



Hillingdon U3A

Printers, Printing and Scanning

October 2018

A Brief History of Printers

1938 – Chester Carlson invents a dry printing process called Xerography.

Became more commonly known as Xerox

1958 – Led to the Xerox 914 copier. Revolution in office printing but expensive.

1968 – First Dot matrix printers , the EP-101 from Shinshu Seiki Co (later to become Epson) .

1971 – Laser printer designed by Xerox (first machine from IBM 3800 in 1976)

1976 – Inkjet printing technology invented by HP

1980 – First Inkjet printer available for home use - The HP Deskjet cost \$1,000

1980's – First Thermal printers (later used in FAX machines)

1980's – First Pen Based Plotter

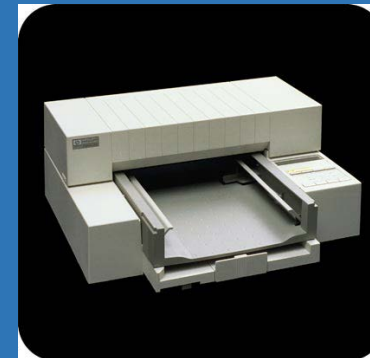
1988 – 3D Printing technology established. In homes mid 1990's



EP-101



IBM 3800



What are Your Choices for a Home Printer

Inkjet Printer

- Ideal for home use, i.e. school work, tickets, photos & Doc's.
- Cheap & typically, they can produce high quality photographs.
- Choice of photographers for photos from DSLR or phone cameras alike.
- Ink tends to be cheaper than laser toners

All in One or 3-in-1 Printers

- These are a combination of scanner, copier and printer, all in one device.
- Reduced footprint & all the benefits of Inkjet printers above.
- However, laser versions available
- Some also include a fax machine, ideal a small or home offices.

What are Your Choices for a Home Printer

Laser Printer

- Designed for volume use, can cut printing times for significant print runs.
- Best for text documents and high speed batch printing.
- Mono or Colour options available
- Initial Cost comparable to Inkjets these days.
- However, toner costs are more than inkjet cartridges but you can get more prints per cartridge (typically over 1400 pages).
- If it's speed and or volume you need, compare the purchase price of a laser printer with the toner cost to get a cost-per-page. It could work out cheaper over time.

3D Printer

Do I need ??????????

A Quick Bit on Inks

Printer and Ink Cartridge Acronyms & Terms

- CMYK - Cyan, Magenta, Yellow and Key (Black), the basic four inks used by standard printers.
- CMYKKg - Cyan, Magenta, Yellow, Key (Black), Key (Black Pigment) and Grey, new 6 colour inks used in high end printers
- DPI - Dots per Inch, the more dots, the better the image.
- PPI – Pixels per inch is scanning resolution; the higher the number, the clearer the scan.
- PPM – This is a measure of print speed and stands for pages per minute.
- Print Head – Holder for Ink Tank with some electronics to control ink flow through nozzles onto paper
- Ink Tank – Ink Cartridge that holds the liquid ink.
- Tri Coloured cartridge

A Quick Bit on Inks

4 Colour process (CMYK) made up of:

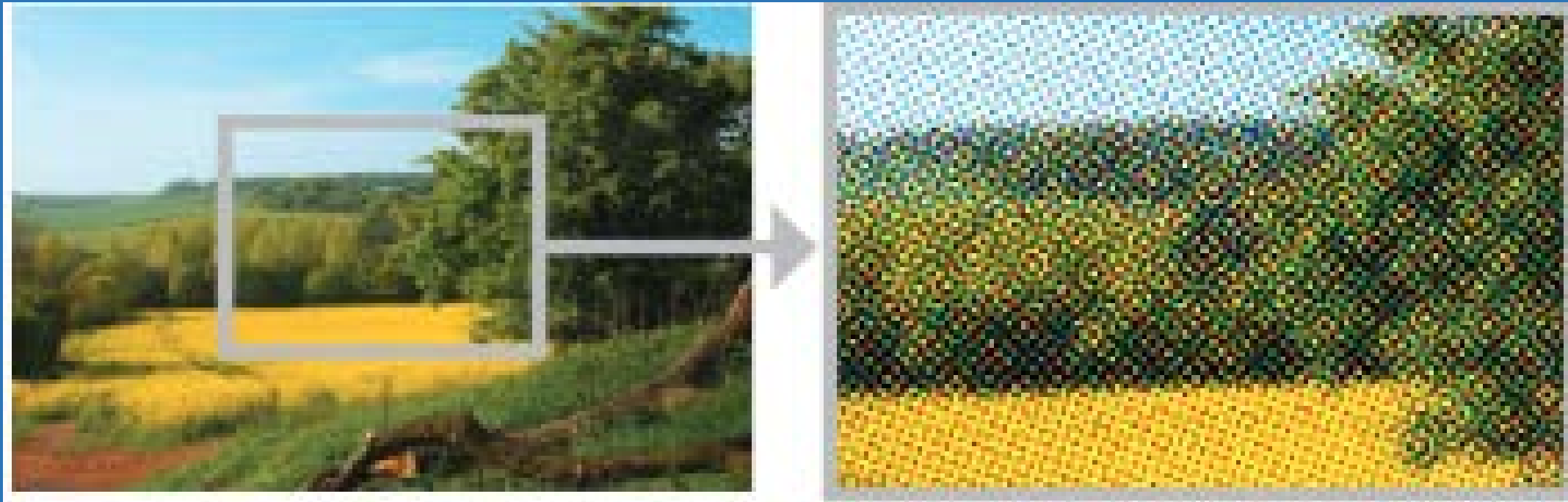
C = Cyan, M = Magenta, Y = Yellow and K = Black (Key colour).



A Quick Bit on Inks

4 Colour process (CMYK) How it works :

Four colour process printing is achieved by laying down the four colours one after the other in a series of very small dots which combine visually to make up the image. The smaller the dot the finer the image



A Quick Bit on Inks

Dye-based ink

- Made from coloration that is dissolved in a liquid, usually either water or glycol.
- This helps the dye flow easily from the printer head to the page (and dry quickly once it's there).
- Most standard inkjet printers use dye-based ink as this is the cheaper ink type (CMYK).
- Dye-based inks are super sharp for text and create rich, vibrant colours in your images.
- They are not waterproof, however, and tend to fade in 5-25 years.

A Quick Bit on Inks

Pigmented Ink

- High end printers use a separate pigmented black for text.
- Designed to create long lasting photo-quality colour for professionals.
- Pigment ink sets often come in a wider range of tones than a standard dye-based ink set
- Very high end photo printers will usually feature both a matte black and a glossy black to get the best results for each medium.

A Quick Bit on Inks

Cheaper printers have two ink cartridges - Black & Tri-Coloured

Better quality printers use 5 ink cartridges – CMYK + Black

New high end printers now use 6 ink cartridges – CMYKg + Black

Some printers have larger refillable tanks :

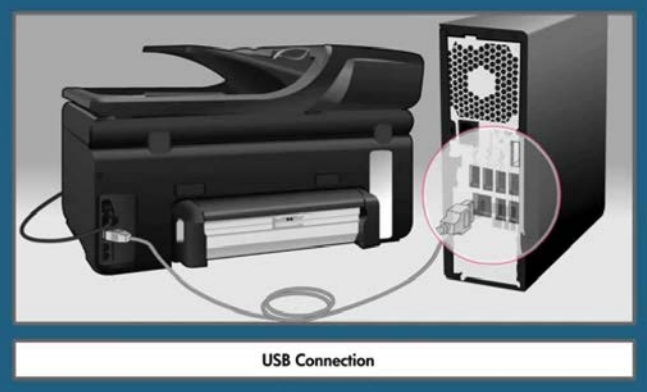
e.g. 11,000 black
8,500 colour

Some cartridges have a computer chip in to manage use ?

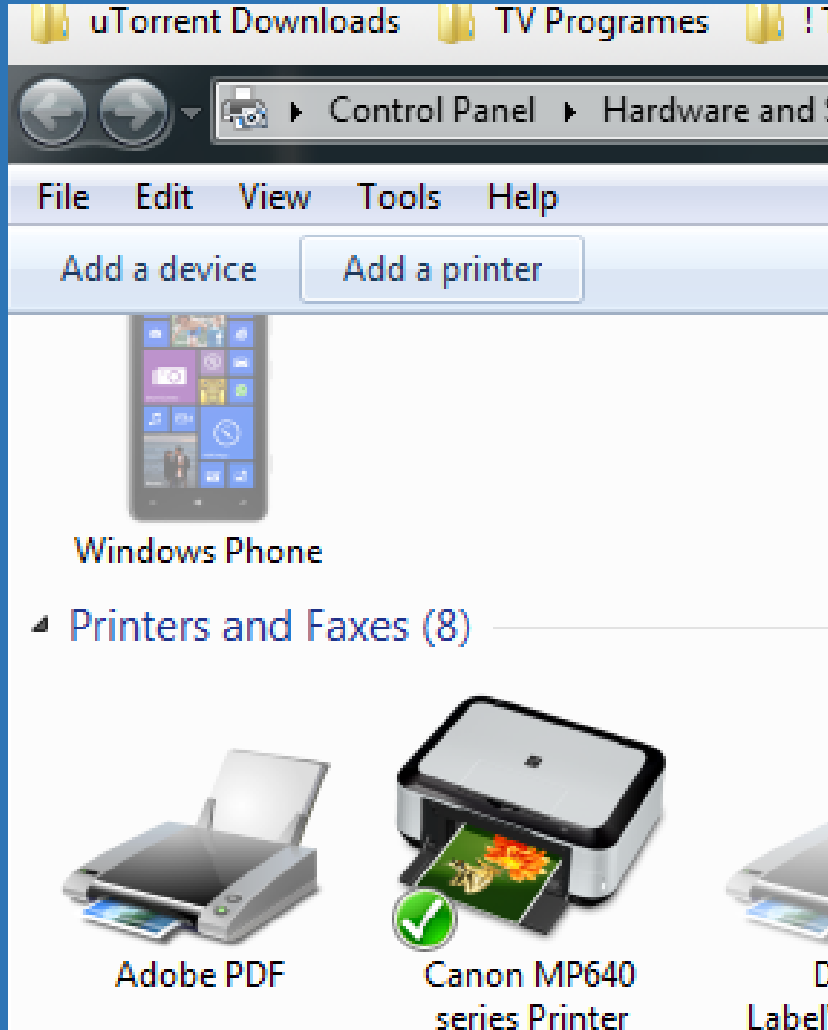
Manufacturers cartridges vs refilled cartridges



How to Install your new Printer

- Personally, I recommend not using the provided software. Bloatware etc.
 - Ensure PC connected to Internet, this supports Windows “Plug & Play” feature.
 - Plug the printer to the PC via a USB cable & connect the printer to the power and switch on.
 - Ensure Ink Cartridges are installed
 - PC should automatically install drivers and add itself to your device list.
- 
- Alternatively, go to Control Panel - Device & Printers and select Add Printer
 - Choose USB & select printer model from list (or do a Windows update) & OK
 - Again, PC should automatically install drivers and add itself to your device list.

