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Digital Camera Buying Guide

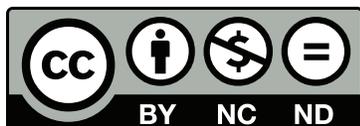
By Marlene Hielema



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Which camera should I buy?

The number one question I get asked by students, friends, relatives, blog readers, newsletter subscribers, and people I meet at parties is, “What’s a good camera to buy?” People expect me to know about all the latest trends in camera gear and have opinions about what is the best one. But what most people don’t realize is that choosing a camera is as much of an emotional decision as it is one that is based on camera features. People also think that I have a lot of spare time to go shopping with them, because they always want me to do that too!

This guide will help you understand what kinds of things to look for in a new camera. It will also help you understand your needs. My needs are totally different than your needs. The type of camera I want and need is probably a lot different than the one you need. Read this guide and answer the worksheet questions at the end and then take yourself out shopping. Go when it’s not busy. Go to a reputable camera dealer, not a big box store. I have a rant on that if you’d like to read it here: <http://www.imagemaven.com/the-lure-of-the-big-box-stores>

If after reading this guide, you’d still like me to research your next camera purchase, I will, but it will cost you a minimum of \$450. So read this instead, and save yourself some money.

The story of cousin Dan

My cousin Dan came to visit me this summer. We are quite close and we share a love of photography. One of the goals of his visit was to pick my brain and help him buy a new camera. He had his eye on a few high end compact cameras, and was really interested in the new four thirds 4:3 cameras with interchangeable lenses that also shot HD video. We sat down one day and looked up specs online at www.dpreview.com and narrowed down his search to two cameras. Then we went shopping at a good camera shop.

A strange thing happened. When Dan actually held those cameras in his hands, something wasn’t quite right, and I could tell he wasn’t ready to buy. Yes, they had good glass, good sensors and all the right features, but something was missing. So just for fun, Dan asked to see a dSLR. The price was



about the same. It had HD video, interchangeable lenses, enough megapixels to make a bill board, expansion capabilities, all the features he wanted, PLUS ONE MORE THING. It just felt better in his hands. It was meatier, easier to hold, and more of the type of camera he really wanted. It didn't take Dan long to make up his mind after that. He was going for it, and getting the dSLR!

Choosing a digital camera is a very personal decision. I was just there for moral support. When we buy expensive things sometimes we need a little help justifying the expense and someone to stop us in case we do something really stupid. In Dan's case his income is limited. He has a great job caring for an autistic boy, but the pay isn't all that great. Dan used his old digital camera for over 5 years and it had served him well, but it was a point and shoot type. He was willing to spend a little more to get to the next level, and that's what buying the dSLR did for him.

I talked to Dan a couple of weeks after he got his camera to see if he had any regrets. He said, "Absolutely not!" He also discovered that a friend of his has the same brand of camera as he does. Now he is able to learn and take practice photos with her, which is great for both of them!

Step 1: You need a camera

If you're reading this you are probably in the market for a new digital camera. First off, you need to know that I'm not recommending any brands or models in this guide. I am going to remain neutral on that front and talk more about how to figure out what you need and want from your new camera. Plus, is this camera for you, or is it a gift?

Why do you need a new camera?

Is your old camera just not doing it for you anymore? Have your photography skills outgrown what your camera can do? Identify if this is a need or a desire. There's nothing wrong with desire. It's okay to treat yourself.

I have a big full frame sensor heavy camera, but sometimes I just want a simple pocket camera for capturing life's moments. When I have the big one, I feel like I'm working, but when I have the small one, I'm having fun.



This guide is really just a set of questions that will help you narrow your search for the right camera for you at this time in your life. In the future your needs may change, and then you can go through this whole process again, but with more experience to guide you. So let's get started!

Is the camera for work or for personal use?

Do you need this for your job? Is your boss paying for the camera, or are you the boss? In that case it is a write-off, but you still need the money to buy it. If someone else is paying, find out your budget.

