

PRINTER BUYING GUIDE

Which printer is right for you, inkjet or laser? Will you print frequently or occasionally? Is black and white printing sufficient for you or will you also print colors and possibly photos? This Printer Buying Guide will educate you to make the right decision in selecting the printer that best fits your needs.

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Types of Printers

- Inkjet Printers

Inkjet Printers can be categorized as 3-color inkjet printers, 4-color inkjet printers and photo printing inkjet printers. The 4-color inkjets are the most popular ones in the industry.

- **4-color Inkjet Printers:** They usually hold two ink cartridges (one for black and one for color). Some hold two additional ink cartridges to separate the colors and have one ink cartridge for each color (black, cyan, magenta and yellow).

- **3-color Inkjet Printers:** They are usually equivalent to the low-end 4 color inkjet printers with the exception of holding only one ink cartridge at a time. So you need to switch the ink cartridge to change between black and color. The 3-color inkjet printers are no longer popular as the 4-color inkjet's prices are continually dropping.

- **Photo Printers:** The photo printing inkjet printers are a bit more complicated than the first two. Many of the 4-color inkjets print photos with good quality and most photo printing inkjets carry the same features as 4-color inkjets with just a few special photo printing features added such as directly printing from the digital camera. Most of the photo printing inkjets use additional colors such as light cyan light magenta, green, and red to provide true photographic quality outputs.

- Laser Printers

Laser Printers have two different technologies for black & white (monochrome) and color printing. Among the lasers, monochrome laser printers are the most popular ones in the industry. In general, laser printers are a lot faster than inkjet printers. Lasers are quite popular as they offer fast printing, good print quality and low cost per page.

- **Monochrome Laser Printers:** Whether it's for home offices, businesses or home users, we can say that monochrome laser printers offer the best balance between print quality, price and speed. With their prices dropping down to around \$200 (personal printer) they start to become a good alternative to inkjets. As monochrome laser printers' toner cartridges cost less, they are less expensive to maintain. However if you print color, you may want to go for an inkjet printer.

- **Color Laser Printers:** Color Laser Printers are generally designed for offices where a lot of graphics or photographs are being printed. If you are a home user, probably you will not need a color laser printer. The high-end laser printers are capable of printing good quality photographs but still none can reach the true photo quality of high-end inkjet printers.

Once you choose between monochrome and color laser printer, you can decide whether you need a personal or workgroup laser.

- **Personal Lasers:** Personal lasers are suitable for text and simple graphics. Most of the personal lasers in the market are monochrome lasers. Because of their high prices, the color laser printers were not attracting personal users. But as some models with prices less than \$1,000 have been released, color laser printers are likely to be more popular among personal users too.

- **Small to Medium Workgroup Lasers:** These printers are designed for small offices or workgroups within large firms. In addition to the standard features, they have specific features designed for multiple users such as larger input and output trays, duplex (double-sided) printing, sorting, and stapling. They support printing over networks (standard or optional). They also have fast processors and more memory which enables them to handle multiple tasks at good speed. Most of the workgroup lasers are monochrome.

- Multifunction Devices

The Multifunction Devices (MFDs) usually combine printers, scanners, copiers and fax in one device. On the ones that have fax, there is either a built-in modem (in which case you can send faxes even when your computer is turned off) or a software that lets you use your computer's fax modem.

The MFDs used to be known as compromising in one or more functions. But nowadays, the manufacturers are making MFDs with high-quality scanners and printers that are the same quality as regular printers.

If you want to print photographs but also print a lot of text documents in your home-office and would like to save on space and money on all the devices, an MFD might be a good choice for you. Bear in mind that it may be hard to find an MFD, if you're looking for special specs in one or more of the devices.

- Portable Printers

If you travel often and need your printer wherever you go, a portable printer will be the right choice for you. Portable printers are usually lightly weighed (between 2 to 5 pounds) and conveniently sized. They mostly come with a battery or a car charger. Some have the capability of wireless printing from a cell phone. Portable printers generally use color-inkjet-printing technology.

Printer Purchase Prices

Typical inkjet printers cost between \$40 to \$150. Photo-printing inkjet printers will start from \$200. You will also find a few high-performance inkjet printer models in the \$300-\$1000 price range. In general, inkjet printers are cheaper than laser printers but as inkjet cartridges need more frequent replacement, lasers may be less costly in the long run.

Laser printers are often much more expensive to purchase compared to inkjet printers. Monochrome laser printers start at around \$200 and may go up to \$2000 and color laser printers start at \$1000 and may go up to \$5500. Workgroup lasers start at around \$400 (for monochrome).

The MFD's (Multifunction Devices) cost between \$100 to \$800 and portable printer prices vary between \$200 to \$350.

Also, most printers do not come with a printer cable that connects the printer to the computer. Include printer cable cost in your budget as well.

Cost per Page and Cost of Ownership

One of the major factors to consider when buying a printer is the cost per page as you will regularly need to purchase the ink cartridges for your printer. Generally, laser printers' cost per page is lower than inkjet printers (even with monochrome lasers) as ink cartridges used for inkjet printers need frequent replacement.