How to Install your new Printer

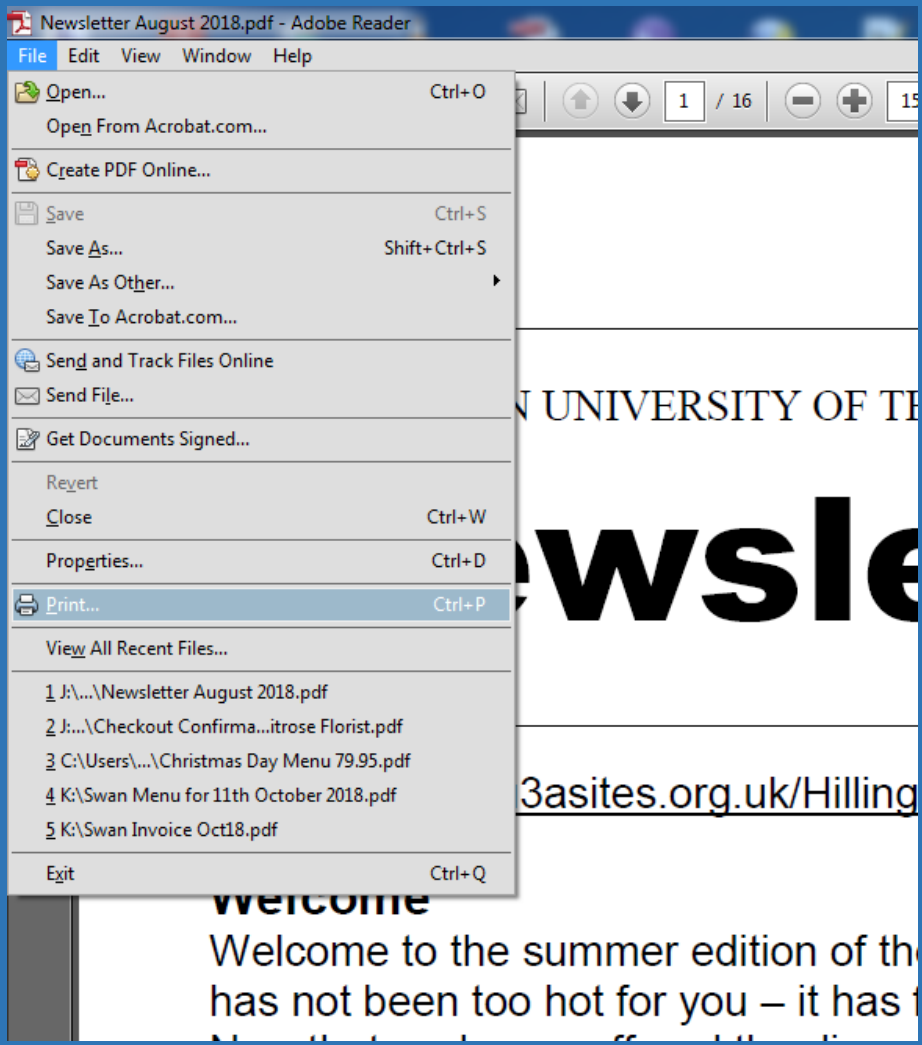


- There are options to connect via a network, Wireless or Bluetooth depending on your printer.
- Control Panel - Device & Printers and select Add Printer
- Select connection option

