



Printers

Want to print out those summer snaps? Getting back to school or back to business? A great printer can be a household essential – but which ones will deliver quality prints without guzzling ink?



REPORT by Clodagh O'Donoghue

At a glance

- 37 printers on test
- Ink matters
- Nine Choice Buys

Whether you have school- or college-going children, are running a home office, or simply need to occasionally print out photos, tickets, receipts, flight details and so on, a printer that churns out good-quality prints and does not cost a small fortune in ink cartridges is a necessity for many. The main decision to make is whether an inkjet or laser printer best suits your needs. Inkjet printers tend to be typically smaller, quieter, cheaper than a comparable laser printer and great for colour prints and photos. Although laser printers are typically more expensive to buy and bulkier to house, they come into their own when printing text, which they do faster than inkjets and are often very speedy indeed. They also are generally cheaper to run in terms of ink costs, especially for black-and-white pages. Most do not impress when printing photos, however – so if this is important to you, an inkjet printer that is relatively frugal with its ink will likely be a better option.

Printers on test

All of the inkjet printers on test are all-in-one models, meaning that they can scan and copy as well as print – and some also have a faxing function. They all print in colour as well as in black and white, and models with auto duplexing can be set to automatically print on both sides of the page – great

for cutting down on the amount of paper needed on bigger printing jobs without having to stand beside the printer and manually turn over the pages. And devices with an automatic document feeder allow multiple pages to be inserted at one time for scanning and copying purposes.

The laser printers on test are divided into standard devices that concentrate on the basics of printing and multifunction machines that additionally offer scanning, copying and sometimes faxing. Given that laser printers are best suited to delivering black text fast, some of the models on test are monochrome printers that focus on black-and-white pages and do not offer the option to print in colour.

Wi-fi connectivity has become virtually standard and is present on the vast majority of the 37 printers in our current batch, including more modestly priced models. As well as allowing you to print wirelessly from all computers or laptops in your home, you can print from mobile devices like smartphones or remotely via Apple AirPrint or Google CloudPrint services. Models with NFC (near-field communication) capabilities let you print by simply touching a compatible device to the printer.

Those with big ideas may need a printer capable of producing A3 pages. However, such large-scale devices will not

come cheap – the current A3 inkjet printers on test come in at around the €300 mark.

Ink matters

The price of the printer models in our current batch varies hugely, from a modest €57 to a hefty €350, but although we all like a bargain, not all lower-priced options will represent great value in the long run. This is because ink costs can really push up the total cost of your printing, especially as inkjet printers typically use ink to clean themselves when you leave time between prints. A certain amount of ink will never make it to the page as it is used to clean print heads when the printer is turned off and then on again or when you only print occasionally. The amount of ink consumed in this maintenance process can be very substantial indeed, with occasional printing sometimes guzzling four times more than the amount of ink needed for continuous printing – pushing up overall ink costs significantly.

Of course, there is no guarantee that a printer that costs several hundred euro will be any more frugal with ink than an inexpensive model – and it is not possible to tell by simply looking at the device. The degree to which a device will be economical with ink usage is tested in our labs so you can consult the ratings on our table to see how each model fared. Laser printers do not use

ink in their maintenance cycle in the same way and are consequently generally cheaper to run – though multifunction models tend to be dearer to buy initially.

Another ink-related element to watch out for is whether your printer has a combined cartridge for coloured inks or individual cartridges. With a combined cartridge, some printers will cease to print when one colour has run out, so that the cartridge will need to be changed even though the other colours may not be used up.

Third-party ink cartridges

Research released by our UK colleagues at *Which?* some years ago noted that, measure for measure, branded printer inks were significantly more expensive than vintage champagne. Given this disquieting statistic and the fact that many inkjet printers guzzle pricey ink in their cleaning process, it is not surprising that many consumers are turning to third-party alternative ink cartridges to significantly reduce costs. Third-party alternatives are ink cartridges that are not produced by the manufacturer of the device but that are a copy of the original branded cartridge and compatible with the printer in question. The quality of these third-party inks has improved greatly in recent years, as has their reliability. Many users may

have reservations about using third-party cartridges with concerns about whether they will work in their printer and whether using them will even cause damage to the printer. From research and surveys, it would appear that such damage is, in fact, a relatively rare occurrence, particularly if you buy a good-quality generic cartridge, which should still offer a substantial saving on the cost of the branded offering. In addition, it should be noted that printer-branded ink cartridges are not totally problem free and that third-party ink cartridges that fail to work should be readily replaced by the retailer as being “not as described or fit for purpose” under the Sale of Goods and Supply of Services legislation.

