

# The Light Bulb

How many mathematicians does it take to change a light bulb?

A<sub>1</sub>: None. It's left to the reader as an exercise.

A<sub>2</sub>: None. A mathematician can't change a light bulb, although he can easily prove that it can be changed.

A<sub>3</sub>: One. He gives it to four programmers, thereby reducing it to a problem that was previously solved.

A<sub>4</sub>: The answer is obvious.

A<sub>5</sub>: Just one, once you've managed to present the problem in terms with which he is familiar.

A<sub>6</sub>: From a previous result, it has been shown that one mathematician can change a light bulb. Additionally, if  $k$  mathematicians can change a light bulb, and if one more simply watches them do it, then  $k + 1$  mathematicians will have changed the light bulb. Therefore, by induction, any number of mathematicians can change a light bulb.

How many high school math teachers does it take to change a light bulb?

Cha-a-a-a-a-a-ange?



How many math professors does it take to change a light bulb?

Just one. But he needs the help of six research students, three programmers, two post-docs, and a secretary.

How many university math lecturers does it take to change a light bulb?

Four. One to do it, and three to co-author the paper.

How many math graduate students does it take to change a light bulb?

Just one... but it takes nine years.

How many math department administrators does it take to change a light bulb?

What was wrong with the old light bulb?

How many classical geometers does it take to change a light bulb?

None. It can't be done with a straight edge and compass.

How many constructivist mathematicians does it take to change a light bulb?

None. They don't believe in infinitesimal rotations.

How many simulationists does it take to change a light bulb?

Infinity. Each one builds a fully validated model, but the light never actually goes on.

How many analysts does it take to change a light bulb?

Three. One to prove existence, one to prove uniqueness, and one to derive a non-constructive algorithm to do it.

How many number theorists does it take to change a light bulb?

No one knows the exact number, but it is believed to be an elegant prime.

How many mathematical logicians does it take to change a light bulb?

None. They can't do it, but they can prove that it can be done.

How many numerical analysts does it take to change a light bulb?

3.9967, after six iterations.

How many topologists does it take to change a light bulb?

Just one. But what will you do with the doughnut?

How many statisticians does it take to change a light bulb?

1-3,  $\alpha = .05$

How many light bulbs does it take to change a light bulb?

Just one, if it knows its Gödel number.