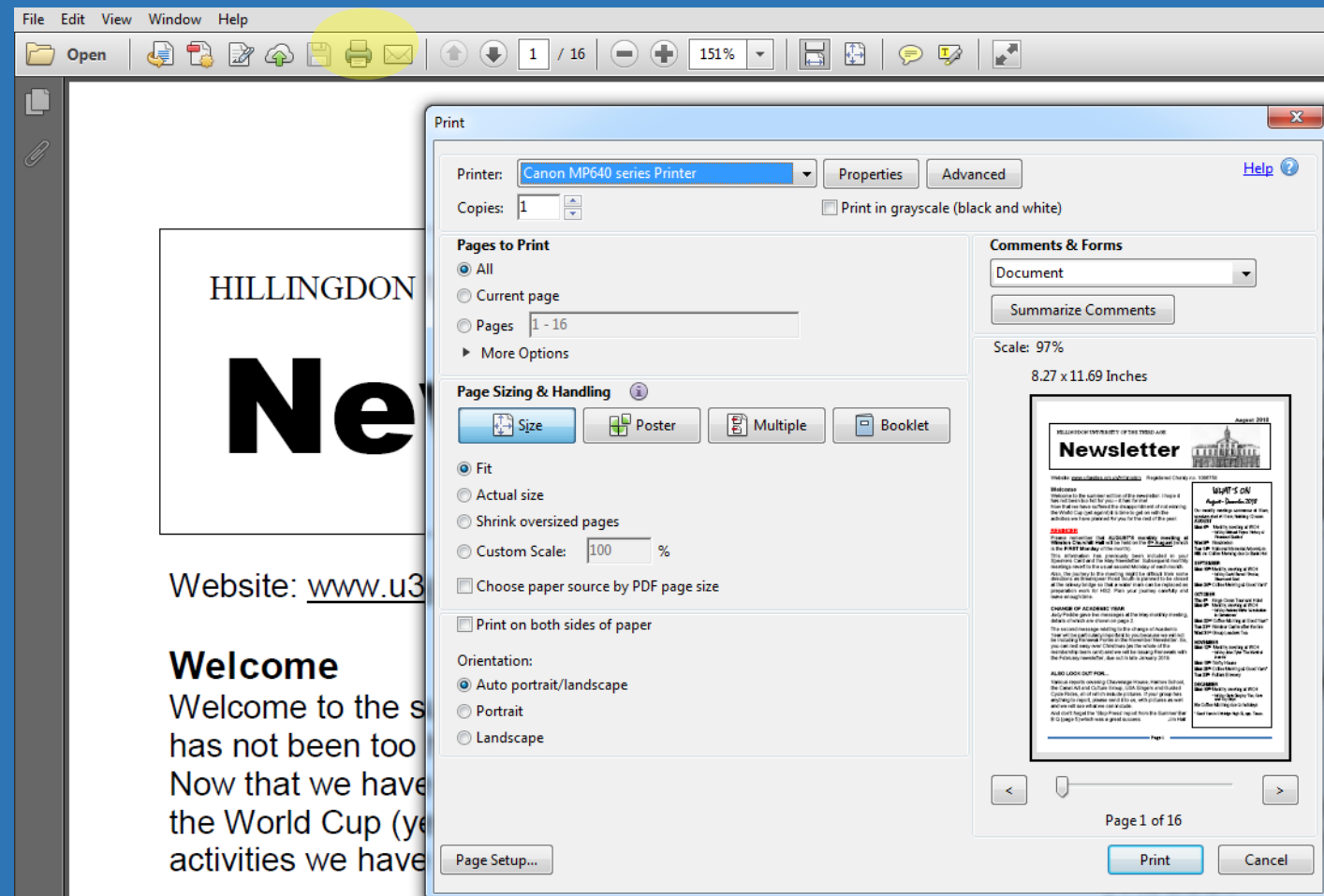
How to Print a Document

Some of the Common Ways

File Print



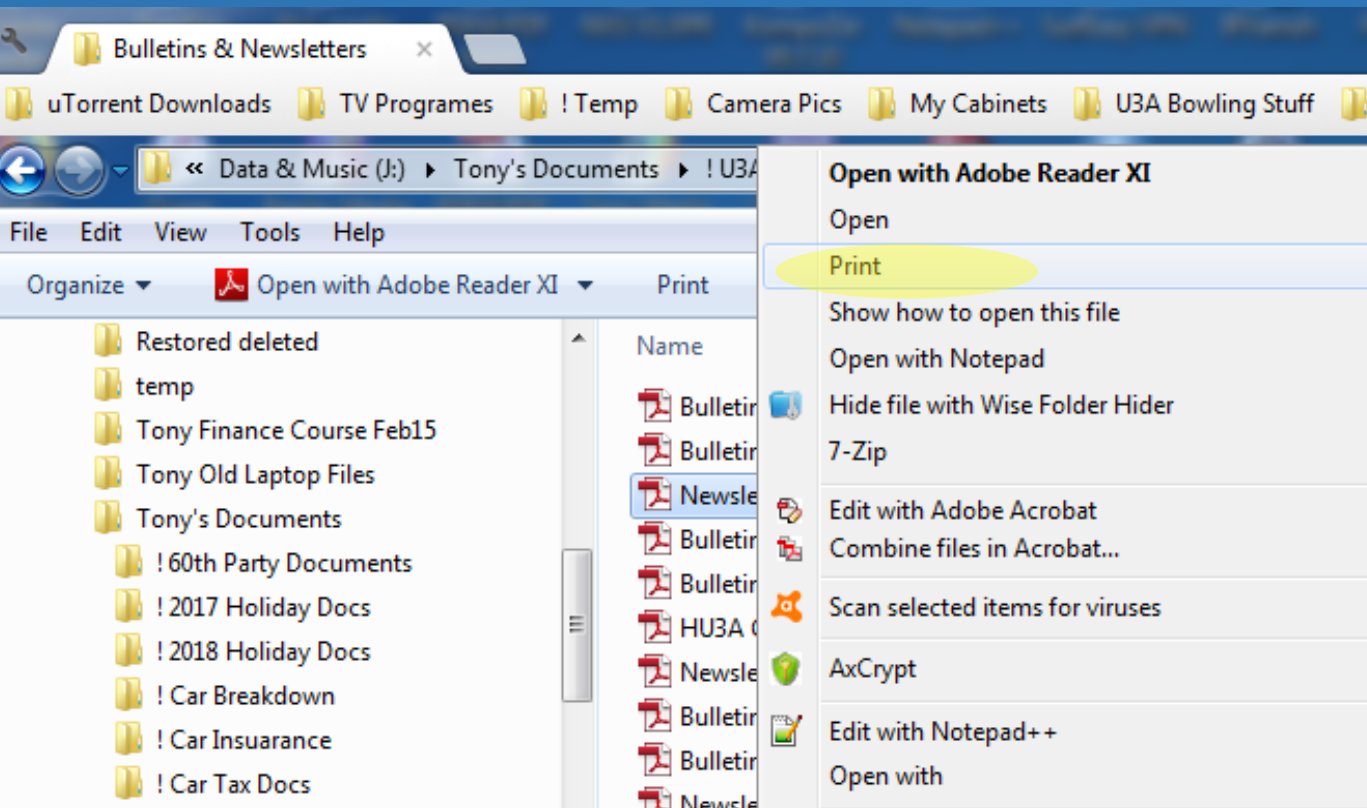
Printer Icon



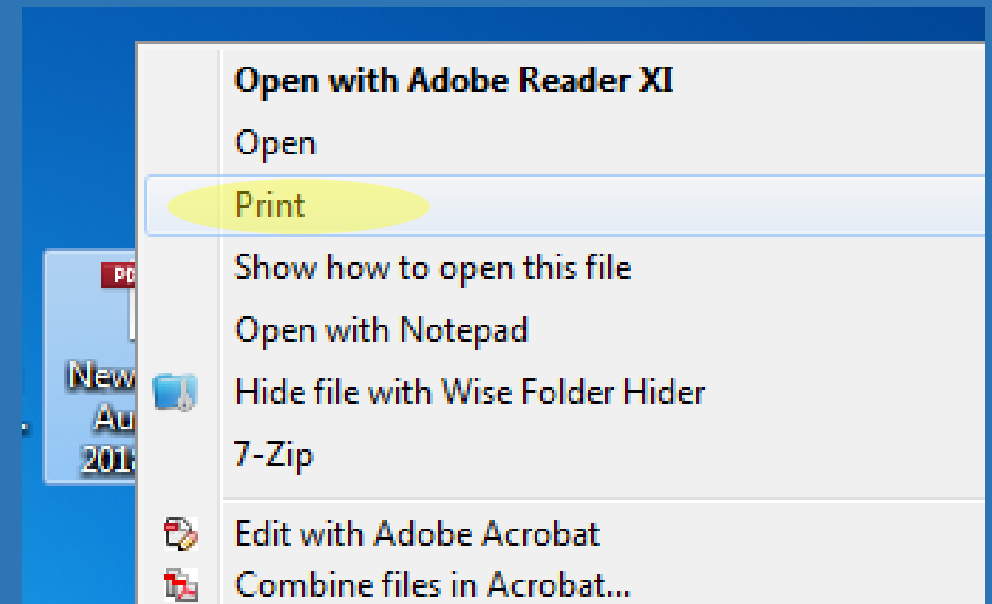
How to Print a Document

Some of the Common Ways

Right Click in Explorer



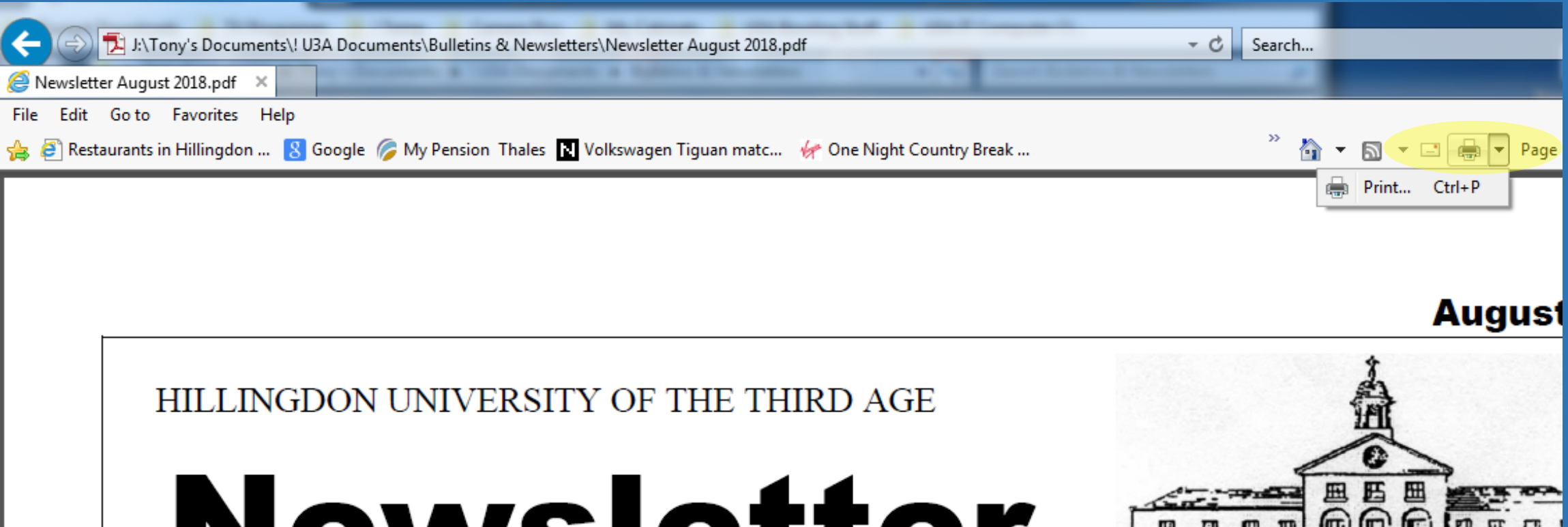
Right Click on Desktop Icon



How to Print a Document

Some of the Common Ways

