# A guide to international paper sizes

It may surprise you that the ISO (*International Standard Operation*) print paper sizes was not invented in the EU. As it's not widely known that it is all based on an ancient Greek discovery, thought - at the time- useless! This is the international paper size (ISO) paper size standard. All UK printers follow it.  It easily allows for the most economical pare or card sizes, and it was based on ancient Greek geometry and then adapted in Germany to suit. (*See credits\**).

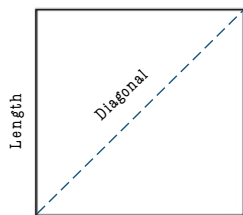*Paper and card adhere to this ISO – International paper sizes based in Europe.*
All being based on this simple Maths discovery by Pythagoras of Greece.

**He was of course ridiculed at the time,** as many of his detractor pointed out that it did not have any *practical* uses! It took until 1768 to be rediscovered.

*"Twenty-four hundred years ago Pythagoras discovered that if he drew squares upon the three sides of a right-angles triangle the large square will be exactly equal in area to the two smaller square combined".*
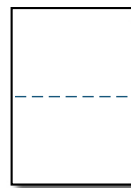
## Pythagoras on paper

**Take an A4 sheet of paper.** Divide the side length into the diagonal (corner-to-corner) and you will find the **'Pythagoras Constant'**!

Length / Diagonal

This is called the Pythagoras Constant, (but it was Hippasus who discovered it!). i.e it is the square root of 2  ($\sqrt{2}$) which is 1.41 **\***

Right this A4 paper when folded in half is now A5. If I folded again it becomes A6... then again A7 etc.

**\* OK The Square root of 2 is a BIT longer than just 1.41...**
1.4142135623 7309504880 1688724209 6980785696 7187537694 8073176679 7379907324 7846210703 8850387534 3276415727 3501384623 0912297024 9248360558 5073721264 4121497099... etc. (This is the shortened version)!

### What's it used for?
ISO (International) paper sizes are all based on a single aspect ratio of the square root of two, or approximately 1:1.4142. Basing paper upon this ratio was conceived by Georg Lichtenberg in 1786, and at the beginning of the 20th century,  Dr Walter Porstmann turned Lichtenberg's idea into a proper system of different paper sizes.  And this is because that it is the most efficient use of paper at various sizes (minimum waste when cut into sheets) Sheet sizes are A0 (largest), A1, A2, A3, A4, A5, A6 and A7.

**Graphic resources:**     *A guide to international paper sizes*

---

*Pythagoras was so elated over the proof of the large square being equal to the other two, no matter what might be the dimensions of the triangle that he gave away all his chattels in offerings to the gods, and yet he was ridicules and told to show his discovery to the dogs"*

*Credits: Sam Llyod (1914).*
https://www.goodreads.com/book/show/1142199.Sam_Loyd_s_Cyclopedia_of_5000_Puzzles_Tricks_and_Conundrums_with_Answers

I think we are now all glad that he didn't feed it to the dogs. It now exists to this day in the form of International Paper sizes (ISO) and it still works perfectly.

You will find examples like this (shown below) as a benchmark of paper sizes.

## Economical printer paper sizes    *Graphic & Print*

The creative printing specialist www.art-services.co.uk

**The most common print paper sizes are either A or B**. The letter designates the series and then is followed by a figure, for example: **A1 is half the size of A0.** A0 is the the basic sheet size and A1 is half the longest length. Similarly A2 is half A1, A3 is half A2, A4 is half A3 and so on. *The C range is mostly uses in envelope sizes.* A creative professional can create a *'custom'* square size but the overall paper *(or card)* cost will still be based on standard A (or B) sizes which are the most economical print sizes. Printers normally print from 'B' stock paper size and then trim your job down to 'A' sizes, this allows 'creative' users to *'bleed off'* (*the edges of the paper*) a colour *(or image)* for creative effect.

| A range mm | B range mm | C range mm |
|---|---|---|
| **2A0** 1189 x 1682 | **2B0** 1440 x 2000 | - |
| **A0** 841 x 1189 | **B0** 1000 x 1440 | - |
| **A1** 594 x 841 | **B1** 720 x 1020 | - |
| **A2** 420 x 594 | **B2** 520 x 720 | - |
| **A3** 297 x 420 | **B3** 360 x 520 | - |
| **A4** 210 x 297 | **B4** 260 x 360 | **(C4)** 229 x 324 |
| **A5** 148 x 210 | **B5** 180 x 260 | **(C6)** 114 x 162 |
| **A6** 105 x 148 | **B6** 130 x 180 | **(C7)** 81 x 114 |
| **A7** 74 x 105 | **B7** 90 x 130 | **(C8)** 57 x 81 |
| | | **(DL)** 210 x 110 |

*Illustration only (not to scale)*

*Note: traditional Photography print sizes are usually different and the Large format display (Exhibition and display) can be almost any size, the limiting factors is the width of the paper or plastic sheet it is being printed on. Screen printers can however print on anything such as Wood, Metal, Glass, Plastics as well as standard card or paper as well as curved surfaces.*

Our own guide to ISO printer sizes that we use every day. This example we use is quite old, every UK printer has a copy of the International Paper sizes and all paper and card is based on this same ISO paper size.

Something we are all now grateful for, as it reduces wastage and costs.

**Art Services | Design**
January 2023