



## Chapter 4

# Digital Photography



# Lessons

- **Lesson 4.1:** Reviewing Cameras
- **Lesson 4.2:** Taking Photographs
- **Lesson 4.3:** Adjusting Settings



# Learning Outcomes

- **4.1:** Demonstrate knowledge of camera basics
- **4.2:** Transfer images from a digital camera to a computer
- **4.3:** Use good composition skills to take photographs
- **4.4:** Photograph images with several different techniques
- **4.5:** Use camera settings to modify an image
- **4.6:** Adjust camera's white balance to improve an image



# DSLR versus Point and Shoot

- Digital cameras fall into two basic categories:
  - **DSLR (digital single lens reflex)**—a camera that uses a mirror system to capture an image
  - **Point and shoot**—a camera designed to be easy to use with preset functions
- DSLR cameras are designed for the professional or serious amateur photographer who is most interested in image quality
- Point-and-shoot cameras are designed for the more casual photographer who is looking for ease of use and convenience

# DSLR versus Point and Shoot (continued)

- DSLR cameras:
  - Better image quality
  - More adaptability
  - Faster performance
  - More manual control
  - WYSIWYG
- Point-and-shoot
  - Less expensive
  - More portable
  - Easier to use



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# Camera Features

- Shooting Modes

- A **jog (or mode) dial** is a type of wheel or dial on a camera that makes it possible to scroll through setting options by rotating

ICON	FEATURE OR MODE	FUNCTION
 or Auto	Auto Mode	Use this default mode for shooting general images. The camera will select all of the settings for you.
	Manual Mode	Select this mode to control all of the camera settings.
	Macro (or Close-Up) Mode	Use this mode for shooting close-ups of small items, such as flowers or insects.
	Landscape Mode	Use this mode for shooting wide scenes, such as a field or a skyline.

camera, tulip & mountain icons: Ritu Manoj Jethani/Shutterstock.com, manual icon: Cengage Learning



# Camera Features (continued)

- Megapixels
  - A unit of measure equal to one million pixels
  - On a digital camera, the megapixels on an image sensor react to and record light to produce an image
  - The number of megapixels indicates the maximum image resolution of a camera



# Camera Features (continued)

- Optical versus Digital Zoom
  - With **optical zoom**, the camera lens physically moves to magnify your subject and make it appear closer
  - With **digital zoom**, the digital image sensor crops the area around your subject and digitally enlarges the subject (through interpolation of pixels) to fill the frame



# Camera Features (continued)

- File Types

- The default file format for most digital cameras is JPEG (.jpg)
- Some professional or serious amateur photographers prefer cameras that can save an image in a raw file format; raw files:
  - include all of the image data without any compression or processing
  - must be processed by the photographer using conversion software on a computer

# New Digital Camera Category



- Mirrorless interchangeable lens cameras (MILC) are a hybrid of compact and DSLR cameras
- Do you think the new hybrid cameras could eventually replace most point-and-shoot and DSLR cameras?
- Why or why not?



# Care of the Camera

- Keep the lens area clean by using a soft cloth designed especially for camera lenses
- Keep the lens cap on or the shutter closed (usually by turning off the camera) when not using the camera
- Beware of dropping the camera even from a short distance such as onto a counter
- Never force a memory card in or pull it out if there is resistance
- Never force an uncooperative switch; instead find out why the latch or door is unable to function
- Never throw rechargeable camera batteries in the trash: they can leak toxins into the environment



# Taking Photographs

- **Candid photographs** are unplanned photographs taken with little or no preparation or posing
- **Photographic composition** is the selection and arrangement of design elements within a photograph
- Elements are the building blocks and composition is the arrangement of the blocks to create a final product
- Elements of design include things like lines, shapes, color, and lighting
- Principles of composition include unity, balance, perspective, and emphasis