If it is a business purchase, is photography your way of making money? Is something else your business? Do you need your camera to support other areas of your business? They may be:

- real estate
- design
- artist
- travel agent
- blogger
- cook
- landscaper

Perhaps photography is your passion and you just want to take photos for the fun of it. Fun is good. It makes us happy. If you are happy then people around you are happy and your life is better for it.

Many people I know are extremely passionate about photography and just love getting out and taking photos. Some are nature buffs, hikers, skiers, birders, campers or gardeners who want to record these parts of their lives with photos. I spend a lot of time gardening and I never get tired of photographing my flowers and vegetables. Not a lot of people see those photos, but I still enjoy the creative process.

Are you going on a big vacation and you want a good camera to take along? Do you want a small, easy-to-pack camera for a long holiday? One that takes AA batteries, that you can get virtually anywhere. One of my friends was going on an African safari and needed help with purchasing a camera for



that trip. That was a tall order, especially since I haven't been on an African safari and had no idea what sort of conditions she'd be living under. Would there be electricity to recharge batteries? Would it be dusty? Would it be safe and secure to carry around a lot of expensive camera gear? I probably wasn't the best person to ask and the day that email came it had the plea, "Please answer asap. We're leaving in 2 days." To say the least I was not happy. (Actually that incident resulted in me writing this guide.)

Maybe you are awaiting the birth of your first child or grandchild, and you want to capture those special early years. Or maybe you're a family photographer who needs better equipment because you want to up your game.

Are you upgrading an existing camera system, or is this your first camera? Are you switching from film to digital? Do you have a compact camera that you've outgrown? Some compact cameras, especially if they are a few years old, are just not fast enough. Not that long ago lots of people had blurry photos of the ground. You remember those. You'd go to take a picture and not realize that the shutter hadn't opened yet. Then you finished taking your photo, moved your camera away from your eyes and "click" went the shutter as you dropped your arm, giving you a nice streaky photo of the ground.