A recent *Which?* report has noted, however, a problem being encountered when the printer software updates itself periodically over the internet. Anecdotally, it would appear that such updates can cause a printer to reject or no longer recognise a third-party alternative ink cartridge that had been happily working away prior to the update. However, an update will not always affect cartridges and third-party ink retailers are quick to develop newer cartridges to work around any problems caused by updates.



1. Epson Expression Premium XP-830 €190 (inkjet printer)

If you are looking for a great all-rounder with plenty of bells and whistles, the **Choice Buy** Epson Expression Premium XP-830 could be a good option. Although not cheap, you get a lot for your money with this all-in-one colour inkjet printer that can also fax – and it is quite frugal in terms of ink usage, keeping running costs down and helping to offset the initial purchase price. Print speeds are decent and the quality overall is very good both for text and photos, with graphics prints particularly impressive. The copying and scanning functions work very well generally and excel when it comes to colour copies and photo scans. Those who like to print from all manner of mobile devices will appreciate this printer's wi-fi connectivity and compatibility with Apple AirPrint and Google CloudPrint. As well as being able to automatically print double-sided, it also offers automatic double-sided scanning and copying and an automatic document feeder. In addition, it is an exceptionally easy printer to use and maintain.

2. HP Envy 5644 €150 (inkjet printer)

The **Choice Buy** HP Envy 5644 is a versatile inkjet printer that can copy and scan, though it does not have a fax function. It does a great job of producing high-quality black text quickly and its colour prints and photos are also very decent and won't take too long to emerge. The scanning and copying functions perform well, with colour copies looking especially good – and speeds overall are reasonable. This printer scored top marks for ease of use and it offers plenty of handy features, including the ability to print automatically on both sides of the paper and a second smaller input tray for photo paper so that you will not have to swap trays when printing the occasional photo. A memory card slot offers direct printing without having to turn on the PC and, with wi-fi connectivity and compatibility with CloudPrint and AirPrint, there are plenty of options for printing from mobile devices. Importantly, maintenance-ink usage on this printer is low, keeping ink costs below average.



3. Canon Pixma MG3650 €57 (inkjet printer)

A very cost-effective option and the cheapest printer on test, the **Choice Buy** Canon Pixma MG3650 has a lot to offer for its modest purchase price. This colour inkjet printer is a multifunction device that can scan and copy as well as print – and it does a good job across the board, with testers particularly impressed by its colour copying and scanning capabilities. Print quality is very decent but although text prints are delivered fairly quickly, you will have to wait a bit for printed images and photos. With no built-in screen, you won't be able to print straight from a memory card but you can use the wi-fi connectivity to print directly from a range of devices, with AirPrint and CloudPrint compatibility also on offer. Not only is this printer inexpensive to buy, it is fairly cheap to run, with a below average amount of maintenance ink used – it does have a combined colour cartridge though, so you may end up having to replace the cartridge for all three colours when only one colour has been used up.



4. HP Envy 5540 €104 (inkjet printer)

The **Choice Buy** HP Envy 5540 is another multitasking inkjet printer with the ability to scan and copy and some useful features thrown in. Although print quality may not match that of the highest-end devices, it is very satisfactory nonetheless with text that is pretty sharp and good colour prints. Photos may be a little soft, however. In terms of speed, printing text is reasonably swift, and photos and images emerge in about two minutes. Both monochrome and colour copies look great and this device does a fairly good job of scanning also. Built-in wi-fi and compatibility with AirPrint and CloudPrint make for a range of wireless printing options and handy features include automatic double-sided printing to help cut down on paper usage. In all, this is a solid performer, and it is also quite cost-effective to run, with not too much ink wasted on cleaning the print heads – though the combined colour cartridge could push up ink costs if you have to replace the whole cartridge when one colour runs out.



5. Epson Expression Premium XP-530 €130 (inkjet printer)

The **Choice Buy** Epson Expression Premium XP-530 is an all-in-one inkjet printer that excels when it comes to printing colour graphics and images, delivering sharp and vibrant results very swiftly. Photo prints are a little less punchy but very decent and this printer does a good job with black-and-white text also - though print speeds here are on the slow side. The copying function again impresses with the sharpness of its colour copies and photos scan particularly well with this device. As well as built-in wi-fi and AirPrint and CloudPrint compatibility for wireless printing, you can use the small touchscreen display to print from a memory card without having to turn on your computer. Inkjet printers commonly use ink to clean print heads, but this one uses less than most, helping to reduce overall ink costs and making this a fairly cost-effective machine to run – and the automatic double-sided printing feature cuts down on paper usage too.



