Cross Instrument
In addition to the required questions in bold-faced, answer an additional 1 question from this list.

1. What's the first thing I should do when preparing my proposal?

I think I should first carefully read through the call for proposals and make sure I am aware of all of the requirements, restrictions, and deadlines. On the General Proposal Planning Workflow page I can find the most important links – like the call for proposals and the Science Policies. This second link is very important for understanding exposure times, overhead times, and how time is accounted for with JWST. The Workflow page then provides an almost step by step list of things I should do to understand the instruments I am working with, the readout times, the instrument modes, recommended strategies and an example science program. The Workflow page is definitely the place to start and the guidemap you need for planning a JWST proposal. This si the first link under Proposal Preparation:

https://jwst-docs.stsci.edu/general-proposal-planning-workflow

2. What observing methods does JWST support?

Under Proposal Preparation, the third link is to Methods and Roadmaps.

https://jwst-docs.stsci.edu/methods-and-roadmaps

This website lists the different data collecting methods. There is imaging, wide field slitless spectroscopy, high-contrast imaging, integral field spectroscopy, MOS spectroscopy, time-series observations, moving target observations, parallel observations, and target of opportunity observations.

When you click on one of these links, it then provides information for all of the cameras that have the ability to obtain data with that method. For example, you can do standard imaging with MIRI, NIRCAM, and NIRISS. A summary of basic characteristics, such as wavelengths or mode of use are given as well as short descriptions for each instrument. Also some nice figures showing field of view and spectral range. There are also additional links to more detailed information.

https://jwst-docs.stsci.edu/methods-and-roadmaps/jwst-imaging

The other observing methods have similar structures on their pages.

3. How do I know when a given target is visible to JWST?

Under the proposing tools, there is a link to Other Tools, and under that is a link to Target Visibility Tools.

https://jwst-docs.stsci.edu/other-tools/target-visibility-tools

There are two tools for determining target visibility. The first is the JWST General Target Visibility Tool (GTVT) and the second is the JWST Coronographic Visibility Tool (CVT). These tools will give you an overview of target visibilities and their available position angles and are designed for preplanning work. Eventually the schedulability information in APT for each of yoru targets is the final say on when things can be observed. But these other two tools give you a way to see the PA and scheduling constraints for your targets before putting them into the APT and are important for pre-proposal planning.

4. When should I propose for NIRISS Wide Field Slitless Spectroscopy (WFSS) instead of NIRCam WFSS?

5. If I want to observe the spectra of transiting exoplanets, what spectroscopic JWST observing modes are available to me?

For a project like this, we would want to get time-series spectra of the star before, during, and after the transit event. NIRCam, NIRISS, NIRSpec, and MIRI are all capable of obtaining spectroscopy. See table on this webpage.

https://jwst-docs.stsci.edu/methods-and-roadmaps/jwst-time-series-observations/time-series-observations-roadmap

The actual instrument I would select would depend on goals. For example, stars are very faint beyond 5 microns, so I would probably not want to use MIRI unless there was a definite molecule I was trying to detect. I would then follow the TSOs Roadmap for spectroscopy to determine which instrument and configuration to use based on my science goals. Reading more closely into the different instruments and observing modes, I found that the NIRISS SOSS mode is optimized for obtaining spectra of transiting exoplanets. So while the NIRCam Grism and NIRSpec BOTS exist, as does MIRI Low Res, I would probably want to use NIRISS SOSS and carefully read through the example that is also provided on the website.

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-observing-strategies/niriss-soss-recommended-strategies

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-example-programs/niriss-soss-time-series-observations-of-hat-p-1

6. Which JWST instruments offer standard imaging? What is the wavelength coverage of the imaging modes?

7. I would like to obtain spatially resolved 2-D spectroscopy with JWST. Is that possible? If so, what observing modes support this, and what wavelengths are covered?

8. What JWST observing modes will allow me to observe faint companions near bright host objects?

MIRI
In addition to the required questions in bold-faced, answer an additional 2 questions from this list.