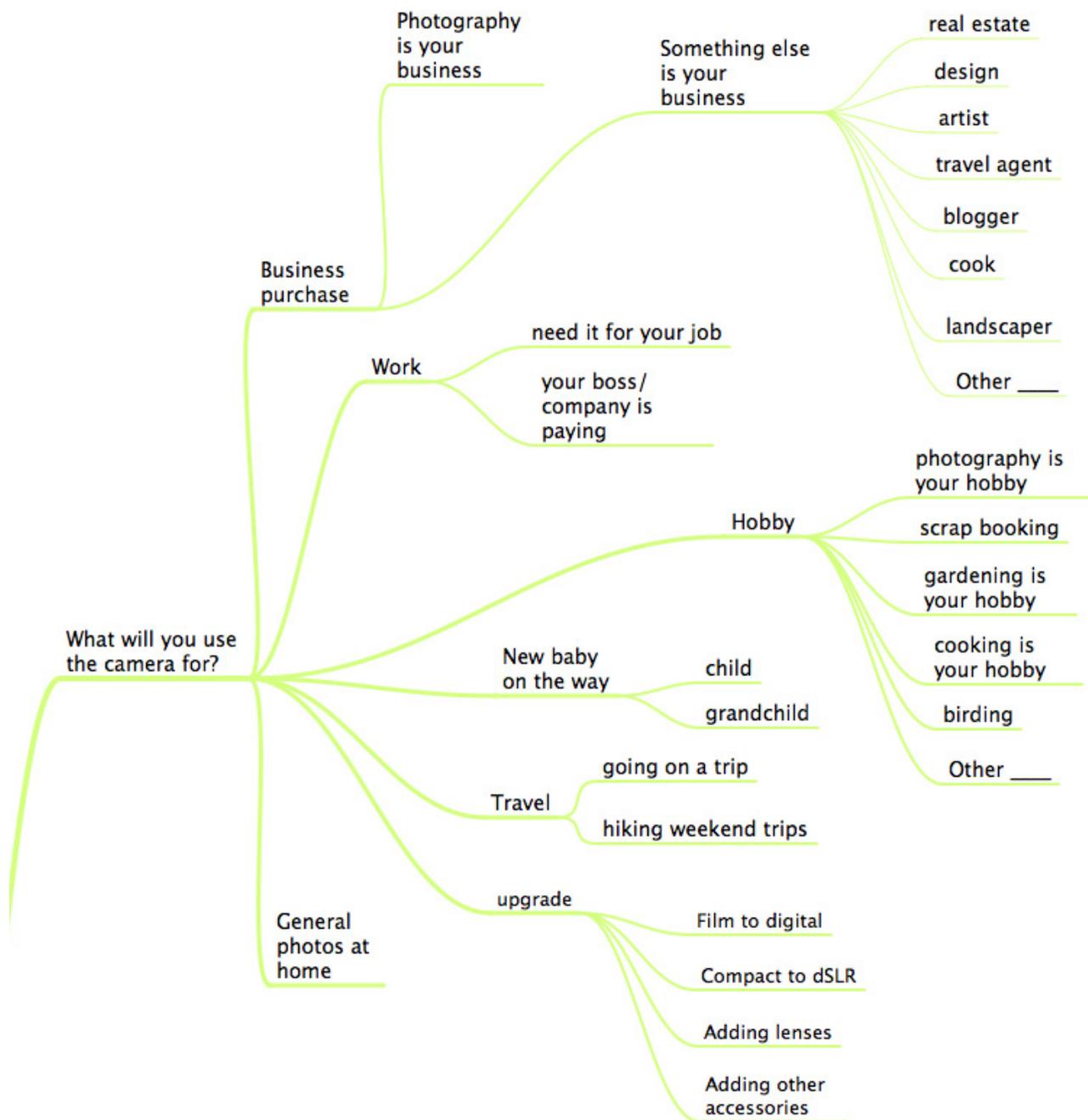
Step 2: Assess your needs

Cousin Dan did a lot of research on the new 4:3 cameras, with high quality interchangeable lenses, which looked great on paper, but then ended up buying a dSLR, based on the fact that it felt better to hold. So keep an open mind.

Take some time to think about why you need the camera and review the diagram on the following page. Circle the things that apply to you. If anything is missing, just add it.

Determining your needs is a big part of choosing a camera system. You don't want to overspend, but you also need to get something with enough features and benefits so that you don't have to upgrade too soon.

If you are buying a dSLR, or 4:3 camera take a look at the whole camera system, including lenses, flash, and other accessories. That way you can plan for the future and add pieces to your camera kit as your budget allows.