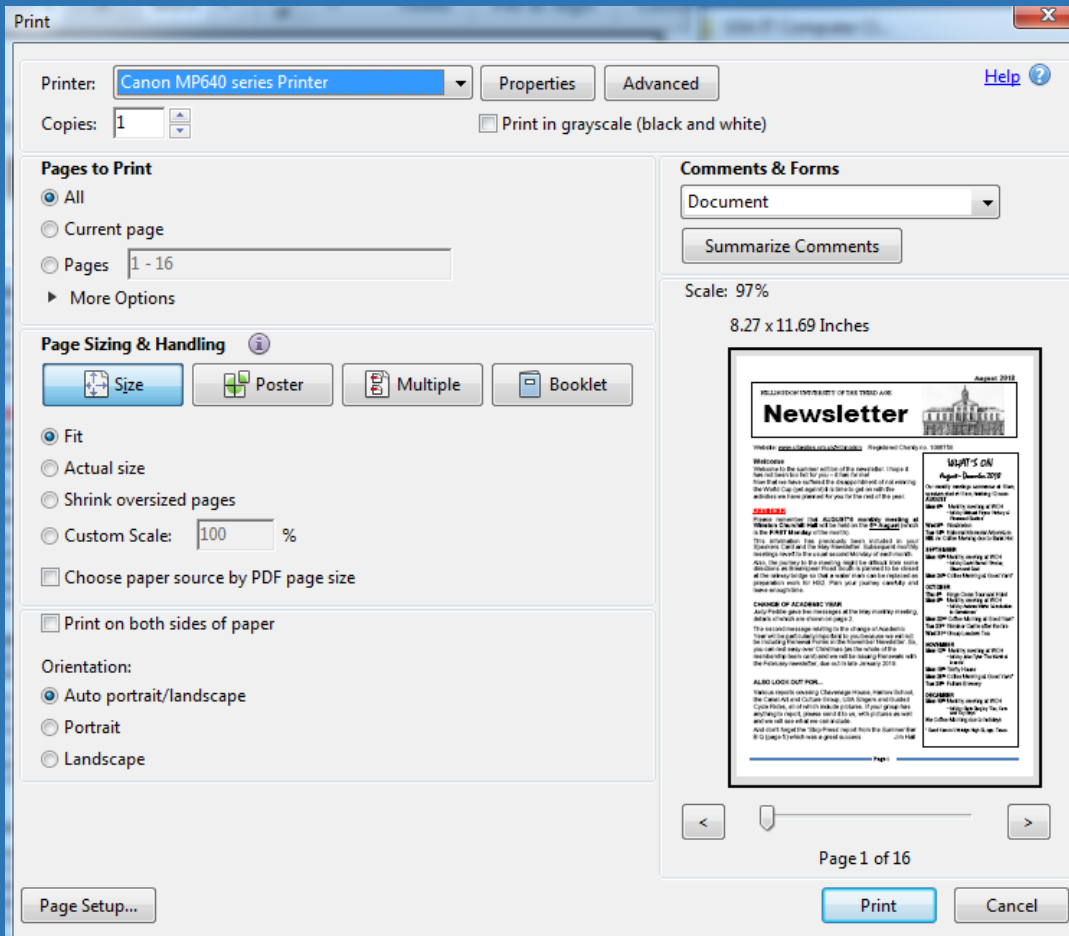
Button on a programs Toolbar



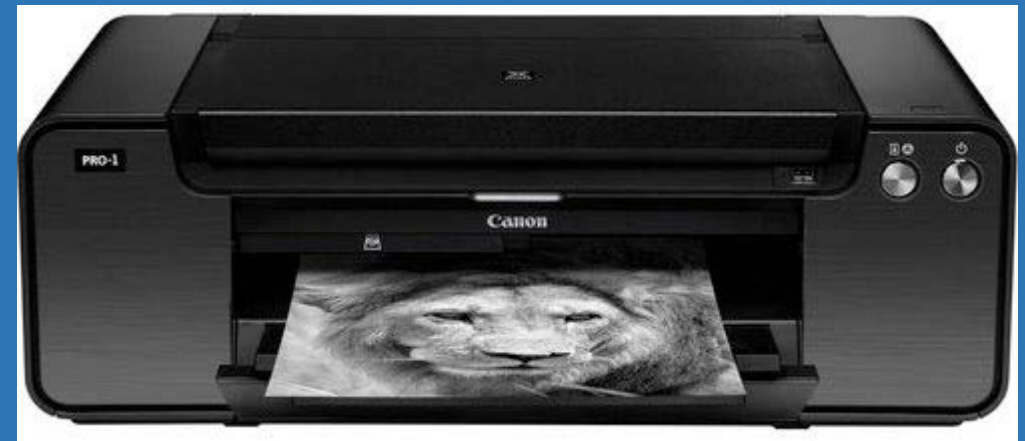
How to Print a Document

Some of the Common Ways

Click OK or Print button

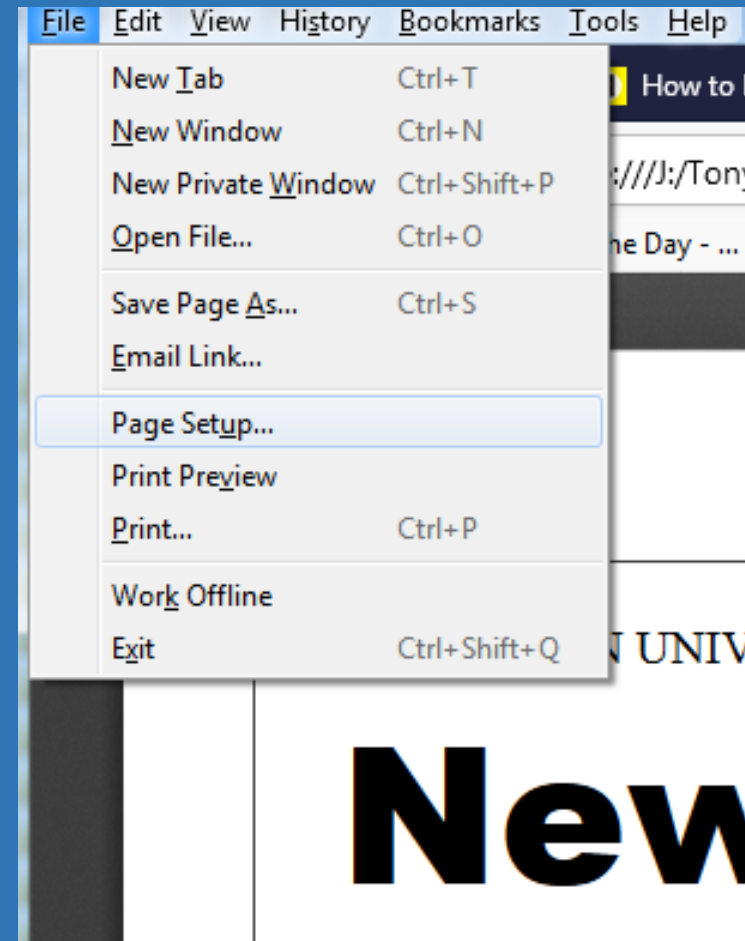


Then Windows instantly sends document to the printer

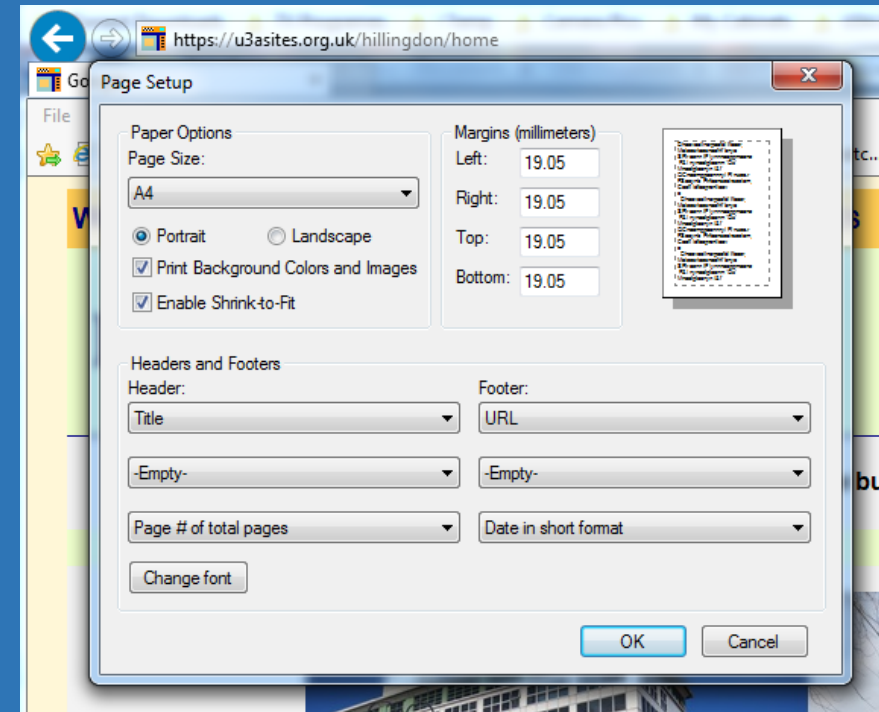
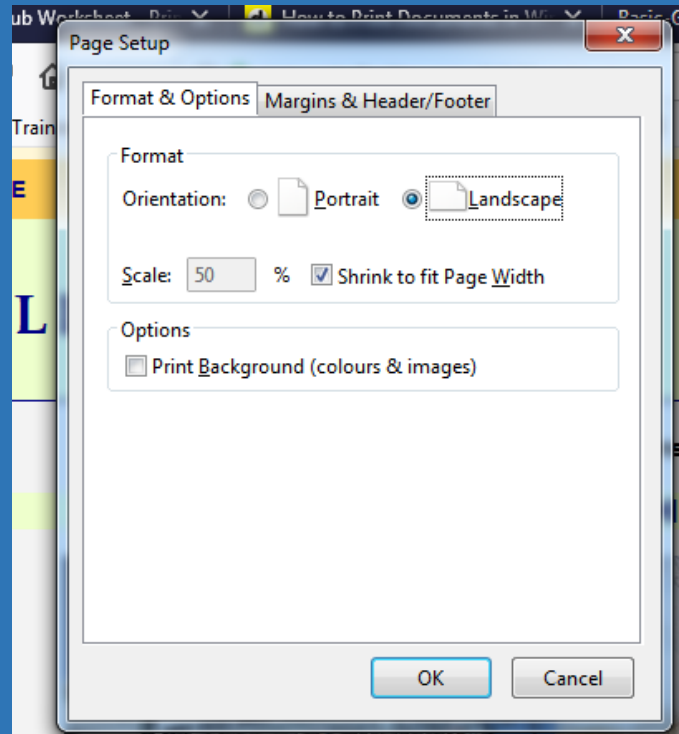


Want to Change the way the Document Prints?

