STAR PHOTOGRAPHY

My attempt!

500 rule for sharp stars

Max time = $\frac{500}{\text{focal length x crop factor}}$

$= \frac{500}{12 \times 2}$

= 21 seconds

So my 39 seconds was far too long.
My stars are not sharp they formed a streak.

I was more concerned with light painting the buildings.
In fact I only really saw the stars when I processed the image.

ISO 200, 12mm, f/2.8, 39 seconds

Settings for Stars - Starlight

It's all about getting enough **starlight** onto the sensor

- Clear night!
- Find a dark sky area (minimal light pollution) e.g. River Murray Dark Sky Reserve.
- Avoid too much Moonlight
- Red light torch Or torch covered in red cellophane.
  - So you can see your camera without affecting the night adjustment of your eyes.

Settings for Stars – Camera Settings

- Tripod
- Wide, fast lens. A fast lens is one with a large aperture F2.8 (maybe F4) or lower.
  - Manual mode
  - Widest aperture
  - High ISO e.g. 1600 (preserves the colour of the stars)
  - Calculate speed
- Manual Focus
  - Move focus to infinity
  - Look at brightest star and fine tune till that star is a pin point.
    - Use focus magnification if you have it (x7 or x10)

Or

  - Olympus Starry Sky AF
- Cable release, shutter delay etc. to trigger shutter.
- **Trial Shots – review and adjust**

Settings for Star Trails – three methods

1. One very long exposure (at least 30 minutes)
2. Many shorter exposures that are then photo stacked.
3. Olympus – Live Composite
   - The first photo is a base exposure
   - As other photos are taken, only new light is registered so the trail is made but any buildings etc. that are static are not blown out.
   - Live View enables you to see the image as it is being built up.
   - Computer in the camera stacks photos together into one image.

Star Trails - One shot

- Battery fully charged!
- Lens that lets in as much light as possible – e.g. f/2.8 or wider.
- F2.8, ISO 100 or ISO 200 or 320 if f4 or f5.6
- Test shot for 30 seconds to see if stars get recorded in the frame.
- More test shots until you have a good image.
- Increase shutter speed to around 10 to 15 minutes. Try more test shots by doubling the exposure time till you are satisfied.
- Need a minimum of 60 minutes exposure for good trails.

Information from https://www.lightstalking.com/how-to-photograph-star-trails/

Star Trails – Image stacked (shorter exposures)

- Wide aperture
- ISO 320- 640 or higher -know what ISO you are willing to accept in your camera
- Noise reduction off
- Test shot – adjust
- Set up intervalometer in your camera.
- Minimum of 50 exposures for short star trails, 200-300 for decent star trail.
- Stack images using Image Stacker or DeepSkyStacker.

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Stars Post Processing

- Brighten
- Adjust white balance
- Noise reduction
- Multi-shot panoramas then stich in Lightroom or Photoshop