25. Samsung Xpress M2885FW €270 (laser printer, all-in-one)

The first of our laser printers and the highest-scoring device in our current batch, the **Choice Buy** Samsung Xpress M2885FW is a hard-working, multitasking machine. It has the ability to fax as well as print, scan and copy and is speedy at all tasks, living up to the 'Xpress' billing in its title. This Samsung model can print only in black and white but the results are sharp and high-quality, especially for text pages – and everything is delivered very swiftly indeed. Laser printers are pretty economical with ink anyway but this device is exceptionally cheap to run, helping to somewhat offset the hefty purchase price. This printer also performs well when scanning and copying, both of which functions are easy and fast to use. With NFC support as well as compatibility with AirPrint and CloudPrint, there are plenty of options for connecting with mobile devices and handy features include an automatic document feeder and a large-capacity paper tray with space for 250 sheets.



26. Samsung Xpress C480FW €260 (laser printer, all-in-one)

The Choice Buy Samsung Xpress C480FW is another multifunction laser printer that can scan and copy – and it also has a fax function. As well as printing excellently sharp black text, this device can also print in colour and results here are generally very good. As with most laser printers, photo prints are somewhat disappointing, however, with some graininess. This Samsung model excels when scanning, delivering sharp detail. Testers were less impressed with the copying function, though results here are decent enough. Laser printers are generally swift and though not the fastest model, prints emerge reasonably quickly. With no automatic duplexing, pages will have to be turned manually for double-sided printing. This device offers an automatic document feeder for scanning and copying multiple pages and NFC is available for superfast and easy printing from NFC-compatible tablets and smartphones. With no ink wasted cleaning print heads and generally frugal ink usage, this laser printer won't cost too much to run.



31. HP Colour Laserjet Pro M252dw €220 (laser printer, standard)

You will not be able to scan and copy with the Choice Buy HP Colour Laserjet Pro M252dw but it will perform all printing tasks to a good standard. This standalone laser model can print in colour as well as in black and white and text pages are crisp and sharp. Graphics pages are less impressive, however, and, as with most laser printers, photo prints suffer from a degree of graininess. Prints are delivered swiftly with even colour pages not taking too long to emerge. Laser printers are frugal with ink as there is no ink wasted cleaning print heads and this device will be economical to run. There is a wide range of networking options with Ethernet and wireless wi-fi connectivity for printing from PCs and mobile devices along with support for AirPrint, CloudPrint and NFC 'touch-to-print' technology. The colour touchscreen offers a preview of what you are about to print and this device can be set to automatically print on both sides of the page.



32. Samsung Xpress M2026w €90 (laser printer, standard)

The Choice Buy Samsung Xpress M2026w is a modestly priced standard laser printer that sticks to the basics and performs them very well. There are no scanning or copying functions and this device cannot print in colour but its black-and-white text pages are nicely crisp and sharp and spreadsheets are decent too. Graphics and images printed in monochrome do not fare as well, however. This Samsung model takes the 'Xpress' in its title to heart, delivering all types of prints very quickly. There is no automatic double-side printing on offer, so those who want to print on both sides of the page will have to turn the paper manually. Laser printers tend to be thrifty in terms of ink usage and this device is no exception, with inexpensive running costs added to the relatively affordable purchase price making this a good value option for those who want their black-and-white prints fast and are not fussed about added features.

Test change

The importance of ink usage as a factor in the overall purchasing decision is now reflected in our tests, with total ink costs accounting for 20% of the overall score. Energy consumption of printers is generally fairly low and though our labs still measure energy usage, the rating no longer impacts the overall total. Laser printers have to work harder to impress us –and they need to score a little higher than inkjet printers to achieve Choice Buy status.