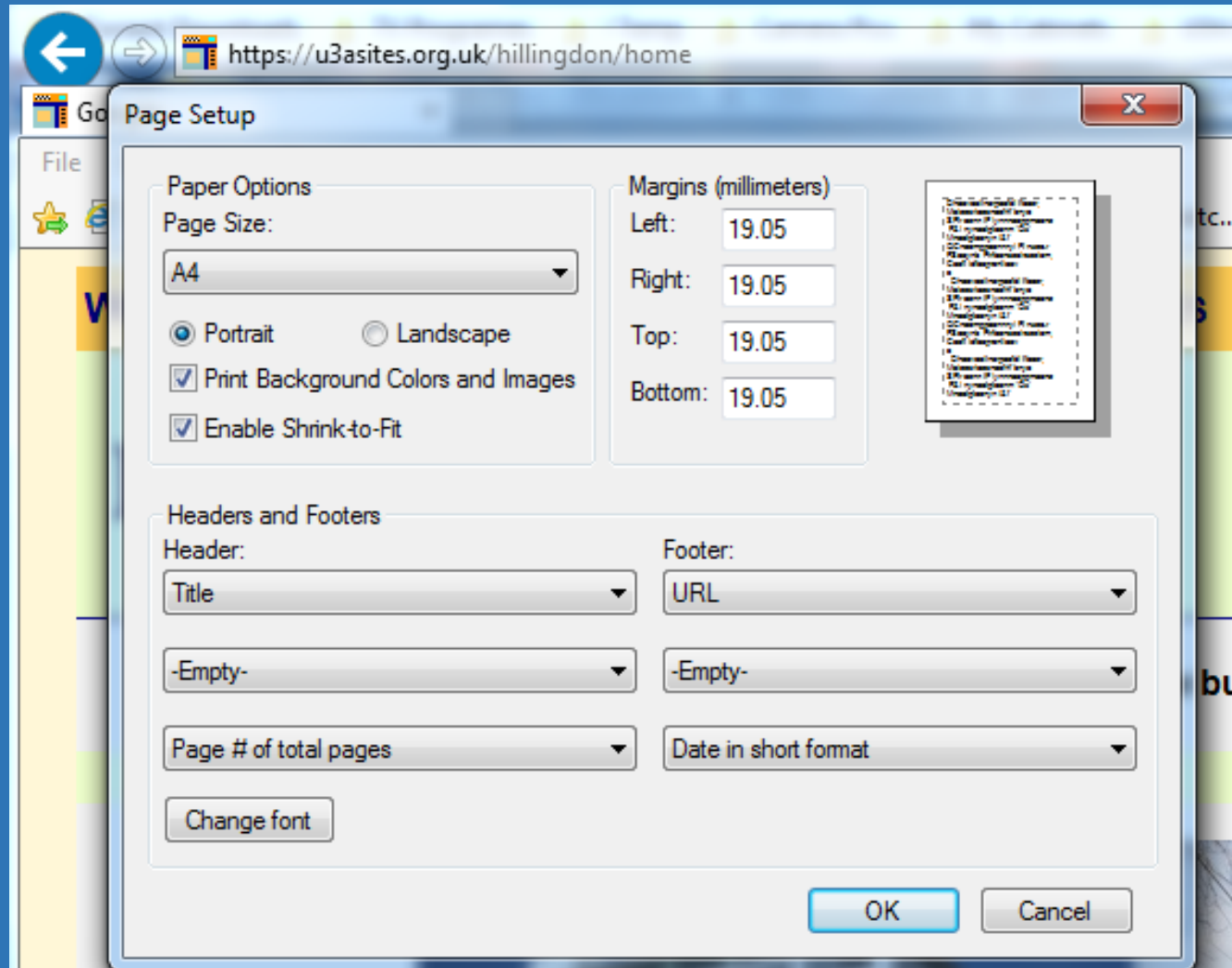
Select Page Setup in the Program's File Menu



Page Setup Menus

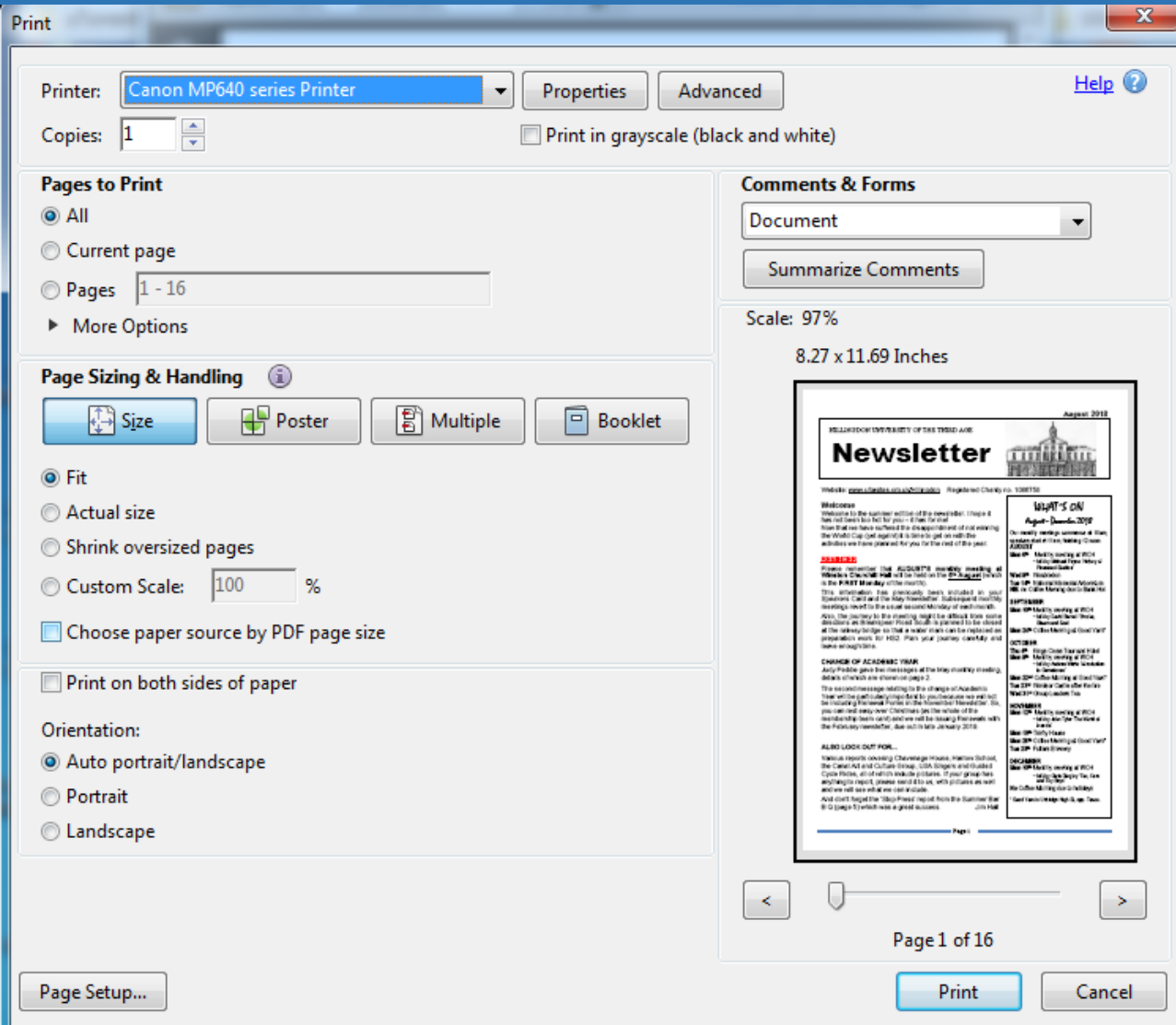


Want to Change the way the Document Prints?



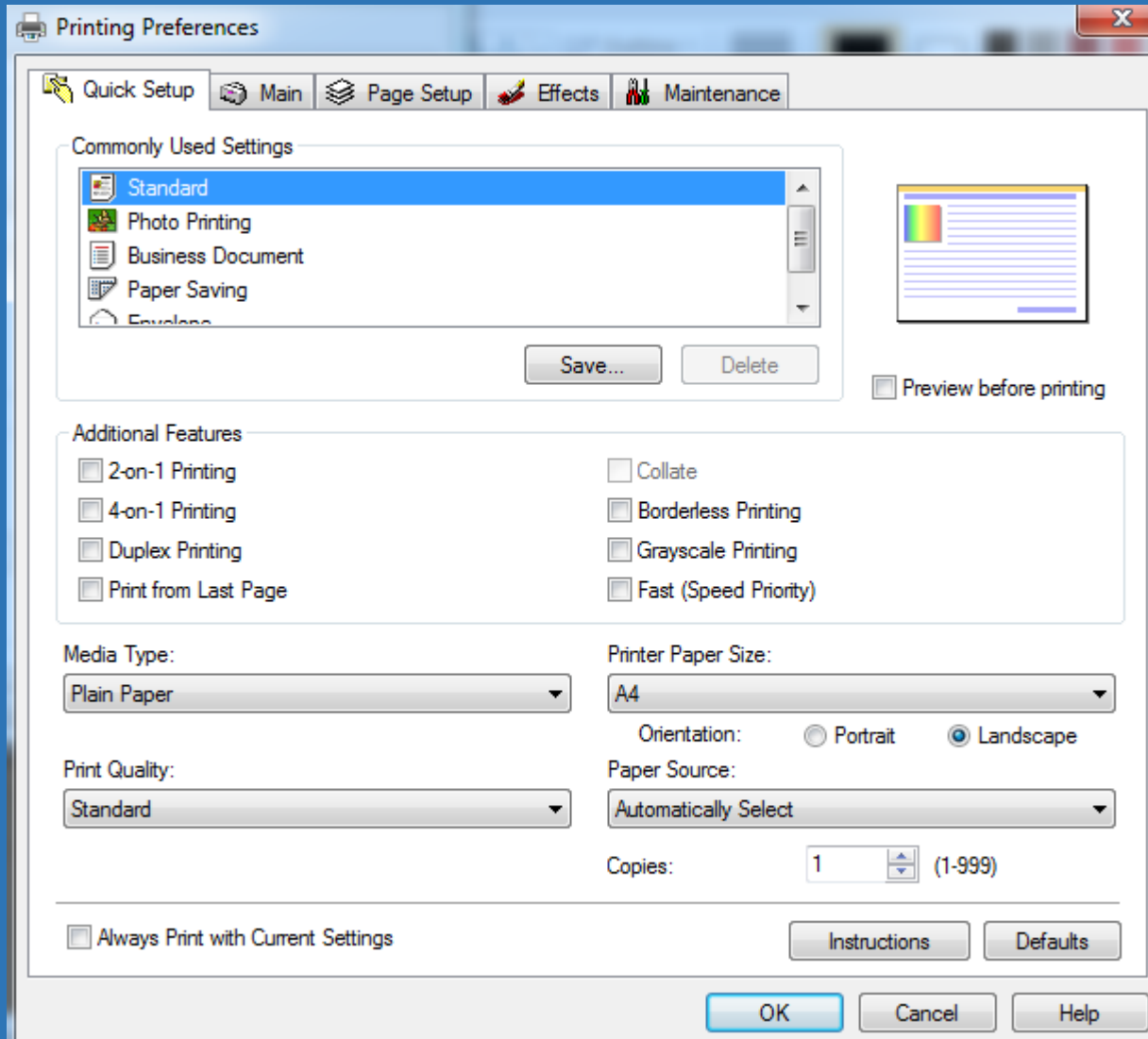
Click OK to save changes

Want to Change the way the Document Prints?