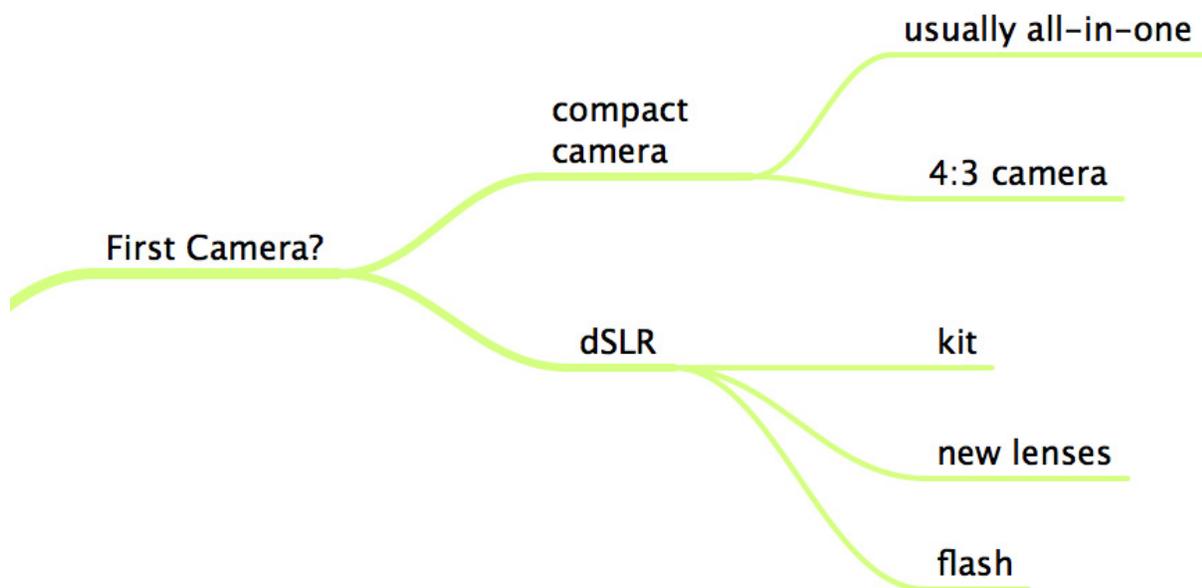


Now that you've identified your needs, you can start thinking more specifically about how to solve your main problem.

You want to buy a camera and you want to figure out which one to buy!

Is this your first camera?

Below is another flow chart with some things to consider if this is your first camera. You might not know what to choose at this point in your research, but it's good to know the possibilities. Keep these options in the back of your mind.



Step 3: Research

Referrals

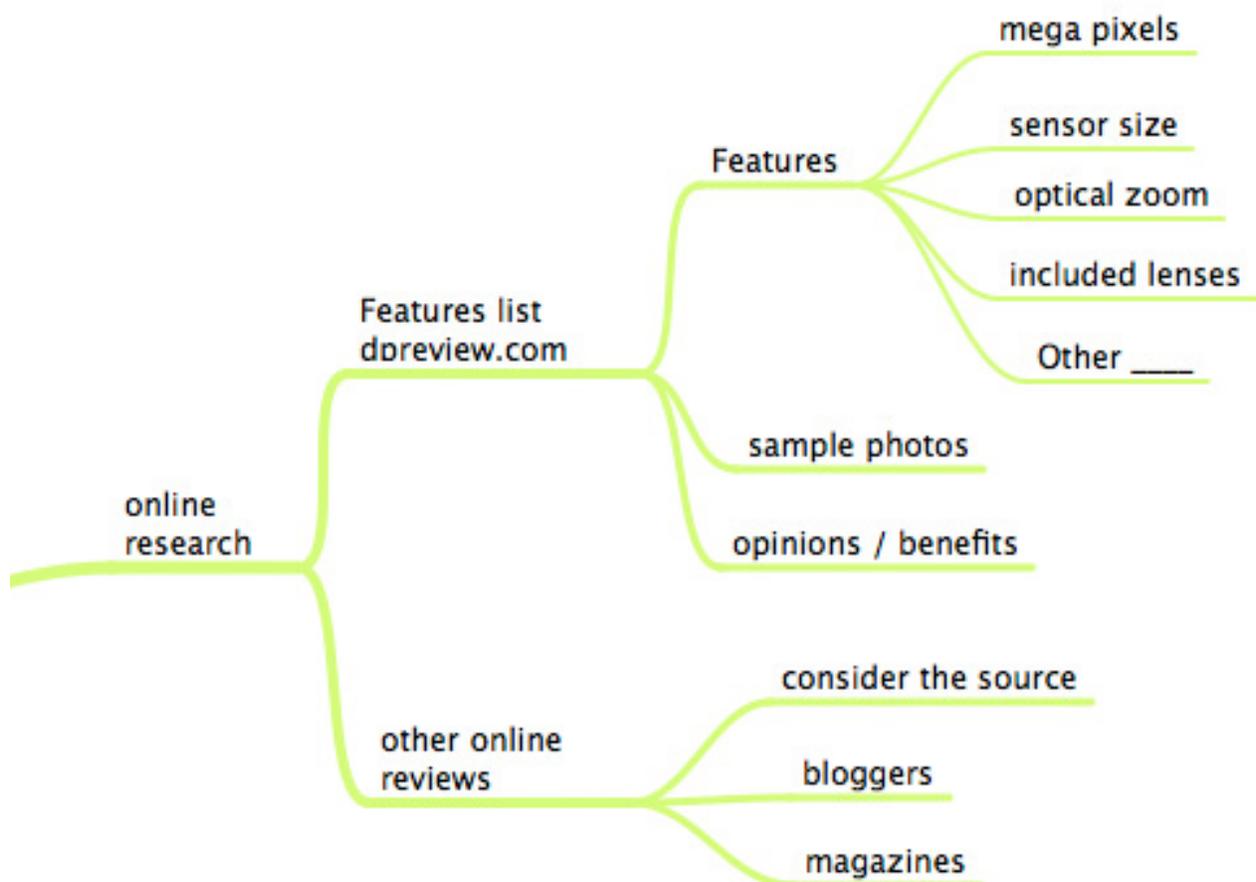
The first thing you should do is talk to people who use cameras. Don't ask them what they recommend. Instead, ask them what they like about their own camera. Discuss the features they like and see if those will benefit you. Get some referrals from people who like their camera. Remember they can't answer the "What camera should I buy?" question any better than I can.



