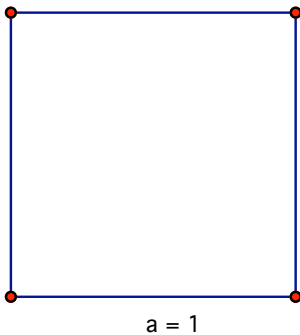


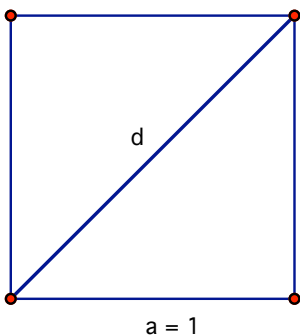
## How to make some irrational numbers behave well again...

This worksheet can be used for both drawing with traditional tools, and for the work with Geometer's Sketchpad. Have a look at the [www.mathsisgoodforyou.com/number/irrational.htm](http://www.mathsisgoodforyou.com/number/irrational.htm) for a page on irrational numbers for further ideas and worksheets.

1. First construct a square (the size of the side of the square is unimportant – but whatever you choose it will be a UNIT from now on).



2. Draw a diagonal of this square

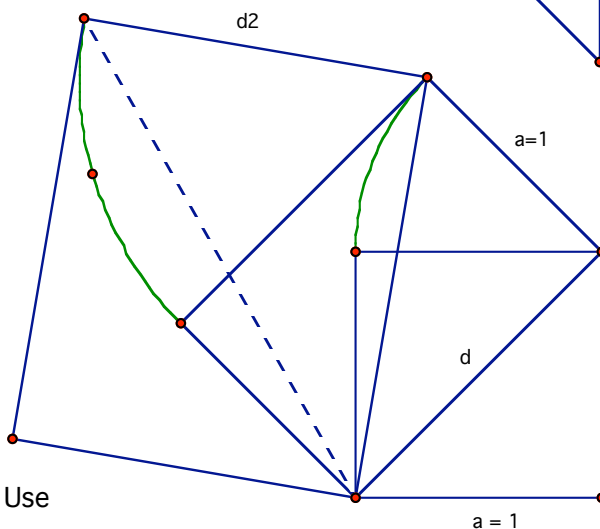
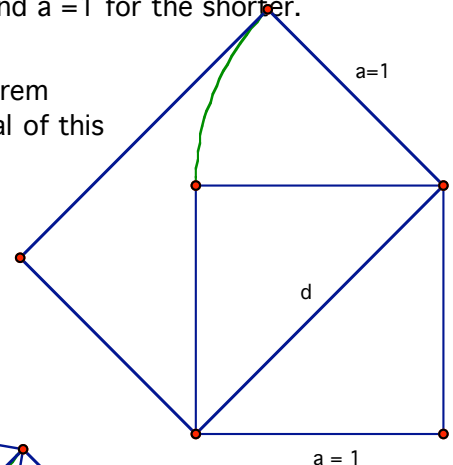


3. Can you calculate the diagonal now? Use Pythagoras' Theorem.

4. Ok, you now know what the diagonal is. Make a rectangle now, which has a diagonal  $d$  for longer side, and  $a = 1$  for the shorter.

5. Use Pythagoras' Theorem again to find the diagonal of this rectangle.

You will need to know what it is, as you will soon use it to construct yet another rectangle.



6. The final rectangle has for longer side the diagonal of the previous rectangle, and the side of the previous rectangle is its shorter side. What is the diagonal of this, final, rectangle? Can you guess (it is one of the most irrational numbers of all... and no wonder). In the drawing it is a dashed line.