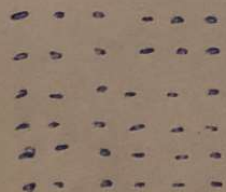
(c)  $8 \times 8$

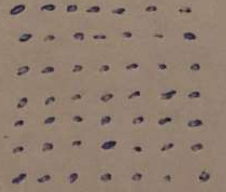
(d)  $9 \times 9$

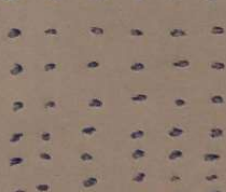
(e)  $10 \times 10$

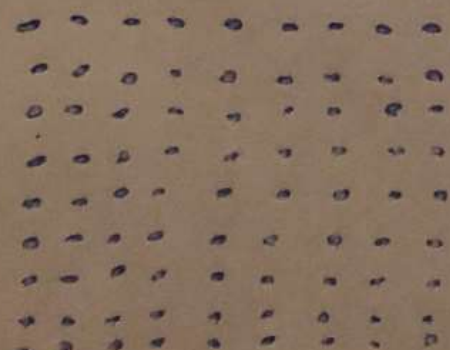
(f)  $11 \times 11$

Square Numbers

Q1 (a)   $6 \times 6 = 36$

(b)   $7 \times 7 = 49$

(c)   $8 \times 8 = 64$

(d)   $9 \times 9 = 81$