



10. A square is cut into 37 squares of which 36 have area 1 cm^2 . What is the length of the side of the *original* square?
- A 6 cm B 7 cm C 8 cm D 9 cm E 10 cm

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10. E Let the original square have sides of length y cm and the single square which is not 1×1 have sides of length x cm. Then $y^2 = 36 + x^2$, and so $y^2 - x^2 = 36$ and hence $(y + x)(y - x) = 36$.

As $36 = 2^2 \times 3^2$ and $y + x > y - x$ the possible factors of 36 are:

$y + x$	$y - x$	y	x	
9	4	$6\frac{1}{2}$	$2\frac{1}{2}$	impossible
12	3	$7\frac{1}{2}$	$4\frac{1}{2}$	impossible
18	2	10	8	possible
36	1	$18\frac{1}{2}$	$17\frac{1}{2}$	impossible

We can check that $10^2 = 36 + 8^2 = 100$ and hence the length of the side of the *original* square is 10 cm.