MODEL	SPECIFICATIONS								TEST PERFORMANCE								SCORE %	
	Price	Mono-chrome or colour (M or C)	Auto duplexing	Automatic document feeder	Fax	Max/min paper size	Wi-fi	NFC	Printing (60%)*			Scanning (7.5%)	Copying (7.5%)	Total ink costs (20%)	Networking (5%)	Power consumption (0%)		
										Printing quality and speed	Printing convenience	Printing versatility						
Inkjet printers (all-in-one)																		
1	Epson Expression Premium XP-830	190	C	✓	✓	✓	A4/A6	✓		★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	75
2	HP Envy 5644	150	C	✓			A4/A6	✓		★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	73
3	Canon MG3650	57	C	✓			A4/A6	✓		★★★★	★★★★	★★★★	★★★★★	★★★★	★★★★	★★★★★	★★★★★	71
4	HP Envy 5540	104	C	✓			A4/A6	✓		★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	71
5	Epson Expression Premium XP-530	130	C	✓			A4/A6	✓		★★★★	★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	70
6	HP Officejet Pro 8610	220	C	✓	✓	✓	A4/B7	✓		★★★★	★★★★	★★★★★	★★★★	★★★★	★★★	★★★★★	★★★★	68
7	Brother MFC-J6720DW	320	C	✓	✓	✓	A3/A6	✓		★★★★	★★★	★★★★★	★★★★	★★★	★★★★★	★★★★★	★★★★★	67
8	Canon Pixma MG6850	156	C	✓			A4/A6	✓		★★★★	★★★★	★★★★★	★★★★	★★★★	★★	★★★★★	★★★★★	66
9	HP Officejet 3830	93	C		✓	✓	A4/A6	✓		★★★★	★★★★	★★	★★★★	★★★★★	★★★★	★★★★	★★★★★	66
10	Brother MFC-J480DW	260	C	✓	✓	✓	A4/A6	✓		★★★★	★★★★	★★★★★	★★★★	★★★	★★★★	★★★★★	★★★★★	65
11	Canon MG7750	160	C	✓			A4/A6	✓	✓	★★★★	★★★★	★★★★★	★★★★★	★★★★	★★	★★★★	★★★★★	65
12	Epson Expression Photo XP-960	290	C	✓			A3/B7	✓		★★★	★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	63
13	Brother MFC-J4625DW	219	C	✓	✓	✓	A3/A6	✓	✓	★★★	★★★	★★★★★	★★★★	★★★	★★★★★	★★★★★	★★★★★	62
14	Brother MFC-J5625DW	290	C	✓	✓	✓	A3/A6	✓		★★★★	★★★	★★★★★	★★★★	★★★	★★★★	★★★★★	★★★★★	62
15	HP Envy 4520	75	C	✓			A4/A6	✓		★★★	★★★★	★★★★	★★★★	★★★★★	★★★	★★★★	★★★★★	61
16	Epson Workforce WF-7620DTWF	290	C	✓	✓	✓	A3+/A6	✓		★★★	★★★★	★★★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	60
17	HP Officejet 4650	120	C	✓	✓	✓	A4/A6	✓		★★★★	★★★★	★★★★	★★★★	★★★★	★★	★★★★	★★★★★	58
18	HP Deskjet 3630	57	C				A4/A6	✓		★★★	★★★★	★★	★★★★	★★★★	★★★★	★★★	★★★★★	58

USING THE TABLE

Star ratings are out of five.

SPECIFICATIONS

Price: Typical retailer's price if you shop around.

Auto duplexing: The printer can be set to automatically print on both sides of a page.

Automatic document feeder: The printer has an automatic document feeder for copying, scanning and faxing multi-page documents.

TEST PERFORMANCE

Printing quality and speed: Rating for the print quality and timing for one A4-page black-and-white letter, an 8x10-inch photo, a spreadsheet with graphs and charts, and a page with colour graphics and images. Ratings are given for clarity, sharpness, colour accuracy and the smudge and moisture resistance of the printed material.

Printing convenience: Rating includes ease of installation, printing different types of documents, and maintenance as well as start-up time and noise.

Printing versatility: Rating for the range of features provided by the printer, including printing options, auto-duplexing, the presence of a preview screen, and the ability to print from memory cards and Pictbridge.

Scanning: Rating includes the quality, speed, convenience and versatility of the scanning function when scanning magazine pages, photos, text documents and 3D objects.

Copying: Rating includes the quality, speed, convenience and versatility of the copying function when copying both in colour and in black and white.

Total ink costs: Rating for the amount of additional ink used during periodic maintenance cycles, including the ink used when the cartridge is initially inserted into the printer, as well as the ink consumption measured during continuous-use and intermittent-use tests.