Referrals can come from many sources including photographers in your field, friends and family, photo instructors, magazines, and of course online. Photography bloggers are a great source for hands-on product reviews. If you are doing online research make sure the site and reviews are real reviews and not just advertorial pieces aimed at making you buy the gear being reviewed.

My favourite place to compare camera specs is www.dpreview.com. It provides a full list of features of every single digital camera that has ever been on the market. It's also a great site to trace the evolution of digital photo technology since the early 1990's.

The following chart lists some of the features you should consider when conducting both online and offline research.





Features explained

Perhaps you're looking at that features branch and thinking you don't even know what all those things mean. Read on to learn about the more important features, and what to look for when you read the feature specs.

Mega pixels

Sensor size

Lenses and optical zoom

These are the most important features to compare, and are often the ones that determine how expensive a certain camera is going to be.

Mega pixels

Pixel is short for **picture element**. It's the smallest part of a digital file. A camera sensor contains a lot of pixels. Mega means million, so mega pixels (MP) is millions of pixels.

Mega pixels is a measurement of the area on your digital camera sensor. It is a width x height measurement.

Here's an example:

When I open up the largest file on my camera I see it has a size of:

4000 x 3000 pixels on the width x height

Which = 12,000,000 (12 million) so I have a 12 MP camera.

These days it is typical for consumer grade cameras to have anywhere from 7 MP to 21 MP. Really high end medium format cameras go up to 48 MP and beyond. It seems that every month a new camera is coming out with even more mega pixels. But that's not always important. Read on to see why.



Sensor size

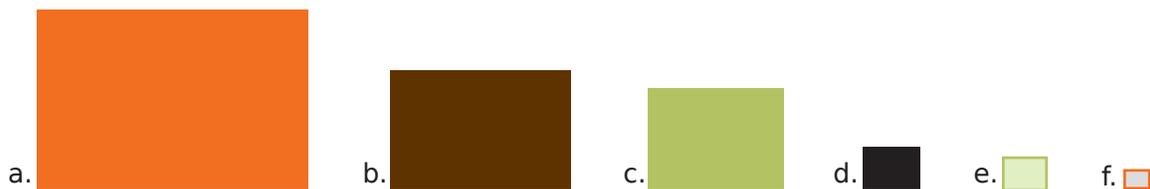
Mega pixels don't matter that much after a certain point. What matters more is sensor size. I'd rather have a larger sensor with 12 MP, than a smaller one with 21 MP, because the pixel density is lower.

The website www.dpreview.com, that I mentioned earlier, lists the sensor sizes of all cameras. This is really important to note.

Remember my friends who were going on the African safari? Well they had narrowed down their research to two cameras. The first thing I did was go to dpreview.com and check the specs. The cameras were virtually identical in all features, except that the sensor size in one was about 5.75 mm x 4.31 mm. Yes, you read that right! That's about the size of your baby finger nail. The other camera had a sensor double the size, which is still very small. If a sensor is really small, those millions of pixels are there, but they are tightly packed together, resulting in high pixel density. More on pixel density later.

For comparison, the picture area of 35 mm film is 36 mm x 24 mm, and that's the size a full frame sensor is based on. For dSLRs and compact digital cameras, sensor sizes go down from there.