When you click on Print –
One last chance to change
print parameters

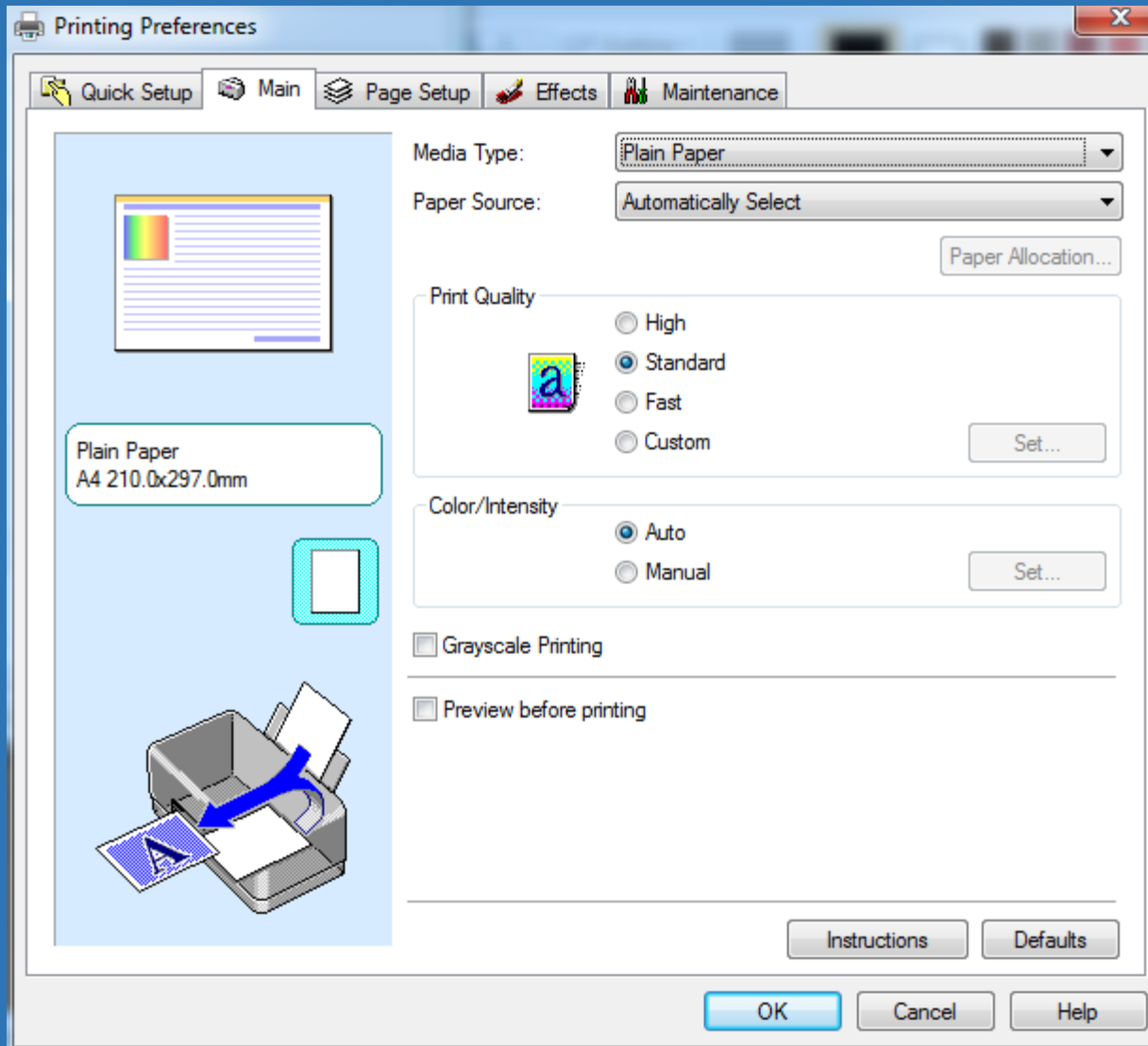
Changing an Image/Photo Options 1



Devices – Your Printer – Right Click Printer Preferences

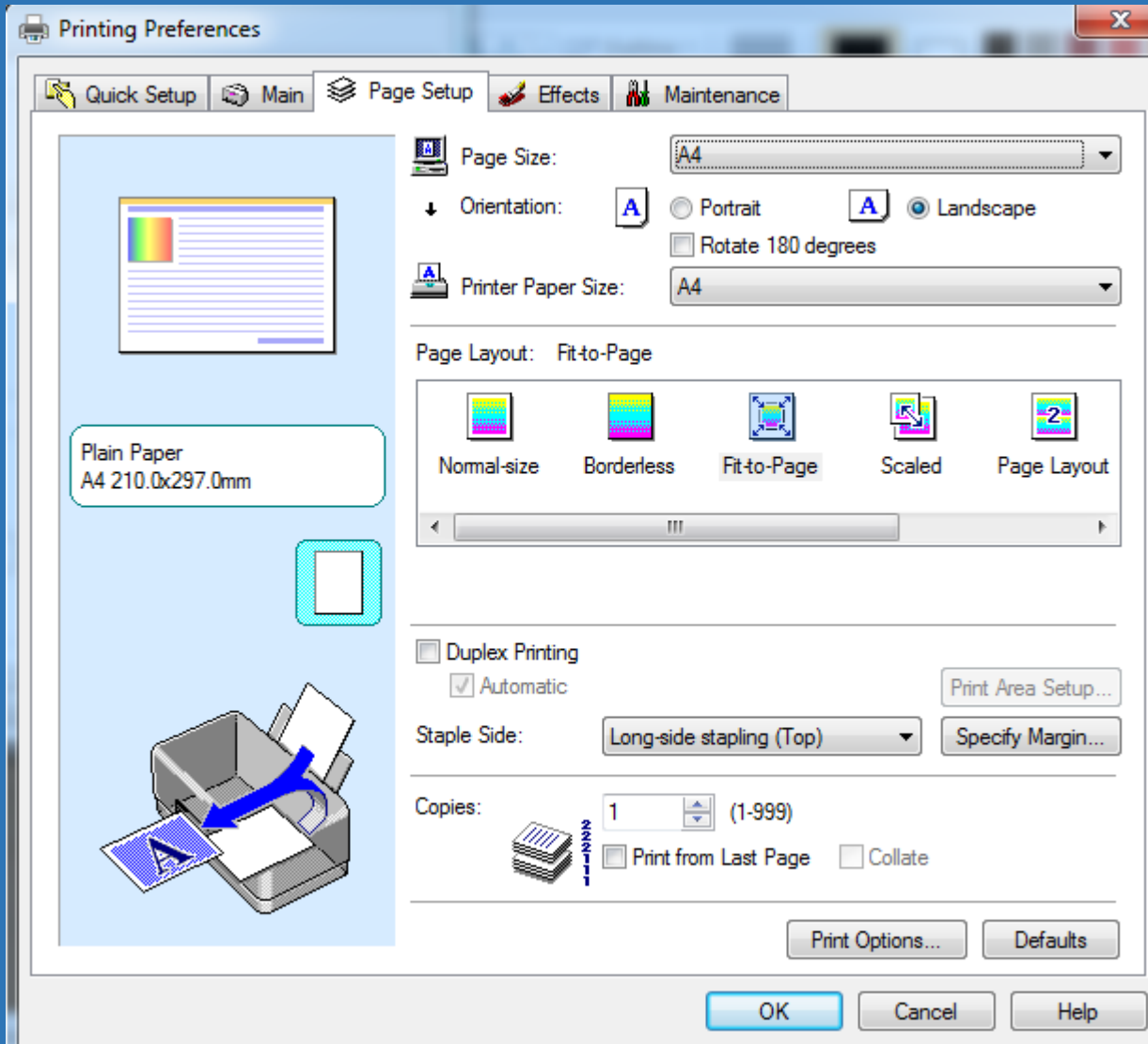
4 Screens of options to change way the document prints

