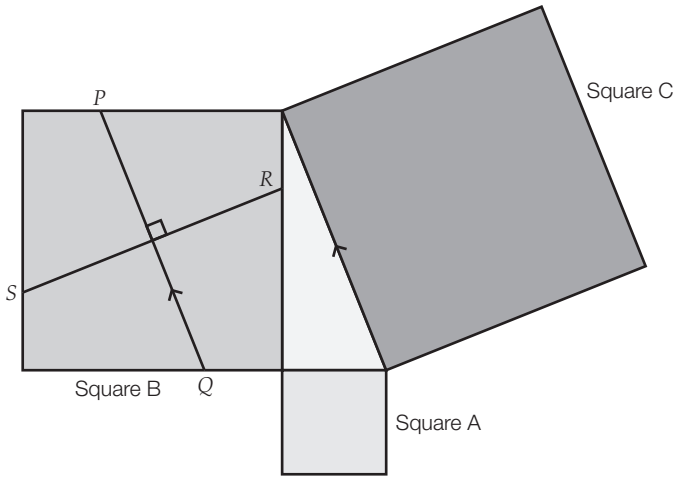
Discovery Task

Pythagoras' Theorem: Perigal's proof

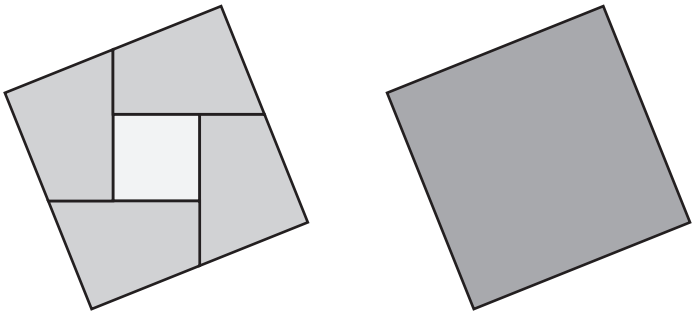
Mathematicians have developed several methods of proving Pythagoras Theorem. This proof was developed by the Henry Perigal, who had the diagram of the proof carved on his gravestone!

Equipment required: grid paper, scissors, ruler

1. On your grid paper, draw any right-angled triangle, and label the sides *a*, *b* and *c*.
2. Construct a square on each side of the triangle as shown below. Label the squares *A*, *B* and *C*, to correspond to the sides *a*, *b* and *c*.
3. Rule a line *PQ* through the centre of square *B*. Make *PQ* parallel to the hypotenuse of the triangle. Rule a second line, *RS*, perpendicular to *PQ*.



4. Cut square *B* into its four pieces. Then cut out square *A* and square *C*.
5. Rearrange square *A* and the four parts of square *B* to make a larger square. Place it next to square *C*. What do you notice?



6. To check your observation, measure the sides of this larger square and compare it with square *C*. What can you say about the two squares?
7. The area of a square is the side length multiplied by itself. For square A this would be $a \times a$, or a^2. By writing the areas of squares *b* and *c* in similar form, write an equation that shows what you observed in Questions **5** and **6**.