Lighting and Studio Photography
Version 2.0

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LIGHTING BASICS

Small light sources produce hard shadows
Large light sources produce soft shadows

⇒ N.B. Distance also affects effective size.
**Types of Lighting**

**Sunlight**
- Direct sunlight is hard (point source)
- Sky light is soft

**Tungsten/halogen lighting**
- Electricity heats up filament which glows white hot
- Small hard source, but easy to add modifiers to direct light
- High power usage and heat output

**Fluorescent lighting**
- Around 5 times more efficient than tungsten
- Complex/unpredictable colour spectrum
Types of lighting

Flash lighting

- Very short high-intensity flash of light — much brighter than practically achievable with continuous lighting
- Must be synchronised with camera shutter
  - hotshoe or X-sync connector
- Sometimes combined with a continuous modelling light to allow the photographer to visualise the lighting
Direction of light

From the front:
- no shadows, flat

From above:
- soft light can be useful for fill, like a cloudy sky
- hard light casts harsh shadows downwards

From the side:
- emphasises form and texture

From behind (rim lighting):
- emphasises the outline of the object
- typically use a grid to avoid light hitting the lens directly
SHADOW CONTRAST

A single light produces very deep shadows in areas where it does not reach.

Reducing shadow contrast:

- Add a reflector to bounce light into the shadows
- Move the light further away
- Add a less powerful light to fill in the shadows (fill light)
We use light modifiers to:

→ change the apparent size and shape of a light source
→ change the colour of a light source
→ control where light falls

Examples of light modifiers:

→ umbrella (reflective or shoot-through)
→ softbox
→ diffusion screen
→ snoot
→ barndoors
→ flag or gobo
→ honeycomb grid
→ colour gels
EXPOSING FOR FLASH

Maximum shutter speed is the X-sync speed

➔ Depends on camera, typically around 1/250s
➔ At faster speeds, the shutter is never fully open, so only part of the frame would be lit by the flash
➔ Some flash systems have a high-speed sync mode which pulses the flash

No minimum shutter speed

➔ First-curtain flash: flash fires after shutter opens
➔ Second-curtain flash: flash fires before shutter closes

Shutter speed has no effect on flash exposure

➔ Flash much shorter than exposure time
➔ Instead, aperture controls flash exposure
FLASH QUICK START GUIDE

➜ Set camera to manual
➜ Set aperture depending on desired depth of field
➜ For flash-only exposure:
  ➜ Set shutter speed below X-sync speed (say 1/200s)
  ➜ Set ISO speed as low as possible
➜ Alternatively, when combining flash with available light:
  ➜ Set shutter speed and ISO speed for desired ambient exposure
➜ Set flash power to obtain correct exposure (your camera/flash system might do this automatically, but you may need to adjust Flash Exposure Compensation)
COLOUR TEMPERATURE CORRECTION

Daylight colour temperature $\approx 5500K$
- Somewhat lower (more orange) at sunrise and sunset
- Somewhat higher (more blue) in shade

Tungsten colour temperature $\approx 2700K$
- Much lower (more orange) than daylight

If using one type of light, set white balance appropriately.
- If using film, either use correct film or use a filter.

If mixing different types of light, consider placing colour gel over one light.
- Orange gel (CTO): converts from daylight to tungsten
- Blue gel (CTB): converts from tungsten to daylight
PORTRAIT LIGHTING

Broad lighting
- Key light on camera-facing side of face
- Tends to widen appearance of face

Short lighting
- Key light on side of face turned away
- Tends to slenderise face

Butterfly/glamour lighting
- Key light on nose axis
- Flattest lighting, minimises nose