1. What is the wavelength coverage of MIRI? What are the pixel scales for the various observing modes?

MIRI operates from 4.9 microns to 28.8 microns. The pixel scale is 0.11 arcsec/pixel for the imaging mode, the 4QPM coronographic imaging mode, the Lyot coronographic imaging mode, and the low-resolution spectroscopy mode. The plate scale varies from 0.196 to 0.273 arcsec/pixel for the medium-resolution spectroscopy mode. Specifically the 1^{st} and 2^{nd} IFU channels have 0.196 arcsec/pixel platescales while the channel 3 is 0.245 arcsec/pixel and channel 4 is 0.273 arcsec/pixel.

https://jwst-docs.stsci.edu/mid-infrared-instrument

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-observing-modes/miri-medium-resolution-spectroscopy

2. For what MIRI observing modes should I dither? Is there a limit for the amount of time I should spend in a given dither position?

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-operations/miri-dithering

Dithering is required to achieve accurate photometry and get superior sampling. It is needed to avoid bad pixels and accurately subtract the background. It is only available for 3 of the observing modes, imaging, low-resolution spectroscopy, and medium-resolution spectroscopy and it should be used in these modes for most science cases. One exception would be time-series observations where differences in sensitivity of pixels would create more uncertainty if you dithered. It is not available for the coronographic imaging modes.

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-observing-strategies/miri-imaging-recommended-strategies

The time spent in a single dither position is called the dwell time. At shorter wavelengths the dwell time is just the exposure time because you are not allowed to take multiple exposures at a single dither position. (Note that exposure time is not integration time. You can take multiple observations at a given integration time, up to your exposure time) At longer wavelengths the sky background will determine your dwell time limit because you do not want to saturate the detector. Table 2 on the website listed above gives the recommended amount of time that should be spent in a single dither position for the **imaging mode**. For F2100W and F2550W a given dwell time cannot be longer than 8 minutes. Recommendations are given for the shorter wavelength filters.

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-observing-strategies/miri-lrs-recommended-strategies#MIRILRSRecommendedStrategies-ditherDithering

For MIRI LRS a simple two-point dither is best for point sources, while a more complex mapping mode exists for extended sources. Dithering is only allowed when using a slit and is not allowed when working in slitless mode as this was designed to carry out TSO observations.

So far there are no restrictions on the length of an exposure per dither position for LRS.

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-observing-strategies/miri-mrs-recommended-strategies#MIRIMRSRecommendedStrategies-ditheringDithering

For MIRI MRS dithering is recommended to better sample the PSF because it is undersampled by the optics. But a staring option does exist. When dithering, the motion is small to keep the target in the field of view. At this time there are no restrictions on the length of an exposure for MRS.

3. What is the field-of-view & wavelength range for the MIRI IFU (medium-resolution spectroscopy) channels?

4. What separations between a faint companion and bright host can I achieve with the MIRI coronagraphic masks? What are the central wavelength coverages of these masks?

The Lyot coronograph is centered at 23 microns. It was chosen at this wavelength because 1) it is not possible to fabricate a 4QPM mask at those wavelengths, and 2) it can work with a broad spectral band and will optimize sensitivity to planetary debris disks, in contrast the 4QPMs can only operate over a narrow passband.

The 4-quadrant phases masks are designed to image much closer to a bright point source and would be used to image the inner regions of debris disks and detect exoplanets close to their star, very tight binary star systems, and near-nuclear environments of AGN. These three masks are located at 15.5 microns, 11.4 microns, and 10.65 microns.

The inner working angle is approximately the smallest apparent separation between the host and a companion source at which the companion is detectable, assuming it is bright enough to see. For the Lyot spot the inner working angle is 2.16 arcseconds. For the three 4QPM masks you get 0.33, 0.36, and 0.49 arcseconds for F1065C, F1140C, and F1550C respectively.

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-observing-modes/miri-coronagraphic-imaging

https://jwst-docs.stsci.edu/mid-infrared-instrument/miri-instrumentation/miri-coronagraph-masks

https://jwst-docs.stsci.edu/methods-and-roadmaps/jwst-high-contrast-imaging/jwst-high-contrast-imaging-inner-working-angle

5. When observing with the low-resolution spectrometer (LRS), should I choose slit or slitless spectroscopy?

6. When using MIRI MRS Simultaneous Imaging, will I get imaging observations of my target "for free"? What is this mode used for? When should I choose to not use this option?

7. When should I take a dedicated background observation?

NIRCam
In addition to the required question in bold-faced, answer an additional 2 questions from this list.

1. What is the wavelength coverage, field of view, and pixel scale for NIRCam's shortwavelength and long-wavelength detectors?

