

# Laser printers

We tested 12 budget black and white laser printers to see which are worth the paper they print on.



## IN SHORT

- ▶▶ Laser printers are a good choice for home printing.
- ▶▶ The running cost is an important consideration.
- ▶▶ Most brands offer some information about toner cartridge recycling.

**H**ome office printing has become so popular that many people are choosing to buy their own laser printer. And, as the price comes down and the quality improves, a laser printer is a good choice for small-scale print runs.

We tested 12 budget laser printers to rate the performance, ease of use and ink consumption. We also assessed the print quality with a viewing panel that considered how well the printers could reproduce both text and graphics. We tested machines that print in black and white (monochrome) only, although colour laser printers are becoming increasingly affordable.

## COST

The upfront cost of a printer isn't the only consideration when buying a new printer. The running cost is a significant issue — replacing toner cartridges, drums (see *Dictionary*, page 20), fixing units and paper can all add up.

The cost of toner ranged from nearly 2 cents per page for the **Brother HL-2040** and **Brother HL-2070N** to almost 6 cents per page for the **Epson EPL-6200L**. It may not seem like much of a difference, but it can add up to a considerable amount of money over many toner replacements.

By comparison, the last inkjet printers test showed that the ink cost ranged from 3 cents to 22 cents per page — see CC Sep/Oct 06 or online.

Our calculations are based on the price of toner cartridges and don't include paper, energy and replacement parts such as drum units.

We also tested the printing capacity using a new cartridge to print a standard letter. There was a considerable difference between the manufacturer's claim and the actual print capacity — but it's not all bad news in this regard. All but one of the printers printed more pages than the manufacturer's claims using full capacity toner cartridges. The **Lexmark E250d** produced over 50% more than the claimed figure, while the **Canon Laser Shot LBP-3000** produced only 95% of its claimed printing capacity. See the table on page 21 for toner cost comparisons.

## QUALITY

All of the tested printers rated well for overall printing quality, although some had difficulty printing graphics and images accurately.

- >> The **Brother HL-2040** and the **Brother HL-2070N** had problems printing the spreadsheet and didn't print the gradation of shading and pixilation very well.
- >> The **Epson EPL-6200L** and the **Lexmark E120n** had problems printing graphics; the image was too dark and too grainy respectively.
- >> The **Canon Laser Shot LBP-3000** had an excellent score for printing the spreadsheet.
- >> The **HP LaserJet 1020**, **HP LaserJet 1022** and the **Samsung ML-2571N** rated equal best for overall print quality.

## FEATURES

The **Lexmark E250d** had the most features, such as booklet printing, recycling options, manual feed, watermark and duplex options and a slot for a security lock.

>> **Speed** — We timed the printers from the click of the Print button to the last page dropping into the paper tray. We found that all of the models rated well for printing time. The **Lexmark E250d** had the fastest printing speed, while the

## WHAT TO BUY

HP LaserJet 1022	\$299
Brother HL-2040 <b>BEST BUY</b>	\$129

The **HP LaserJet 1022** scored the highest overall, although it's one of the most expensive models. If you're after something more affordable, the **Brother HL-2040** scored very well for both performance and ease of use and is one of the cheapest in our test.

## What about the rest?

All of the printers in our test rated well and would be a good option. Your choice might depend on the comparative running costs between the models and whether you want a specific feature, such as the option to network the printer.



HP LaserJet 1022



Brother HL-2040

PHOTOS: GEOFF AMBLER

## Green scene

All of the printers, except **Samsung**, include recycling documentation with the toner cartridges or on the manufacturers' websites. In addition, **Brother**, **HP**, **Lexmark**, **Konica Minolta** and **Canon** are affiliated with the Planet Ark cartridge recycling program.

To find out more about the scheme, go to [www.planetark.com.au](http://www.planetark.com.au). For more on recycling, go to [www.recyclingnearyou.com.au](http://www.recyclingnearyou.com.au).

The **Canon Laser Shot LBP-3000** and both the **HP** printers had the best standby energy scores and cost less than \$4 a year on standby. The **Epson** is the most expensive to keep on standby and costs just over \$9 a year.

