Group 1: The Thirty Meter telescope

1. What is the total collecting area of the telescope?
2. How many mirrors (excluding segments) does the telescope have?
3. What is the final focal ratio of the Nasymyth beam?
4. Workout the detector size necessary to cover the field of view of the Infrared Imaging Spectrograph, if the detector pixel size is 15μm.
5. How many pixels would a 0.5 arcsec seeing disk cover? Is this a sensible design?

<https://www.tmt.org/page/optics>

<https://irlab.astro.ucla.edu/iris/>

Group 2: Extremely large telescope

1. What is the total collecting area of the telescope?
2. How many mirrors (excluding segments) does the telescope have?
3. What is the final focal ratio of the Nasymyth beam?
4. Workout the detector size necessary to cover the field of view of the MICADO (10``), if the detector pixel size is 15μm.
5. How many pixels would a 0.5 arcsec seeing disk cover? Is this a sensible design?

<https://www.eso.org/sci/facilities/eelt/telescope/design/>

Group 3: Giant Magellen Telescope

1. What is the total collecting area of the telescope?
2. How many mirrors (excluding segments) does the telescope have?
3. What is the final focal ratio of the Grogorian beam?
4. Workout the detector size necessary to cover the field of view of the GMTIFS, if the detector pixel size is 15μm.
5. How many pixels would a 0.5 arcsec seeing disk cover? Is this a sensible design?

<https://www.gmto.org/Resources/GMT-ID-01467-Chapter_6_Optics.pdf>

<https://www.gmto.org/resources/near-ir-ifu-and-adaptive-optics-imager-gmtifs/>

<https://rsaa.anu.edu.au/research/established-projects/giant-magellan-telescope-integral-field-spectrograph-gmtifs/instrument-design>

Group 4: James Webb Space Telecsope

1. What is the total collecting area of the telescope?
2. How many mirrors (excluding segments) does the telescope have?
3. What is the final focal ratio of the telescope?
4. Workout the detector size necessary to cover the field of view of the NIRCAM, if the detector pixel size is 18μm.
5. What is the wavelength coverage of MIRI and why is it necessary to build it in space?

<https://jwst-docs.stsci.edu/display/JTI/JWST+Telescope>

<https://jwst-docs.stsci.edu/display/JTI/NIRCam+Detectors>