Networking: Rating includes network sharing and the ability to print from mobile devices over wi-fi, through AirPrint and Google CloudPrint, from email over the internet and using NFC (near-field communication).

Power Consumption: Rating for the energy used when the printer is idle, in stand-by mode and switched off.

Useful contacts

Canon Ireland
tel 01 6990990
www.canon.ie

Epson
tel 01 4367742
www.epson.ie

HP Ireland
tel 01 5339808
www.hp.com/ie

Samsung
tel 0818 717100
www.samsung.com/ie

MODEL	SPECIFICATIONS								TEST PERFORMANCE								SCORE%	
	Price	Monochrome or colour (M or C)	Auto duplexing	Automatic document feeder	Fax	Max/min paper size	Wi-fi	NFC	Printing (60%)*			Scanning (7.5%)	Copying (7.5%)	Total ink costs (20%)	Networking (5%)	Power consumption (0%)		
									Printing quality and speed	Printing convenience	Printing versatility							
Inkjet printers (all-in-one) cont'd																		
19	Epson Expression Home XP-432	90	C			A4/A6	✓			★★★	★★★★★	★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	58
20	Canon Pixma MG5750	140	C	✓		A4/A6	✓			★★★★	★★★	★★★★★	★★★★★	★★★★	*	★★★	★★★★★	57
21	Epson Expression Home XP-235	60	C			A4/A6	✓			★★★	★★★★★	★★	★★★★	★★★★	★★	★★★★★	★★★★★	56
22	Epson Expression Home XP-335	74	C			A4/A6	✓			★★★	★★★★★	★★★	★★★	★★★★	★★★	★★★★★	★★★★★	55
23	Epson ET-2550	300	C			A4/B7	✓			★★★	★★★★	★★	★★★★	★★★★	*	★★★	★★★★★	51
24	Epson ET-2500	275	C			A4/A6	✓			★★★	★★★★	*	★★★★	★★★	★★★★	★★★	★★★★★	50
Laser printers (all-in-one)																		
25	Samsung Xpress M2885FW	270	M	✓	✓	✓	A4/A6	✓	✓	★★★★	★★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	82
26	Samsung Xpress C480FW	260	C		✓	✓	A4/A6	✓	✓	★★★★	★★★★	★★	★★★★	★★★	★★★★★	★★★★★	★★★★	74
27	HP Laserjet Pro MFP M277dw	333	C	✓	✓	✓	A4/A6	✓	✓	★★★★	★★★★	★★★★★	★★★★	★★★	★★★★★	★★★★★	★★★	71
28	Brother DCP-9020CDW	350	C	✓	✓		A4/A6	✓		★★★★	★★★★	★★★★	★★★	★★★	★★★★★	★★★★★	★★★★★	62
29	Samsung Xpress SL-C1860FW	360	C		✓	✓	A4/A6	✓	✓	★★★	★★★★	★★	★★★★	★★★	★★★★★	★★★★★	★★★★	58
30	Brother DCP-L2500D	120	M	✓			A4/A6			★★★	★★★★	★★★★	★★★★	★★★★	★★★★★	★★	★★★★★	57
Laser printers (standard)																		
31	HP Color Laserjet Pro M252dw	220	C	✓			A4/A6	✓	✓	★★★★	★★★★	★★★★★	na	na	★★★★★	★★★★★	★★★★	79
32	Samsung Xpress M2026w	90	M				A4/A5	✓	✓	★★★★	★★★★	*	na	na	★★★★★	★★★★★	★★★★★	75
33	Samsung Xpress SL-C1810W	260	C				A4/A6	✓	✓	★★★★	★★★★	*	na	na	★★★★★	★★★★★	★★★	69
34	HP Laserjet Pro 200 M201dw	205	M	✓			A4/A6			★★★★	★★★★	★★★★	na	na	★★★★★	★★★	★★★★★	64
35	HP Laserjet Pro P1102w	100	M				A4/A6	✓		★★★★	★★★★	*	na	na	★★★★★	★★★	★★★★★	59
36	Brother HL-1210W	80	M				A4/A5	✓		★★★	★★★★	*	na	na	★★★★★	★★★★★	★★★★★	55
37	Brother HL-L2340DW	130	M	✓			A4/A6	✓		★★★	★★★★★	★★★★	na	na	★★★★★	★★★★★	★★★★★	52

*When scanning and copying functions are not available, the printing rating accounts for 75% of the overall score.