Here is a visual representation of the sensor sizes of many cameras that are currently on the market.



- a. Full frame dSLR 36 x 24 mm
- b. Entry level dSLR 24 x 16 mm
- c. High quality 4:3 camera 18 x 13.5 mm
- d. A typical compact camera 7.6 x 5.7 mm
- e. Another typical compact camera 5.75 x 4.31 mm
- f. iPhone camera 3.63 x 2.73 mm



Pixel Density

The smaller the sensor, and the higher the mega pixels, the more dense the pixels will be in that space. Look for a combination of mega pixels and sensor size that gives you the lowest possible pixel density in that camera class. All other things being equal, the lower the pixel density the better your photos will be and the less noise you will have in your photos.

Typically though, larger sensor cameras cost more. So it could all come down to your budget and what quality you expect and need from your camera. I have two cameras that both capture 12 MP files, but one sensor is full frame (a) and the other is a compact camera with size (d) sensor.

My full frame camera has a pixel density of 1.5 MP/cm²

My compact camera has a pixel density of 28 MP/cm²

Shocking isn't it! Needless to say I was very disappointed with the image quality of the smaller sensor camera when I first got it. But then again, it was 10% of the price of the full frame sensor camera and it fit in my pocket. You'll have to decide what's most important to you and find your own:

sensor size vs. budget vs. camera use comparison

On a good note, sensor quality rises and camera prices fall continually.

Lenses and optical zoom

When shopping for a compact camera, pay attention to the optical zoom. Optical zoom is the actual focal length range of the lens. Don't be fooled by the term digital zoom, which is equivalent to taking your photo and cropping it to get closer to a faraway subject.

Zoom lenses offer a range of focal lengths. On a dSLR lens it's easy to see the range of the zoom lens. Typically, your entry level camera will have a lens bundled with it in the 18 to 55 mm zoom range. Those numbers are right on the zoom control ring and also on the front of the lens.

With a compact camera the terminology is a bit different. You may have a 5x zoom, or a 10x zoom. Multiply the lowest focal length by 5x or 10x and that



is your zoom range. Here's a couple of examples:

5 x 28 mm = 140 mm, which is a range of 28 to 140 mm

10 x 28 mm = 280 mm, which is a range of 28 to 280 mm

The first lens (5x) is a wide angle to medium telephoto lens, and the second lens (10x) is a wide angle to long telephoto focal length lens. Usually the more range in the optical zoom a camera has, the more it costs, all other things being equal.

Just a note about these numbers. On a compact camera when actually measuring the lens, the focal length might be much smaller. If you currently have a compact camera, look at the lens from the front. You might see some numbers like 6.3 mm to 18.9 mm (for a 3x zoom). Photo industry standards use the 35 mm film (or full frame sensor) equivalent when describing focal lengths, and most photo education about focal lengths is based on those standards as well. Your camera manual probably describes your lens focal length using 35 mm equivalent also, so you might want to look it up.

Narrow your search

When checking out the features of various cameras you are interested in, your research should definitely include mega pixels, sensor size, optical zoom range (for compact cameras), and which detachable lenses (if any) are included with dSLR cameras and some of the higher end 4:3 cameras. A good place to start with that research is www.dpreview.com.

Magazines, photography bloggers, friends and family are also good sources of research.