NIRCam observes from 0.6 to 5 microns. The shortwavelength detector operates from 0.6 to 2.3 microns and the long-wavelength detector works from 2.4 to 5 microns. The field of view is 2.2 x 2.2 arcminutes (relatively small) for each of the two modules and the distance between the adjacent fields of view is 44 arcseconds. Together, those two areas (think of a rectangle 2.2 x 4.4) gives a total field of view of 9.7 arcmin. The plate scale for the shortwavelength detectors is 0.031”/pix and the plate scale for the long-wavelength detector is 0.063 “/pix. The images are obtained simultaneously in both the short and log wavelength channel using a beam splitting dichroic (similar to how Scorpio is working). So you can get simultaneous images in two different wavelength bands at once.

https://jwst-docs.stsci.edu/near-infrared-camera/nircam-observing-modes/nircam-imaging

2. I would like to observe the gaps in between NIRCam's A & B module when using imaging. What dither pattern should I use? What dither pattern should I use for NIRCam Wide Field Slitless Spectroscopy?

https://jwst-docs.stsci.edu/near-infrared-camera/nircam-operations/nircam-dithers-and-mosaics

To observe between the gaps, I want to use “primary dithers” which are telescope pointing maneuvers that are 4 to 100 acrseconds in size. This fills the gaps in sky coverage and mitigates flat field uncertainties. The different patterns are given on this website. Note that these patterns are not allowed in time-series observing modes (although you would not want to dither). All dither positions must be executed before any filter changes may be executed, and all filter changes are executed before proceeding to the next tile in a mosaic.

If I want to cover the 43 arcescond gap between A and B, I need to use the Full or Fullbox dithers. The others will cover the 5 arcsecond gap between the detectors, but not the gap between A and B. The Full pattern is designed to use with mosaics to cover larger areas, so it is not as effective at covering the gap as the fullbox pattern which has smaller moves and less overhead time, but will not cover as big of an area of sky. But with 4 or more dithers, you cover the gap regions. The other modes are designed for smaller targets that fit on one detector.

https://jwst-docs.stsci.edu/near-infrared-camera/nircam-operations/nircam-dithers-and-mosaics/nircam-primary-dithers

The only dither pattern available for Wide Field Slitless Spectroscopy with NIRCam is the Intramodule pattern and its variants. (Question, what are variants? Does that mean Intramodulex and Intramodulebox are also available? Are they variants?)

3. What NIRCam observing modes support mosaicking? When I should a mosaic and when should I dither?

4. Which NIRCam readout patterns have skipped frames?

5. What coronagraphic masks are offered by NIRCam, and what wavelength ranges do they cover?

6. Should I dither for grism time-series imaging observations?
GRISM time-series observing performs rapid spectroscopy (R~1600) monitoring of bright time-variable sources at 2.4 to 5 microns. Dithering is not available for time-series, so I couldn't even if I wanted to.

https://jwst-docs.stsci.edu/near-infrared-camera/nircam-observing-modes/nircam-time-series-observations/nircam-grism-time-series

NIRISS

In addition to the required question in bold-faced, answer an additional 2 questions from this list.

1. What is the field of view and wavelength coverage of NIRISS? What is the pixel scale?

NIRISS provides slitless spectroscopy and high-contrast interferometric imaging and imaging from 0.6 to 5 microns. Although closer look at the second website says that it is 0.8 to 5 mcirons for imaging, and aperture masking interferometry is 2.8 to 4.8. microns and the widefield slitless spectroscopy is 0.8 to 2.2 microns, and the single object slitless spectroscopy s 0.6 to 2.8 microns. The Field of view is 2.2 by 2.2 arcminutes for imaging and wide-field slitless spectroscopy and only 5.2 x 5.2 arcseconds for paertyre masking interferometry. It has a pixel scale of 0.65 arcsec/pixel.

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-overview

2. What is the difference between the NIRISS readout patterns? Which should I choose for my science?

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-instrumentation/niriss-detector/niriss-detector-readout-patterns

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-instrumentation/niriss-detector/niriss-detector-readout

First of all the detector is read out in Multiaccum mode, so charge is continuously measured "non-destructively". The readout pattern determines the temporal sampling cadence for the non-destructive "up-the-ramp" reads and if the frame is saved or if it is coadded.