Changing an Image/Photo Options 2



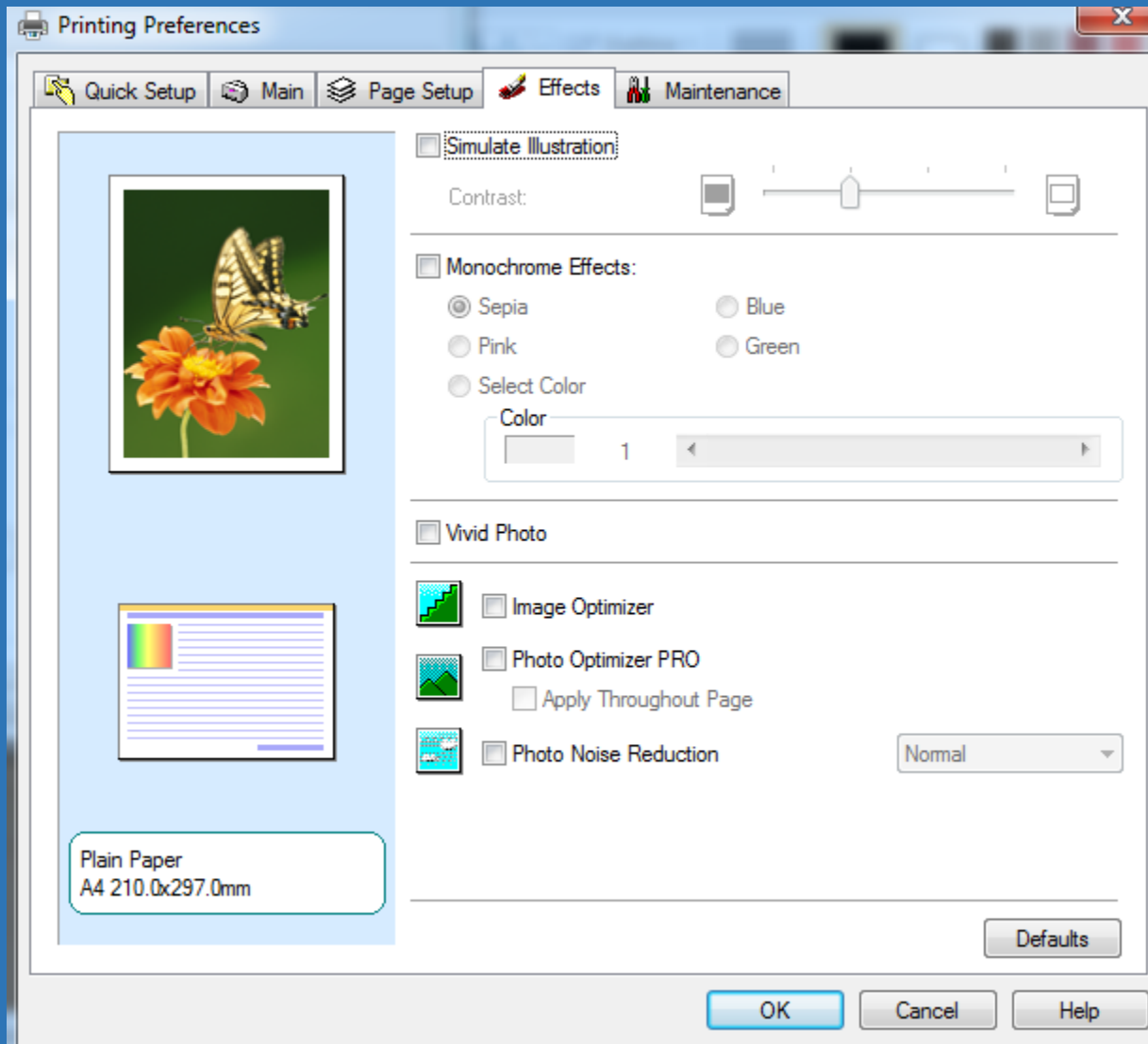
The Main options that can be changed

Changing an Image/Photo Options 3



Page Setup Options

Changing an Image/Photo Options

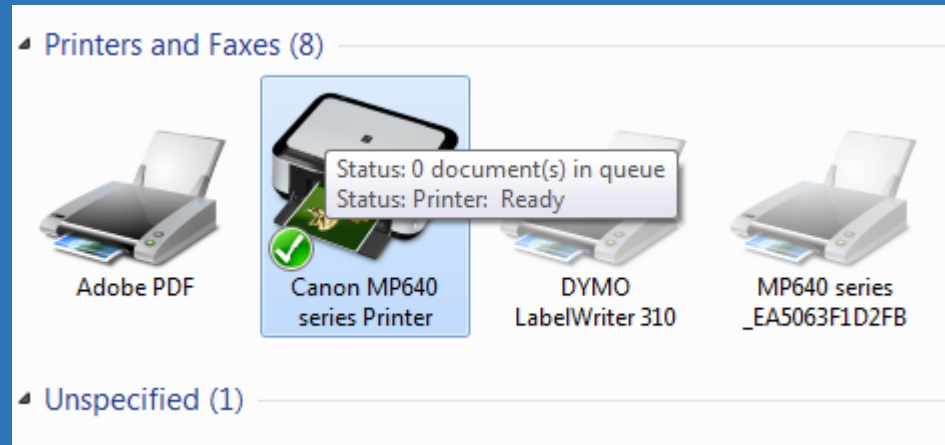


Various Effects can be included

Printing to wrong thing ?? DON'T PANIC & Don't try to switch printer off

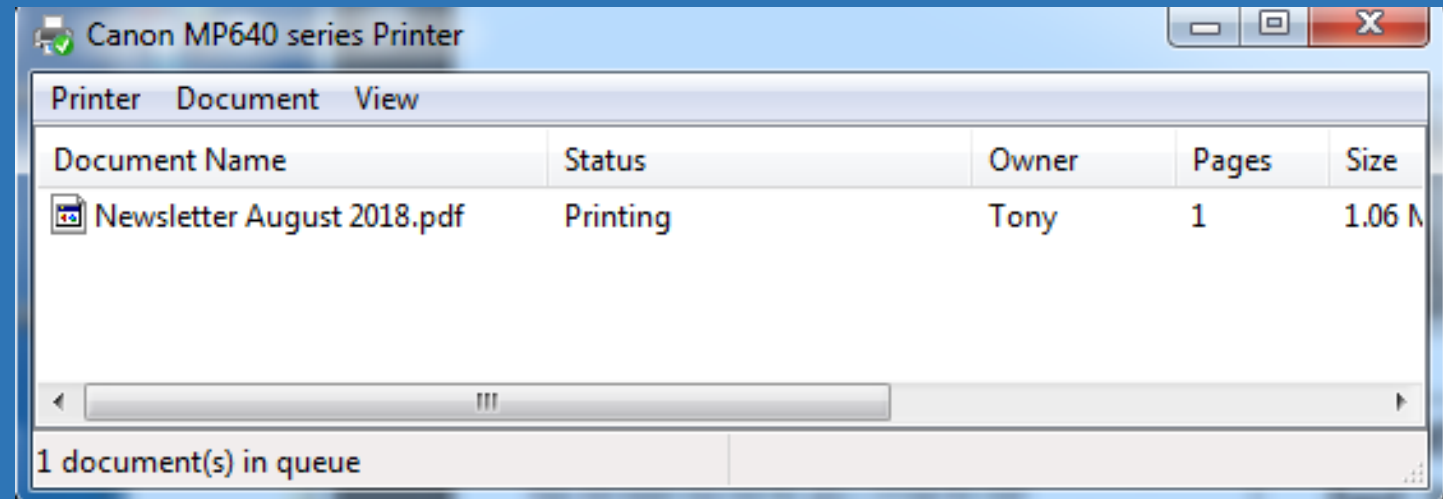
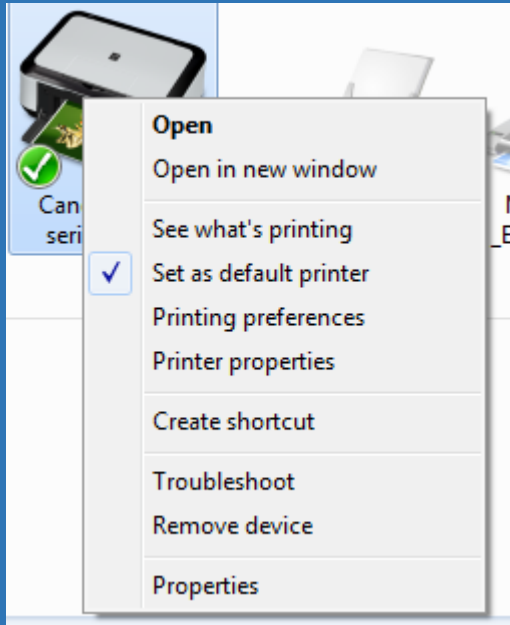


Right Click on the Printer Icon
on the Task Bar



Then Right Click your Printer
Icon in the Devices Menu

Printing to wrong thing ?? DON'T PANIC & Don't try to switch printer off



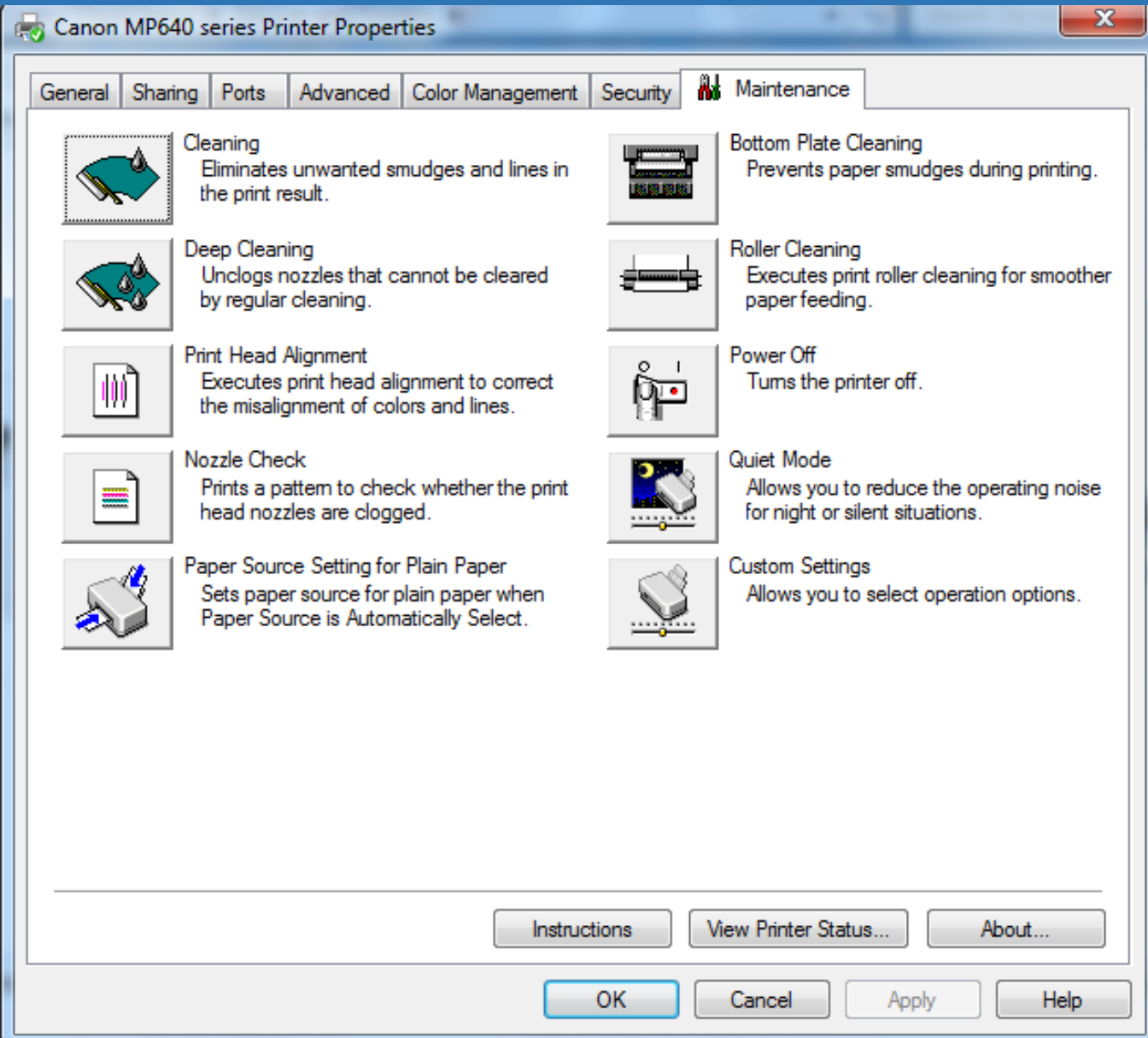
Then either click on Document in the toolbar &
select Cancel

