Observational tasks

Each of the following observational tasks sets out a problem, which can be solved by a programme of observations. Completion of these tasks will give students an understanding of the cycle of astronomical observation and help them to develop the key observational skills. Centres must ensure that each student completes at least one unaided and one aided observation task from the following list. Students may not select both of their observational tasks (unaided and aided) from the same row on the observational task table. For example, not A1 and B1.

Unaided tasks		Aided tasks	
A1	**Demonstrate the changing appearance of lunar features** Use a series of naked-eye drawings of individual lunar features to demonstrate their changing appearance during the lunar phase cycle	**B1**	**Demonstrate the changing appearance of lunar features** Use a series of telescopic drawings or photographs of individual lunar features to demonstrate their changing appearance during the lunar phase cycle
A2	**Finding the radiant point of a meteor shower** Use naked-eye drawings of the paths of meteors to determine the radiant point of a meteor shower	**B2**	**Finding the radiant point of a meteor shower** Use photographs of the paths of meteors to determine the radiant point of a meteor shower
A3	**Assess the accuracy of stellar magnitude estimates** Using reference stars, estimate the magnitude of a range of stars from naked-eye observations and thus assess the accuracy of this technique	**B3**	**Assess the accuracy of stellar magnitude measurements** Using reference stars, estimate the magnitude of a range of stars from photographs and thus assess the accuracy of this technique
A4	**Estimate a celestial property using drawings of a suitable event** Use naked-eye drawings or measurements of a celestial event such as a comet or eclipse to determine a celestial property such as the relative size of the Earth and Moon	**B4**	**Measure a celestial property using telescopic drawings or photographs of a suitable event** Use telescopic drawings, measurements or photographs of a celestial event such as a comet, transit, eclipse or occultation to determine a celestial property such as the Earth-Sun distance or the orbital period of a Jovian satellite
A5	**Estimating levels of light pollution** Use estimates of the magnitude of the faintest stars visible with the naked eye to conduct a survey of the astronomical effects of light pollution in an area	**B5**	**Measuring levels of light pollution** Use estimates of the magnitude of the faintest stars visible on photographs to conduct a survey of the astronomical effects of light pollution in an area

Unaided tasks		Aided tasks	
A6	**Estimate the solar rotation period using drawings of sunspots** Use a series of drawings from pinhole projections of sunspots to estimate the length of the Sun's average rotation period	**B6**	**Determine the solar rotation period using photographs of sunspots** Use a series of photographs or drawings from telescopic projections of sunspots to estimate the length of the Sun's average rotation period
A7	Estimating the period of a variable star Use estimates of stellar magnitude from naked-eye observations to produce a light curve for a variable star and thus estimate its period	B7	Measuring the period of a variable star Use estimates of stellar magnitude from telescopic observations or photographs to produce a light curve for a variable star and thus estimate its period
A8	**Comparing stellar density estimates** Use naked-eye estimates of stellar density taken in and outside the plane of the Milky Way to estimate their relative sizes	**B8**	**Comparing stellar density measurements** Use telescopic measurements of stellar density taken in and outside the plane of the Milky Way to estimate their relative sizes
A9	**Finding longitude using a shadow stick** Use measurements of shadow length around local noon to estimate the observer's longitude	N/A	
A10	**Assess the accuracy of a sundial** Use a log of sundial and clock times to assess the accuracy of a sundial	N/A	
N/A		**B11**	**Demonstrate the range of objects in the Messier Catalogue** Use detailed drawings or photographs of objects from the Messier Catalogue to demonstrate the range of different objects it contains
N/A		**B12**	**Calculation of the length of the sidereal day** Use long-exposure photographs of the area around the celestial pole to produce an accurate measurement of the length of the Earth's sidereal period