There are two readout patterns. With NISRAPID each of the frames in the "up-the-ramp" read is saved and there is no averaging or coadding of frames. This mode is used for brighter objects or observations that require a high cadence, where data volume limit is not a concern, and when using subarray readout modes.

With NIS four non-destructive reads are coadded (I assume averaged in some way) and saved as a group. This mode is used for longer integrations of faint source. An integration is specified by the number of groups between detector resets. So if I took 4 groups in NIS mode, that would be 16 images, with 4 final saved images that are from the coadds.

3. For which NIRISS observing modes do I have to use a target acquisition?

4. Which NIRISS observing modes require dithering?

5. What are the four factors to consider when choosing a PSF reference (i.e., calibrator) star for an AMI observation?

https://jwst-docs.stsci.edu/near-infrared-imager-and-slitless-spectrograph/niriss-observing-modes/niriss-aperture-masking-interferometry

(This mode is awesome! You can resolve planetary or stellar companions that are up to 9 magnitudes fainter than their host star and separated by 70-400 mas and detect and characterize them. We should totally get Mario and do this for HD. You can resolve things at the Michelson criterion.)

The reference stars needs to be 1) nearby! Slewing the telescope to other areas of sky is not going to be an option and we don't want any adjustment of the primary and secondary mirror taking place between the object and reference images. 2) A single object, not binary. 3) Similar in magnitude. 4) Similar in Color (spec type)

6. I want to observe a galaxy cluster field with NIRISS WFSS. Is there a good example of how to set up my observations? How do I remove contamination from overlapping spectra?

NIRSpec

In addition to the required question in bold-faced, answer an additional 2 questions from this list.

1. What is the wavelength coverage of NIRSpec? What is the pixel scale of NIRSpec?

NIRSpec covers wavelengths from 0.6 to 5.3 microns, but the full coverage is only available for the prism and low R~100 resolving power. When using a grism to get higher resolution, the actual wavelength coverage will vary. See info on Table 1 on link below. The pixel scale is 0.1 arcsec/pixel.

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-overview

2. What is the field of view of the NIRSpec Micro-Shutter Assembly? What is the field of view of the NIRSpec IFU?

The field of view for the Micro-Shutter Assembly (MSA) is 3.6 by 3.4 arcminutes and it can obtain simultaneous spectra of may science sources using tiny configurable shutters. This is a great configuration for getting spectra of multiple galaxies in a cluster for example.

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-observing-modes/nirspec-multi-object-spectroscopy

The Integral Field Unit (IFU). It has a much smaller field of view, just 3 x 3 arcseconds. This is designed to get spectra of a more extended area of sky like shown in Figure 1 of SN 1987A.

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-observing-modes/nirspec-ifu-spectroscopy

3. What is the estimated best possible accuracy for target acquisition for the micro-shutter assembly shutters and which TA method will deliver it?

4. I have ground-based and Spitzer imaging of my field. Do I need NIRCam pre-imaging to ensure that my objects are precisely located in their MSA shutters?

5. There are bright stars in the MSA FOV that will cause leakage and will contaminate my IFU observations. What are the mitigation strategies that can be implemented when designing the observations?

6. What do I do if I need precise centering for a target that's too bright for WATA?

7. I want to use a 0.2" fixed slit to observe a source with an emission feature at 1.355 microns. Which slit should I use? Can I use both of the A slits for this?

The documents say to not use S200B1 since that slit produces a truncated wavelength range when used with high resolution gratings and was included just in case the NRS1 detector fails. But if we wanted high resolution data, it may be the better option than either of the A slits – see below.

The two slits S200A1 and S200A2 are both 0.2” slits and appear to be identical, but at high resolution they have gaps at certain wavelengths. To get the 1.35 micron feature I would want to choose a disperser-filter combination of G140M or G140H with F100LP. If we go with G140M, the spectra will fall into one detector and we will not get a gap in wavelength coverage. If we want higher resolution spectra using G140H, then we can use the S200A1 slit with its gap from 1.3 to 1.34 microns because we would see 1.355, but we would not get the shorter wavelength continuum, so not great. But we can’t use the S200A2 feature at all because its gap is 1.35 to 1.38. We can use both A slits with G140M and medium resolution, but neither slit would be ideal (although S200A1 better than S200A2) for higher resolution G140H measurements.