However, none of the printers achieved a one watt standby power rating, which is a target set by the International Energy Agency. Australia has agreed to support the One-Watt program in order to reduce standby power usage in the future. A printer is on standby when it's turned on, but not actively printing.



## DICTIONARY

**Drum:** Large round unit that is coated with toner and rolls over a sheet of paper to print.

Canon Laser Shot LBP-3000 and the HP LaserJet 1020 had the slowest printing speed.

**>> Network connection** – Useful if you want to connect more than one computer to the printer. It's often listed as an Ethernet connection. The Brother HL-2070N, Lexmark E120n and Samsung ML-2571N have an inbuilt network connection. The Brother HL-2040, Canon Laser Shot LBP-3200 and Konica Minolta PagePro 1350W have an optional add-on network connection that you must buy separately, but it's probably cheaper to buy a printer with a built-in network connection. None of the printers in the test have the capability to print via a wireless connection.

**>> Print options** – Printing multiple pages on a single sheet of A4 paper is a useful feature. All of the printers could print

at least four pages on one sheet of paper. The Brother HL-2040 and the Brother HL-2070N could print up to 25 pages on one sheet – the highest number in the test – while the Epson EPL-6200L could only print a maximum of four pages on one sheet.

**>> Booklets and posters** – Can be a useful option. All of the printers can print booklets, except the Brother HL-2040, Brother HL-2070N, Canon Laser Shot LBP-3000, Canon Laser Shot LBP-3200 and the Epson EPL-6200L. Only the Lexmark E250d, Samsung ML-2010 and Samsung ML-2571N can print posters.

**>> Watermark** – Lets you print a light mark or outline on the page. All but the Canon Laser Shot LBP-3000 and the Canon Laser Shot LBP-3200 have this feature.

## 4 Features

## 5 Specifications

Brand/model (in rank order)	1 Price (\$)	Overall	2 Performance (%)	3 Ease of use (%)	Network	Multiple pages	Booklets	Posters	Recycling options	Manual feed	Watermark	Duplex	Security slot	Connection	Weight (kg)	Input tray capacity (pages)	Dimensions (WxHxD, mm)
HP LaserJet 1022 (Q5912A)	299	80	81	77		16	✓		✓	✓	✓	✓		USB	6	230	370 x 240 x 420
Brother HL-2040	129	78	77	79	(a)	25			✓	✓	✓	✓		P, USB	7	230	370 x 160 x 700
Lexmark E250d	306	78	79	75		16	✓	✓	✓	✓	✓	✓ (b)	✓	P, USB	11.5	250	390 x 300 x 540
HP LaserJet 1020	199	77	77	77		16	✓		✓	✓	✓	✓		USB	6	140	370 x 210 x 420
Samsung ML-2571N	296	77	75	81	✓	16	✓	✓		✓	✓	✓		E, P, USB	7	240	350 x 280 x 470
Brother HL-2070N	264	76	75	79	✓	25			✓	✓	✓	✓		E, P, USB	7	230	370 x 160 x 700
Canon Laser Shot LBP-3000	169	75	77	71		16			✓	✓				USB	6.5	150	370 x 250 x 430
Canon Laser Shot LBP-3200	209	74	76	69	(a)	9			✓	✓				USB	7	200	370 x 340 x 410
Konica Minolta PagePro 1350W	213	74	73	76	(a)	16	✓		✓		✓	✓		P, USB	7	160	390 x 340 x 410
Lexmark E120n	182	73	72	75	✓	16	✓		✓	✓	✓	✓	✓	E, USB	7	150	390 x 240 x 420
Epson EPL-6200L	286	72	69	79		4			✓		✓			P, USB	7	160	370 x 370 x 400
Samsung ML-2010	152	69	66	75		16	✓	✓		✓	✓	✓		USB	6	140	350 x 270 x 470

### Table notes

**1 Price** paid in April 2007.

**2 Performance** (70% of Overall) rated the print quality, print time, time to turn on, any errors or problems, standby energy consumption and ink consumption.