Or

Right Click the document & select Cancel

Select “See What’s Printing”

Printer Maintenance



In Devices –

- Right Click your Printer Icon
- Select Printer Properties
- Select Maintenance Tab
- Select Option

Scanning & Copying

The Basics

- The 3 in 1 Printers include a Scanner, normally under the top lid
- PC needs a specific driver and scanning software – Supplied CD
- The scanner captures an electronic image of a paper document
- Uses it to produce either a paper copy – i.e. the Copying function
- Or produce a computer image file e.g. jpg or tif which can be further edited like a photo & saved to the computer.
- Can also be used for (with software support) OCR
 - Optical Character Recognition converts a paper text document to a text file which can be opened in say Word and then the text edited.

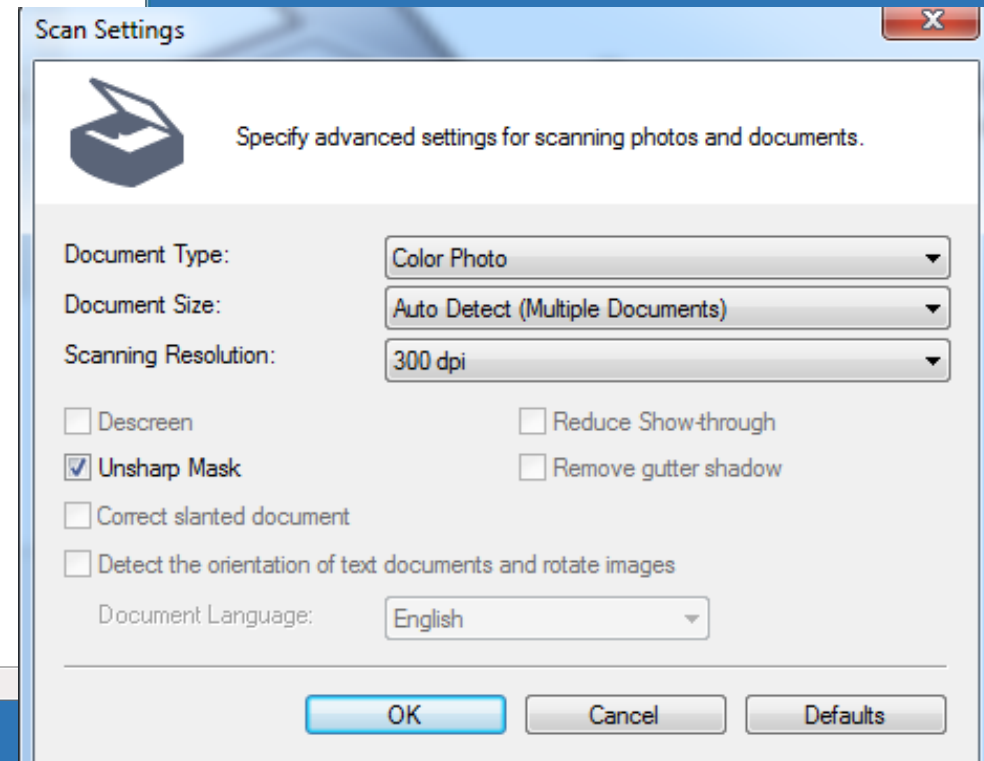
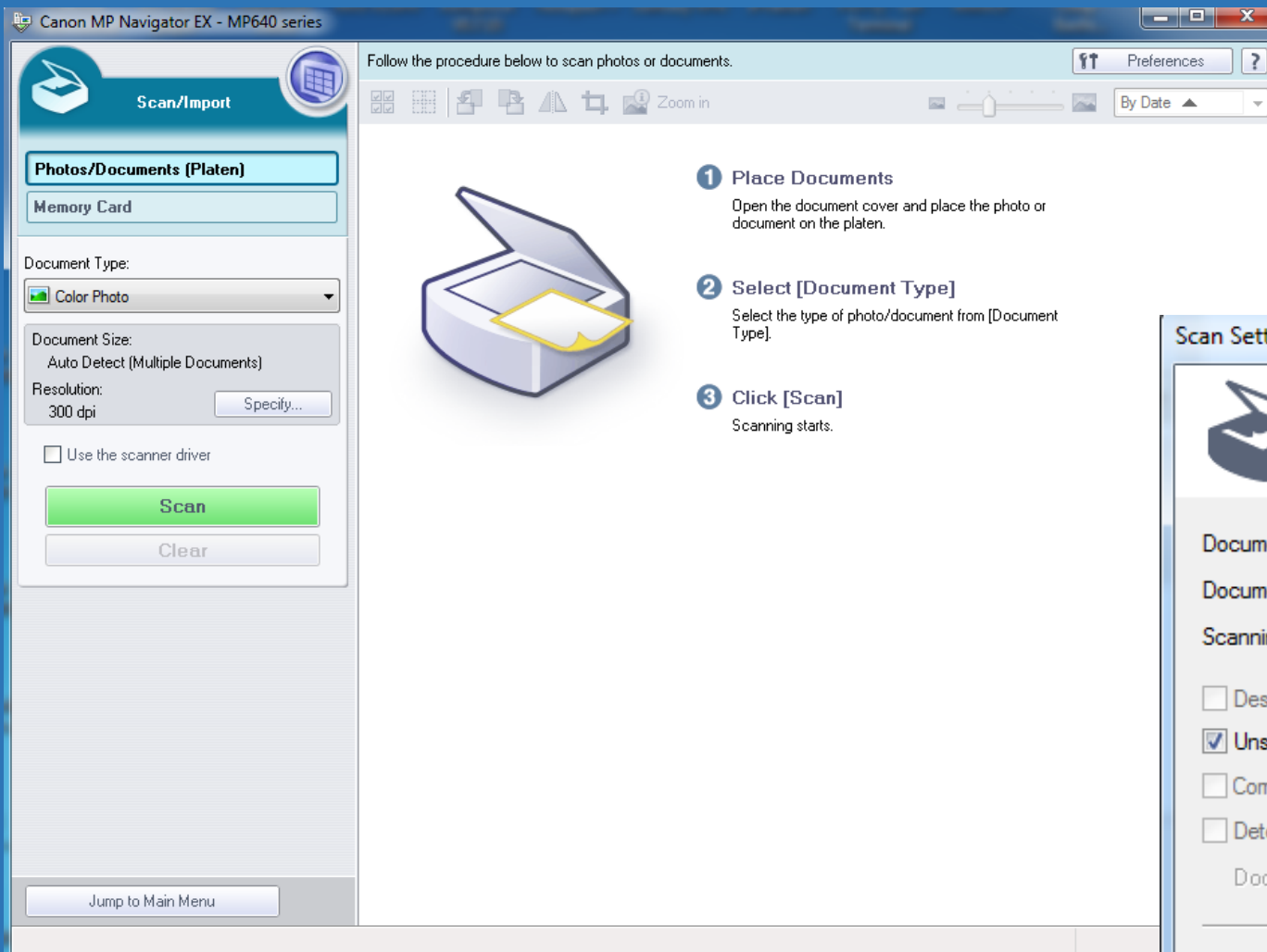
Scanning & Copying

Resolution

- This is a key parameter in scanning and determines the amount of detail captured during the scan.
- SPI - Samples per inch, DPI – Dots per Inch, PPI – Pixels per Inch are all describe the same measurement used in resolution. We'll use DPI from her on.
- Example – a 5"x7" photo scanned at 300dpi would produce an image 1500 pixels wide by 2100 pixels high.
 - Simple maths: $5 \times 300 = 1500$ & $7 \times 300 = 2100$
- Resolution determines how much information a scanner captures from the scanned image. The higher the resolution, the more pixels. The more pixels the more detailed the digital image.
- Remember, the higher the dpi the bigger the file size.

Scanning

Canon Scanning software
After placing the Doc, & checking
the options e.g. resolution



Finally click on the SCAN button



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That's all Folks!