

Comparing Digital Cameras

How do you decide what type of digital camera you want?

Your decision will be influenced by a number of factors, such as:

- Price
- Your experience in taking photographs
- Camera features and type
- Ease of use
- Portability
- Picture quality
- What the photographs are for

In this article comparisons will be made between point and shoot, bridge and single lens reflex (DSLR) cameras.

Compact Cameras

Compact cameras are also known as point and shoot cameras. They are generally lightweight and small. They are easy to slip into a pocket to carry around.

Designed for ease of use, compact cameras will have few advanced features (such as variable shutter speed or aperture control). Most have a built in flash, although this will be of low power, sufficient to light nearby subjects. Their depth of field, set by the aperture of the lens, is generally high.

Some compact cameras have an optical viewfinder. The view obtained is not exactly the same as that thrown onto the sensor because its lens is in a different position to the main lens. The back of a compact camera usually has a live viewing screen to help you to compose your picture more accurately. Most also have a zoom lens.

Compact cameras are suitable as an introductory camera for those wishing to explore their expertise in creative photography, a great way to introduce youngsters to photography and a useful camera to carry around just in case you need to take a picture.

Digital Single Lens Reflex Cameras (DSLR)

Single lens reflex cameras have a common lens path for the viewfinder and for taking a photograph. When the shutter is released, a mirror reflex opens the path for the light from the subject to the CCD.

Because the user sees the subject through the viewfinder, there is no need to have a live viewing screen, although most new DSLRs do have a live view screen that you can use to compose your picture.

These cameras usually feature interchangeable lenses and control of shutter speed and aperture if required. They are heavier and larger cameras and therefore less portable.

Using different lenses allows the photographer to concentrate on one type of shot. This may be close up (macro) photography, wide angle or extreme telephoto zoom used to get close pictures of natural history or sports subjects from a distance.

They also tend to have larger sensors (CCD) for their photographs, meaning that image quality is greater.

Other advanced features found on Digital SLR cameras include changing the resolution or ISO setting, colour temperature settings for different types of lighting, connecting an external flash, the choice of manual or auto focus, light metering and a viewing screen that not only shows your image but also analyses its light content.

Digital SLR cameras are used by most professional photographers and by amateurs with advanced skills.

Bridge Cameras

Bridge cameras fill a gap between compact cameras and DSLR cameras. Their size and weight is similar to a smaller DSLR.

Like a compact camera, they have an optical viewfinder. So they also feature a live viewfinder display that you can use to compose your picture.

The zoom lens on a bridge camera is not changeable, although some secondary lenses are available that screw onto the main lens. The range of the lens however is wider than for a compact camera, allowing macro work, wide angle and telephoto.

They have a number of advanced features, giving control over shutter speed, aperture, ISO setting and light metering. There is also the option of controlling an external flash.

The sensor on a bridge camera tends to be smaller than for a DSLR, thus giving less picture quality.

Pixels, Quality and Price

A digital camera captures an image using a sensor that is usually a charged couple device (CCD). This is in the form of an electronic chip in the camera. The CCD itself is made up of thousands or millions of pixels, each able to store one piece of information about the overall image. The more pixels there on the CCD, the more detail can be captured.

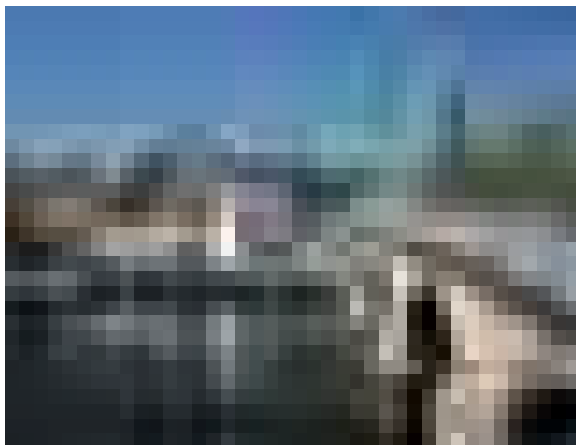


Image 40 x 30 pixels (very low resolution)



Image 768 x 576 pixels (low-medium resolution)

The information from the CCD is then stored as an electronic file on a storage card. Having a removable storage card on a camera means that you can take more photographs.

If you want a camera that will take pictures for a web-based auction or to provide small prints for a family album, then a low-medium resolution CCD will suffice. For example, the Sony Ericsson T280i camera 'phone has a 1.3 Mpx (megapixel) CCD, which is 1280 x 1024 pixels. This would provide a reasonable print measuring 4 inches x 3 inches when printed at 300 dots per inch.

Similarly an early compact camera such as the Nikon Coolpix 950 had a 2 Mpx CCD, which is 1600 x 1200 pixels. This would provide a reasonable print measuring 5 inches x 4 inches when printed at 300 dots per inch.

If you want a camera that will take pictures that can be printed as A3 posters (16.5 inches x 11.7 inches), at 300 dots per inch you will need a CCD of about 5000 pixels x 3500 pixels (17.5 Mpx)

Low resolution camera 'phones and compact cameras are the cheapest type of camera. Not only do they have a small CCD, but they also have fewer camera options. High resolution digital single lens reflex cameras have more features, too, making them more expensive.

The table below illustrates CCD size and the number of pixels on a CCD with an aspect ratio of 4:3:

Width (pixels)	Height (pixels)	Total pixels (px)	Mega pixels (Mpx)
640	480	307 200	0.3
1280	960	1 228 800	1.3
2048	1536	3 145 728	3
2560	1920	4 915 200	5
2816	2112	5 947 392	6
3264	2448	7 990 272	8
3648	2736	9 980 928	10
4000	3000	12 000 000	12

The table below illustrates CCD size and the number of pixels on a CCD with an aspect ratio of 3:2:

Width (pixels)	Height (pixels)	Total pixels (px)	Mega pixels (Mpx)
3008	2000	6 016 000	6
3456	2304	7 962 624	8
3872	2592	10 036 224	10
4272	2849	12 166 656	12
4672	3104	14 501 888	14.5
4992	3328	16 613 376	16.6
5616	3744	21 026 304	21
6048	4032	24 385 536	24.4