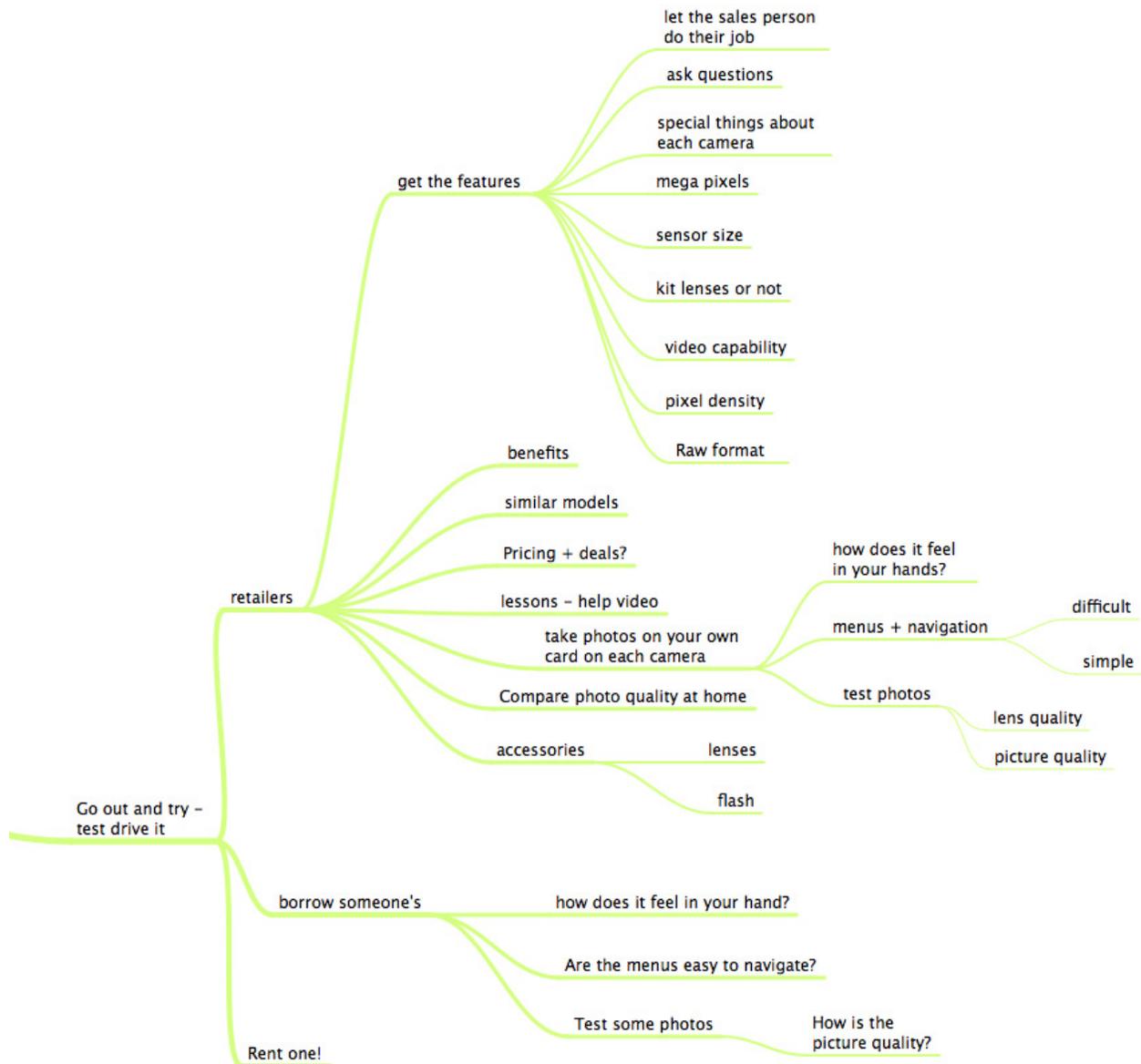
Hopefully by the time you've figured out what your needs are, decided on which format of camera you think you want, asked people for referrals, read reviews and checked specs, you can narrow your search down to two or three possibilities.

**The next step is the fun one.
You get to try out some cameras.**



Step 4 - Test drive

Don't skip this step! Even if you are buying your camera online, it's always a good idea to try it out. There are a few options. You can borrow someone's, go to a camera store and try one there, or rent one for a weekend. Here's a diagram to help with this process.





Get the features

Even though you've done all the research, let the salesperson do their job. Let them tell you about each of the cameras you want to try. In the case of cousin Dan, he did a lot of research ahead of time, so he was well equipped and understood the terminology so that he could ask useful and intelligent questions.

If you go to a reputable camera dealer, you shouldn't have to worry about the slimy salesperson type selling you something that doesn't fit your needs. Of course they may try to up-sell you, but you may also find out about other similar cameras, other features, new cameras, accessories or package discounts.