What we may want to do is to dither the source back and forth between the two different slits in order to recover the wavelengths of light that are lost in the gap. We can specify the option S200A1 and S200A2 and fill in the missing light and see the emission feature at the higher resolution and get the short wavelength continuum. This is actually a situation where maybe we would want to use S200B1 if we need higher resolution because it does not have a gap and goes from 0.98 to 1.46 microns. But if we cannot use the B1 slit for any reason, than using both slits becomes an option.

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-observing-modes/nirspec-fixed-slits-spectroscopy/nirspec-fs-wavelength-ranges-and-gaps

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-observing-modes/nirspec-fixed-slits-spectroscopy

https://jwst-docs.stsci.edu/near-infrared-spectrograph/nirspec-operations/nirspec-dithers-and-nods/nirspec-fs-dither-and-nod-patterns

Astronomer's Proposal Tool (APT)

In addition to the bold-faced required question, answer an additional 2 questions from this list.

1. When I enter an observation in APT, there is a box at far right labeled "ETC Wkbk.Calc ID", but there is no context-sensitive help available. What am I supposed to put in that box, and is it a required input?

https://jwst-docs.stsci.edu/jppom/observation-specifications#ObservationSpecifications-ETC

https://jwst-docs.stsci.edu/jwst-etc-to-apt-interface-support-information/jwst-apt-etc-connectivity

This is the name of the Exposure Time Calculator (ETC) Workbook Calculation ID that you calculate for each target acquisition and science exposure using the ETC. The format is your ETC workbook number followed by a decimal point, and then the calculation ID.

https://jwst-docs.stsci.edu/jwst-etc-to-apt-interface-support-information

It is optional for science exposures, but entering this information may help you track the assumptions used in specifying your APT observations and tying them back to your ETC workbook. You will get a warning if you do not populate it for target acquisition exposures, again not mandatory, but because this information is particularly important to the success of your observations, APT will place a warning on this field and if it is not included and the proposal is accepted, technical reviewers may contact you for more details about your assumptions.

2. The JWST Web site lists accepted Early Release Science programs: http://www.stsci.edu/jwst/observing-programs/approved-ers-programs I am interested in looking at program ID 1334, "The Resolved Stellar Populations Early Release Science Program" as an example, and I understand the APT files for the approved Early Release Science Programs can be loaded directly into APT for inspection. How do I do that?

Go to the approved ERS (Early Release Science) programs page

http://www.stsci.edu/jwst/observing-programs/approved-ers-programs

then select the topic you are interested in (this case Stellar Populations) and then click on the ID of the program you want to see details on. This will pull up the program information.

They you have two choices. Start up APT as you normally would, usually by typing ./APT in the directory where it was created. Under the file tab you can choose "Retrieve from STScI" and then type in the program ID 1334 and it will load into APT. Alternatively you can click on the link under the program content to the APT file and save that to your computer. You can then use the File button to open the saved APT file on your computer by browsing to the directory containing the APT file. This second option would be used if you were working or modifying a proposal and were going to be offline

3. If I am requesting a sequence of observations that need to be chained together in time

(hence I put a special requirement in to make a non-interruptible sequence), is there a maximum time limit for such a sequence?

https://jwst-docs.stsci.edu/jppom/observation-specifications#ObservationSpecifications-ETC

This would be the scheduled "visit' which consists of a set of exposures with their overheads, that is obtained on the same Guide Star and have no scheduled interruption. A Visit consists of 1) slewing to the guide star, 2) Guide star acquisition, 3) target acquisition, 4) science exposures, 5) instrument overheads, 6) instrument calibration if more than the standard calibration is required.

For most science cases, the total duration of the visit cannot exceed 24 hours to preserve the flexibility to insert engineering visits when needed and to be more efficient in scheduling since long visits are harder to schedule. But, depending on the science case, some Time Series Observations can be longer.

https://jwst-docs.stsci.edu/jppom/special-requirements/timing-special-requirements#TimingSpecialRequirements-SeqObs

4. Why does my observation have "Implicit" special requirements in APT, and why can't I edit them?

5. Which APT observation templates fall into the category of mini-mosaics?

6. I see an option for "Module" in the NIRCam APT template. What do these two options refer to?

Exposure Time Calculator (ETC)

In addition to the bold-faced required question, answer an additional 2 questions from the list.

