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| **Unaided Observations** | | **Aided Observations** | |
| Choose one task from this list. | | Choose one task from this list. | |
| **A1** | **Lunar Features** Produce a series of naked eye drawings of three lunar surface features. Use them to show their changing appearance at different lunar phases. | **B1** | **Lunar Features** Produce a series of telescopic drawings and/or photographs of three lunar surface features. Use them to show their changing appearance at different lunar phases. |
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| **A2** | **Meteor Shower** Observe a meteor shower. Record meteor trails on a drawing of the stellar background from sketches and estimate magnitudes of the meteors. Locate and show the position of the radiant. | **B2** | **Meteor Shower Photography** Use long-exposure photography to obtain photographs of a meteor shower. Estimate magnitudes of the meteors. Locate and show the position of the radiant. |
| **A3** | **Drawings of Lunar or Solar Eclipse** Using a suitable method of observation )lunar - direct, solar - pinhole projection) produce a series of drawings showing the progress of a lunar or solar eclipse.  **WARNING: The Sun must NOT be viewed directly, with or without optical aids.** | **B3** | **Photographs of Lunar or Solar Eclipse** Using a suitable method of observation )lunar - direct, solar - pinhole projection) produce a series of photographs showing the progress of a lunar or solar eclipse.  **WARNING: The Sun must NOT be viewed directly, with or without optical aids.** |
| **A4** | **Constellation Drawings** Observe and make detailed drawings of three different constellations, recording dates, times, seeing and weather conditions and noting colours (if possible) and magnitudes by comparison with reference stars. | **B4** | **Constellation photography** Observe and make detailed drawings of three different constellations, recording dates, times, seeing and weather conditions. Use the photographs to identify colours and magnitudes by comparison with reference stars. |
| **A5** | **Drawings of Celestial Events** Produce a series of drawings to record the passage of a suitable celestial event, for example a transit, occultation or comet. | **B5** | **Telescopic Drawings or Photographs of Celestial Event** Produce a series of telescopic drawings or photographs to record the passage of a suitable celestial event, for example a transit, occultation or comet. |
| **A6** | **Shadow Stick** Use a shadow stick to record the direction of the Sun at different times on at least two days and hence determine (a) the time of local noon and (b) the observers longitude. | **B6** | **Sundial** On at least three widely-spaced dates, compare the time shown on a correctly-aligned sundial with local mean time. Use these data to determine the accuracy of the sundial used. |
| **A7** | **Levels of Light Pollution** Use repeated observations of the faintest stars observable to quantify the effect of light pollution at two different sites. | **B7** | **Photographic Measurement of Levels of Light Pollution** Use the magnitudes of the faintest stars visible in long exposure photographs to quantify the effect of light pollution at two different sites. |
| **A8** | **Sunspots** Use a pinhole to **project** an image of the Sun onto a suitable background and observe and record sunspots over a sufficiently long period of time to determine the Sun's rotation period. **WARNING: The Sun must NOT be viewed directly, with or without optical aids.** | **B8** | **Sunspots** Use a small telescope to **project** an image of the Sun onto a suitable background and observe and record sunspots over a sufficiently long period of time to determine the Sun's rotation period. **WARNING: The Sun must NOT be viewed directly, with or without optical aids.** |
| **A9** | **Light Curve of a Variable Star** Use a series of naked eye estimates of the magnitude of a suitable variable star over a sufficient period of time to determine the period of the star. | **B9** | **Light Curve of a Variable Star** Use a series of telescopic estimates of the magnitude of a suitable variable star over a sufficient period of time to determine the period of the star. |
| **A10** | **Estimating Stellar Density** By counting the numbers of visible stars within a certain area of sky, estimate and compare the density of stars in the sky, parallel with and perpendicular to the plane of the Milky Way. | **B10** | **Measuring Stellar Density** Use binocular/telescopic observations or original photographs to measure and compare the density of stars in the sky, parallel with and perpendicular to the plane of the Milky Way. |
|  |  | **B11** | **Drawings of Messier Objects** Use binoculars/telescope/robotic telescope to produce detailed drawings and/or photographs of at least three Messier/NGC objects. |
|  |  | **B12** | **Measuring the Sidereal Day** Take long-exposure photographs of the circumpolar stars around Polaris or the south celestial pole and use them to determine the length of the sidereal day. |