**3 Ease of use** (30%) how easy the printer is to use including instructions and help files, default settings, software and hardware installation.

**4 Features** Network built-in or add-on network connection;

*Multiple pages* the maximum number of pages that can be printed on a single sheet; *Booklets* whether it prints booklets; *Posters* whether it prints posters; *Recycling options* provides information on cartridge recycling; *Manual feed* allows manual envelopes and letterhead printing; *Watermark* print option; *Duplex* for double-sided printing; *Security slot* for a security cable.

**5 Specifications** *Connection* whether it has Ethernet (E), parallel (P) or USB connections to a computer; *Weight* in kilograms including power cord and toner; *Input tray capacity* the number

**>> Duplex** – Double-sided printing, or duplexing, saves paper and is a good feature to have in a laser printer which is likely to be printing a lot of text. All of the printers, except both the **Canons** and the **Epson** printer have a duplex option. The **Lexmark E250d** has automatic duplex but others require you to go into the set-up options and then position the paper.

**>> Manual feed** – Useful for printing envelopes, letterhead or special paper. All of the tested printers, except the **Epson** and the **Konica Minolta**, allow manual print feed.

**>> Security** – A security slot on the printer lets you secure it to the computer or the desk with a security cable. Both the **Lexmark** printers have a security slot. For more on security cables, see the article online.



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## Print cost

Brand/model (in alphabetical order)	New toner cartridge (\$)	Claimed number of pages/cartridge	Measured number of printouts	Toner cost per page (c)
Brother HL-2040	62.64	2500	3506	1.8
Brother HL-2070N	62.64	2500	3638	1.7
Canon Laser Shot LBP-3000	78.3	2500	2373	3.3
Canon Laser Shot LBP-3200	90.3	2500	3235	2.8
Epson EPL-6200L	184.8	3000	3306	5.6
HP LaserJet 1020	92.09	2000	2622	3.5
HP LaserJet 1022 (Q5912A)	92.09	2000	2514	3.7
Konica Minolta PagePro 1350W	99	3000	3600	2.8
Lexmark E120n	109	2000	2545	4.3
Lexmark E250d	149	3500	5410	2.8
Samsung ML-2010	98.21	3000	4065	2.4
Samsung ML-2571N	98.21	3000	3876	2.5

## Table notes

The price per page (in cents) was calculated by dividing price of the cartridge by the number of standard pages the cartridge printed.

We ignored early warnings that the toner cartridge may be running low. At this point, we removed the toner cartridge, shook it, replaced it and continued printing until it ran out or the pages became streaky.

Our costings are based on the price paid for a new toner cartridge in April 2007.

Min system requirements	Mac and Linux compatible	Vista compatible	Warranty (years)	Website
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98SE+	✓		1	www.hp.com.au
95+	✓	✓	1	www.brother.com.au
98+	✓	✓	1	www.lexmark.com.au
98SE+			1	www.hp.com.au
98+	✓	✓	1	www.samsung.com.au
95+	✓	✓	1	www.brother.com.au
98+	Linux	✓	1	www.canon.com.au
98+	Linux	✓	1	www.canon.com.au
98+		✓	1	www.konicaminolta.com.au
98SE+	✓	✓	1	www.lexmark.com.au
95+	Mac	✓	1	www.epson.com.au
98SE+	✓	✓	2	www.samsung.com.au

of sheets of paper the printer can hold as measured by the tester; *Dimensions* width, height and depth of the printer with all trays extended; *Min system requirements* for Windows; *Mac and Linux compatible*; *Vista compatible* at time of testing, but drivers may be released later.

## Footnotes

- (a) Optional network with add-on  
(b) Automatic duplex

## How we tested

We rated the ease of use, hardware and software installation, the help files and instructions, the printer default options, how easy the software was to use and how each machine printed. To rate performance, an expert panel assessed how well the printers reproduced text and graphics. We also rated the width of non-printable margins and the time it took the printers to start up and print a page. We assessed any errors, problems with the printers and rated their standby energy consumption. Finally, we also assessed toner consumption to gauge how many pages you're likely to print from a single cartridge.