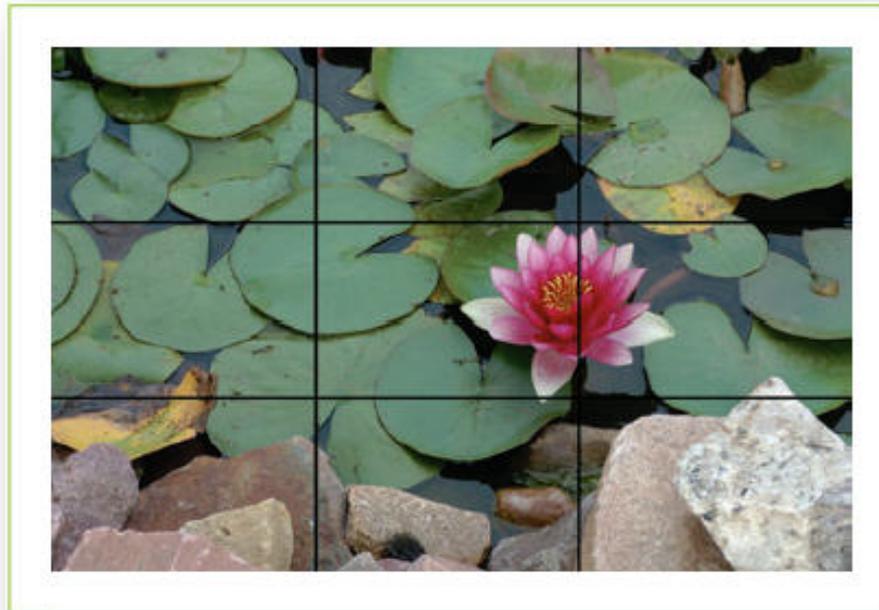


# Focal Point

- A **focal point** is the element within an image on which the viewer's eye focuses
- It is the most important element on which you want a viewer to focus
- Use simple principles of composition to organize other elements in the image to direct your viewer's attention to the focal point of the image

# Rule of Thirds

- The **rule of thirds** states that an image should be divided into an imaginary grid of nine equal parts and that the focal point should be placed at or close to the point where the lines of the grid intersect



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# Framing

- **Framing** is using elements in a scene to visually surround your subject and make it stand out
- One key to framing is to make sure that the frame does not draw too much attention to itself; the objective is to focus on the subject



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# Leading Lines



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- **Leading lines** are actual or suggested lines in an image that draw a viewer's eye through an image in a specific direction, usually to the focal point
- Lines can be straight, curved, vertical, horizontal, or even diagonal



# Cropping

- **Cropping** in photo composition means including all of the elements you want and excluding anything you don't want
- Remove unnecessary clutter in the background or surrounding your subject that will distract from your focal point
- Fill the frame, eliminating unwanted elements, and allowing the subject to occupy more space

# Directional Lighting

- **Front lighting** comes from behind the camera and illuminates the front of the subject, producing few or no shadows
- In **side lighting**, light is directed at a subject from either the left or the right side, creating lots of shadows and highlights
- In **back lighting**, the light shines from behind the subject, toward the camera; shape and outline of a subject are emphasized, but other details are mostly lost in shadow



Photos from Shutterstock.com - rocks: JFulmer; flower: hjschneider; horse: Kondrashov Mikhail Evgenevich



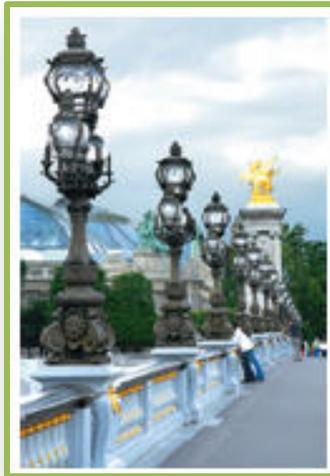
# Depth

- Clues the brain uses to perceive an object as three-dimensional:
  - The contrast between light and shadow
  - The size and relative position of items, or perspective
- Cameras takes three-dimensional scenes and record them on the flat, two-dimensional surface of a photograph
- There is no third dimension of actual depth in a photograph; the brain uses the same visual clues in a photograph to perceive the **illusion of depth**

# Depth (continued)

- Perspective

- In photography, what makes items look larger and closer or smaller and farther away
- Can be used to create depth and express a story about a subject