Typical cost of ink cartridge replacement for inexpensive inkjet printers varies between \$20 to \$50 and between \$20 to \$75 for high-end inkjet printers. So the "**cost per page**" will generally be lower with the expensive printers as they hold bigger ink cartridges that do not require frequent replacement. Before you buy a printer, you should calculate the printing cost per page by dividing the cartridge price by the yield. Yield is the number of pages that can be printed with one particular inkjet cartridge or toner. For example, if the price of an inkjet cartridge is \$33.99 and its yield is 800 pages, then its cost per page will be $\$33.99/800 = \0.042 (4.2 cents per page).

"**Cost of ownership**" per month is very similar to "**cost per page**" calculation. The math is simple: (number of prints per month) times (cost of the cartridge) divided by (the yield of the cartridge). For example, assume that average home user prints 150 black pages per month using a black cartridge that yields 200 pages and costs \$28. The monthly "**cost of ownership**" is $\frac{(150 \text{ pages}) \times (\$28)}{200 \text{ pages}} = \21

After you decide on the printer that you'd like to purchase, please visit www.printcountry.com to find out about the cartridge prices and its yields. If the printer that you are looking for is not in our list, please notify us via email info@printcountry.com and we'll obtain the cartridge prices and its yield information for you to make a wiser choice.

Specs to Consider

Resolution

Resolution is the maximum number of dots that the printer can print in a square inch. In theory higher resolution will give better results. It will print more details which is important especially for printing graphics. But as a marketing trick, manufacturers inflate the resolution numbers and these numbers are not the only factors in print quality. The ink cartridges or toner cartridges, the number of colors, the paper and the method of printing are also great factors in print quality. Resolution is measured by the dpi (dots per inch) which indicates the maximum number of dots that the printer can print in a square inch. And each of these dots in a digital photograph is called pixels. A digital photograph is made up of thousands of pixels.

The resolution of an inexpensive inkjet printer will be between 1200 by 1200 dots per inch (dpi) to 2400 by 1200 dpi. And a higher-end inkjet printer will have a resolution between 2400 by 1200 dpi to 4800 by 1200 dpi.

The resolution of a Personal Monochrome laser printer will be between 600 by 600 dpi to 1200 by 1200 dpi. And a workgroup laser printer will typically be 1200 by 1200 dpi. The resolution of an inexpensive color laser printer will be between 1200 by 600 dpi to 2400 by 1200 dpi. And a higher-end color laser will have a resolution between 2400 by 1200 dpi to 2400 by 2400 dpi. Although laser printers have lower resolutions, they are quite sufficient in printing text and simple graphics.

In any case, it is best to print out a sample to test the real print quality of the printer rather than just looking at its resolution.

Speed

Printer's speed is measured by the ppm (pages per minute); the number of pages a printer can produce in one minute. Generally the speed increases as the price of the printer increases. Normally printers have 3 levels of quality settings: draft, normal, best. The higher the quality, the lower the speed. Bear in mind that the speeds stated by the manufacturers are often higher than real life speeds. While testing the speed, the manufacturers often print the basic text with lowest print quality and come up with such fast speeds. The real speed is likely to be nearly half the speed stated by the manufacturer if you use the normal printing quality. Speed will especially be important for you if you intend to print graphics frequently.

Print speeds may vary depending on many factors such as print mode, system configuration, page coverage, document complexity and software.

So a typical inkjet's print speed may vary between 1 to 28 ppm for black text and 1 to 20 ppm for color photo or graphics. A mid-range monochrome laser's print speed may vary between 6 to 25 ppm for sharp black texts and 2 to 20 ppm for black & white graphics. A typical color laser printer's print speed will vary between 6 to 20 ppm for black text and 1 to 12 ppm for color graphics.

Paper Handling

Generally, all the printers print on standard paper with letter and legal sizes. Most will except envelopes and have input and output paper trays. Most personal printers come with only one paper tray. On the high-end or workgroup models, you will find two or three times more paper capacity and advanced features such as duplexing (double sided printing) and printing on tabloid-size papers. Generally all inkjet and laser printers will have at least 100 sheets of

paper capacity. In general laser printers' paper handling capacity tends to be more than inkjets.

Connectivity

You will need a USB port to connect to a printer. All printers nowadays have a USB port. There are 2 types of USB ports; USB 1.1 and USB 2.0. USB 2.0 is faster but the two types are compatible with each other. Some printers still have the older parallel port technology if you prefer.

If you will print over a network, you will need an Ethernet port. You will find that in workgroup printers. Some high-end models also support wireless printing through infrared or Bluetooth technology.

Most printers do not come with a printer cable that connects the printer to the computer. Include printer cable cost in your budget as well.

Memory

Memory is where printers queue documents to be printed. Memory will especially be important for you if you intend to print graphics, photos or large texts often. But if you are a home user, it will be of less importance to you. The memory affects your printer's speed. The more memory you have the faster you will print. On some printers it is also possible to upgrade the memory.