What are the benefits?

Hopefully the sales person will also be able to tell you about some of the benefits of one camera over another, or of other cameras in the same price range. This is really important because you don't always understand the benefits from a list of specs. Ask the sales person if they have tested out the camera for themselves.

There are usually unlisted benefits of buying from a reputable camera dealer instead of Costco or an electronics store. The camera shop I buy my equipment from gives away free training videos with every dSLR camera. They also offer training classes, and support the local photo community.

Take some test photos

Now ask to have a look at the camera and hold it for yourself. How does it feel in your hands? Sometimes that is all it takes to make up your mind. That's what happened to cousin Dan. Is the camera heavy or too light? A heavy camera is more steady to hold, but a small light camera is great for travelling.

How are the navigation menus set up? Are they simple or difficult to understand? Keep in mind if digital photography is new to you, and this is your first camera, everything may seem difficult at first, so you may not be able to determine the answer to those types of questions yet. That's where the



referrals come in. Ask people if the menus of a certain camera are easy to navigate. Are the buttons big enough? I've heard several complaints that the camera buttons are too small, and the typeface on the menus are too small, especially for those who are far sighted. Camera reviews and the sales person are also good sources of this kind of information.

If possible, take some test photos for yourself. Ask if you can go outside to do your test shots. If you shop at a slow time of the day, the sales staff should have no problem with you doing this. They will likely accompany you though, especially if they don't know you. They may welcome a chance to get out of the store for a few minutes, so don't be afraid to ask. I do this myself every time I buy a camera or lens.

Take along a memory card, or buy one when you're there, and take photos with all the cameras (and lenses) you are testing.

Try to compare apples to apples. Use the same focal length, ISO, and file quality for each photo. Go home and compare the photo quality on your computer. Enlarge the photos to 100%. Look at the picture quality and look for noise in the shadow areas. Look for clues to determine the quality and sharpness of the lens. In photography, you generally get what you pay for, so don't expect great things from a \$100 camera. But that \$100 camera will probably give you much better quality than your cell phone camera with its sensor size of 3.63 x 2.73 mm!

If you borrow or rent a camera, go through the same testing process. The only difference is that you will have a lot more time to do your testing.

Summary

When there were fewer digital cameras on the market it was easier to recommend something to a friend or one of my students. Now, with so much segmentation in the market, and so many features, it takes a bit of research to know which type of camera system is going to work best for each person.

I always recommend doing the research yourself instead of relying on the opinions of others. Asking other people is a good place to start, but by honestly assessing your needs, identifying the types of photography you do, giving yourself a budget, and trying out the cameras, you should be able to find the perfect camera for you!



Worksheet

Your needs. Write down the items you circled on page 8.

What is your budget?

\$\$ _____

What type of camera do you think you might want?

- dSLR (make & model) _____
- 4:3 (make & model) _____
- Compact (make & model) _____

What features do you want or need most?

- How many mega pixels? _____
- Sensor size? _____
- Pixel density _____
- Lenses — zoom range _____
- Video capability? _____
- Raw format? _____

Test photos. Consider the following for each camera you try:

- Camera handling
- Navigation
- Noise
- Sharpness
- Overall impression



About Marlene Hielema - ImageMaven



I teach people how to *really* use their digital camera, and how to take better pictures.

About you

You wish to understand your digital camera better, and learn some things about composition, light and image editing, so that you can start taking your own photos for personal or business use.

This is how I can help you

I Teach People. I give you solutions to digital photography problems that you can really use. I do this in various settings and formats which include:

- blog posts
- free photo lessons — you can sign up for those using the form on the sidebar on my website www.imagemaven.com
- do-it-yourself (DIY) downloadable tutorials
- facilitated online learning environments
- custom workshops
- and classroom instruction — currently at SAIT in Calgary

My areas of expertise:

- digital camera set up
- photographic theory
- digital image editing
- digital output and printing
- working with camera RAW files
- Photoshop for photographers

**Follow me on Twitter
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www.imagemaven.com