Elena Elisseva/Shutterstock.com

- Angles

- Shooting from a low angle makes subjects appear bigger and more important
- Shooting from a higher angle diminishes a subject



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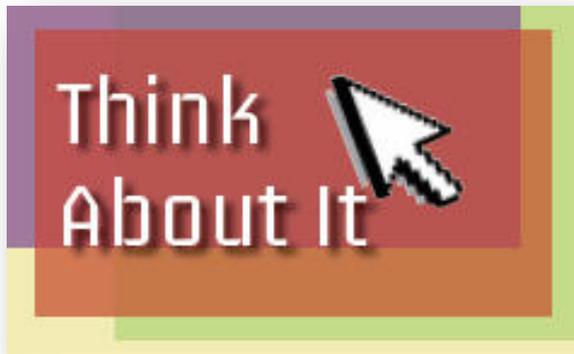
# Depth (continued)

- Foreground, Middle Ground, Background
  - A way to create depth in your photos is to make sure you have elements in three dimensions:
    - The background
    - The middle ground
    - The foreground
  - Add depth by adding another element in front of your main subject



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# Film Manufacturers



- The rise of digital photography means challenges for film manufacturers such as Kodak, Fuji, and Polaroid
- How did these businesses each respond to these challenges and what was the outcome?
- What can other industries learn about being ready for technological advances?



# Basics

- Three components that a camera uses to capture an image:
  - **Shutter speed** (how fast the lens opens and closes)
  - **Aperture** settings (how wide the lens opens to let in light)
  - **ISO** (speed at which the “film” captures an image)
- Many cameras provide pre-set special image types such as a **macro** (close-up) setting, a distance setting, or a sports setting



# Basics (continued)

- Shutter Speed
  - Adjust to achieve specific and desired effects
- Aperture
  - Changing the aperture settings determines the **depth of field**
  - Measured in f-numbers (often referred to as fstop or f-ratio)
- ISO
  - Low ISO settings capture an image sharply with few extra pixels or graininess
  - High ISO settings work hard to capture an image in low light but the result is an image that has artifacts

# White Balance

- Light is described as having various **color temperatures** (measured in **Kelvins**)
- **White balance** means that the camera attempts to make white look truly white without the yellowness of a candle or the blue of an overcast day

COLOR TEMPERATURE	LIGHT SOURCE
1000–2000 K	Candlelight
2500–3500 K	Incandescent Bulb
3000–4000 K	Sunrise/Sunset
4000–5000 K	Fluorescent Bulb
5000–5500 K	Camera Flash
5000–6500 K	Clear Day
6500–8000 K	Moderately Overcast Sky
9000–10000 K	Shade or Heavily Overcast Sky

# Maintaining Perspective



- What are some common challenges faced by people who work in multimedia-related fields (such as tight deadlines or changing technology)?
- Which of these would you classify as serious problems?
- Which are simply minor annoyances?

# Key Concepts

- Digital cameras fall into two categories: point and shoot and DSLR
- Some people choose DSLR cameras for high image quality, more adaptability, faster performance, and more manual control as compared to point-and-shoot cameras
- Point-and-shoot cameras are generally less expensive, less bulky, and easier to use than DSLR cameras
- A wide range of shooting modes on a point-and-shoot camera can help you take better pictures in a bigger variety of situations
- Cameras measure the possible image size by using megapixels. You should consider how you will use images when determining how many megapixels you need in a camera
- In optical zoom, the camera lens actually moves to magnify a subject; in digital zoom, the image processor crops the area around the subject and used interpolation to make it appear bigger



# Key Concepts (continued)

- Most digital cameras save images as JPGs, which are relatively small and easy to use in a variety of settings, but use lossy compression. Some cameras offer a raw data file option, which is stable and offers more control over settings, but must be converted before images are editable and usable
- Digital cameras must be treated carefully to prevent damage
- Photographic composition requires the photographer to consider the focal point, the rule of thirds, framing, leading lines, and depth
- Shutter speed, aperture, and ISO determine the way a photograph is captured