Warranty

When buying your printer, get a written explanation of your printer's warranty explaining its coverage. Get a warranty that covers all the parts and labors of your printer's components. Get information on website services of your printer's manufacturer. Find out where and in which circumstances you will get the services and how much they will cost you. If you know that you will use the printer excessively, we recommend buying additional warranty from the store where you purchase the printer. Test your printer immediately after buying it.

10 Quick Buying Tips

1. First decide what kind of documents you will print. Color, monochrome, text, graphics or photos. If you will print black text and won't need color, you may want to go for a monochrome laser printer which offers the best text quality and speed. But if you'll print high resolution photos you may want an inkjet printer which offers the best photo and graphics quality. If you want true photo quality outputs, go for the inkjet photo printers that specialize in photo printing.
2. Inkjet printers may seem affordable, but consider the cost of ink cartridges too. Before you buy the printer, you can check the prices and yields (number of pages ink cartridge prints) of the ink cartridges and find out an estimate monthly cost according to the number of pages you will print in a month. To find out ink cartridge prices and yields you can go to www.printcountry.com. If the printer that you are looking for is not in our list, please notify us via email info@printcountry.com and we'll obtain the cartridge prices and its yield information for you to make a wiser choice. Also, most printers do not come with a printer cable that connects the printer to the computer. Include printer cable cost in your budget.
3. Laser printer toner cartridges prices will be higher than inkjet cartridges prices. But they last much longer which makes their cost per page less in the long term.
4. Bear in mind that the speeds stated by the manufacturers are often higher than real life speeds. Print speeds may vary depending on many factors such as print mode, system configuration, page coverage, document complexity and software . So a typical inkjet's print speed may vary between 1 to 28 ppm for black text and 1 to 20 ppm for color photo or graphics. A mid-range monochrome laser's print speed may vary between 6 to 25 ppm for sharp black texts and 2 to 20 ppm for black & white graphics. A typical color laser printer's print speed will vary between 6 to 20 ppm for black text and 1 to 12 ppm for color graphics.
5. If you print a large number of documents each month, make sure the printer's monthly duty cycle is high enough to cover your needs. Duty Cycle means number of pages a printer is able to handle in a month.
6. Don't spend extra money on some special features that you may not need. For instance if you are a home user you may not need a printer with an Ethernet port (most monochrome lasers have Ethernet ports).
7. Check the connectivity specs (USB port etc.) of the printer. Make sure the printer is compatible with your computer.
8. Some printers come with enough memory to print anything you'll need. These printers do not allow memory upgrades. Others that do allow memory upgrades may not come with all the memory you need. So check if the printer has enough memory for the types of documents you will print. For example if you are going to print special high-resolution documents, the printer's memory may not be enough for that and require an upgrade which may cost you money.
9. Choose a printer with enough paper capacity. So you won't have to keep adding paper. For example, if you print 20 pages per day, get a printer that holds 100 pages, so you won't need to add paper before 5 days.
10. Make sure that the manufacturer of the printer provides convenient technical support services and driver updates on their website.

Glossary

Although we haven't used all of the printing terminology below in this Guide, we have included the list of terms that may be beneficial for you while looking for printer.

Bluetooth: A technology that enables wireless communication between Bluetooth-compatible devices. It is used for short-range connections between desktop and laptop computers, pocket pc's, digital cameras, scanners, cell phones and printers.

CMYK: It represents the 4 major process colors Cyan, Magenta, Yellow and Black that create the color range of an image.

DPI: Abbreviation for dots per inch. It is a measurement of print resolution that indicates the maximum number of dots that the printer can print in a square inch.

Duplexing: Printing on both sides of a page.

Duty Cycle: Number of pages a printer is able to handle in a month.

Edge enhancement: A feature that allows a printer to fill in the space between dots on the edges of lines and of filled-in areas in graphics, creating straighter edges and making text, lines, and edges in graphics appear to have a higher resolution.

Gamut or color gamut: The range of colors a printer can produce. A gamut is defined by the ink colors a printer uses.

Gradient: An area in a graphic that changes gradually from one color or shade to another.

Infrared: A connection technology that allows wireless data transmission from a device such as digital camera directly to another device such as a computer or a printer.

USB: An input/output bus capable of transferring data at 12 megabits used for connecting peripherals to a microprocessor. It can connect up to 127 peripherals through a single port.

Input Capacity : maximum number of pages the printer can hold.

Media Size : The size range of the paper the printer can handle (letter, legal, etc.).

MFD: Multifunction Device

Output capacity: Maximum number of pages the printer can handle for one job.

Paper Trays: Number of different paper holders (one for letter, one for envelope, etc.).

Pixel: Each single dot in a digital photograph is called pixel.

PPM (pages per minute): number of pages a printer can produce in one minute.

Super-tabloid-size paper: Any paper slightly larger than tabloid size (11 by 17 inches).

Yield: Number of pages that can be printed with one particular toner or inkjet cartridge.



Our commitment: After you decide on the printer that you'd like to purchase, it is very important that you visit www.printcountry.com to find out about the cartridge prices and its yields. If the printer that you are looking for is not in our list, please notify us via email info@printcountry.com and we'll obtain the cartridge prices and its yield information for you to make a wiser choice.

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