1. The ETC will give me a warning if I start inputting parameters that are not supported by APT, right?

https://jwst-docs.stsci.edu/jwst-etc-to-apt-interface-support-information

No it will not. The ETC was built to support engineers as well as astronomers. It was therefore developed to allows a user to choose values for various parameters that are not available by default, but can be accessed for engineering purposes. Therefore ETC will not give you any error or warning that the options you are selecting are not valid in APT, and it will let you select options that will be invalid when you try to transfer the ETC information to the appropriate APT template. So users will need to be careful and consult the documentation for their instrument and viewing mode. Bottom line, need to check in APT and make sure the choices are valid and see what limits APT places on the instrument and the different exposures and viewing modes.

2. Can I upload a custom spectrum for my source for ETC calculations? What information should I provide, if so?

Yes, I can upload my own unique set of sample spectra to use in the Scenes and Sources Library. They can be uploaded as either a ascii or binary FITS file and the accepted formats on on this website

https://jwst-docs.stsci.edu/jwst-exposure-time-calculator-overview/jwst-etc-scenes-and-sources-page-overview/jwst-etc-user-supplied-spectra

I would recommend watching the video tutorial

https://www.youtube.com/watch?v=zVDzqdwIbrs&feature=youtu.be

The spectrum file consists of two columns, first column is wavelength in microns and the second column is flux in mJy. No comment or header files are allowed. Although that is what the video said. The website says you can use the files as long as # preceeds any comment lines. The fits file should have two columns labeled “Wavelength” and “Flux”.

For the Ascii files, use the Upload Spectra page to upload the file Allowed formats are .dat, and .txt. Once uploaded a spectrum cannot be removed, but it can be overwritten by another file with the same name. Surface brightness is allowed and watch the video for instructions on selecting an extended source and the correct angular units. The wavelength range must cover the range of the instrument we plan to use, if not a warning will be sent, and it will proceed, but may not be accurate. The first column must be in increasing wavelength order and there can be no duplicate wavelength values. Any negative flux values will be set to zero.

When uploading a FITS binary table, it must have the two labels “Wavelength” and “Flux” with the units specified for each column. It is then ran through pysynphot and acceptable units for the two columns are in Table 1 of the webpage above. There are also details on what needs to be in the header file of the fits file in order for it to load on this website.

3. What options do I have for defining the flux distribution for an extended source?

4. In the Hubble ETC, I can input my desired SNR and receive as output the necessary integration time. Why can't the JWST ETC optimize the number of groups and integrations for my signal-to-noise goal? Running a whole bunch of calculations is tedious... Is there a way to speed this up?

https://jwst-docs.stsci.edu/jwst-exposure-time-calculator-overview/jwst-etc-calculations-page-overview/jwst-etc-batch-expansions

There is not an option for reverse calculation of the exposure duration parameters starting from a given signal-to-noise ratio because there is often no unique solution for a given subarray/readout combination in terms of groups, integrations, and exposures.

Instead a “Batch Expansion” mode is available to test a numbe rof different detector parameters (groups or integrations) to determine which set of parameters will result in the desired S/N. Likewise if you want a quick calculation of S/N for multiple filters observing a source, enter it in batch mode.

Start with a given calculation and then select the Expand menu at the top. Then you can choose to change certain parameters while holding others fixed. This will generate a number of new entires in the Calculations table and you can then run the calculations and compare the results. You can choose to step over different groups, different integration values, and different filters.

5. When should I use the IFU Nod off Scene strategy?

6. I would like to do additional analysis beyond what the ETC reports. Is there a way to access the output data products so I can use my own software tools for further analysis?

JWST Help Desk Homework Questions
Please answer all questions below.

1. Announcements such as new APT and ETC releases/downtimes, Call for Proposals, etc. are posted on the Help Desk homepage (jwsthelp.stsci.edu, see screenshot below). What is the latest announcement posted on the homepage?

JWST Video Tutorials now available!

https://stsci.service-now.com/jwst?id=kb_article&sys_id=3f475fdfdbd0cc90fb50f9baae9619d2

2. From the Help Desk homepage (jwsthelp.stsci.edu) you can search for answers to your questions. Search results will give Knowledge Base articles first and then JDox results. You can use the sidebar tree to filter for specific types of articles. See the screenshot below for the search results for "APT MIRI".
Use the Help Desk search bar to find out why you may be having trouble connecting to the APT server. Explore using the sidebar tree to filter types of articles.

Done

3. If you can't find an answer to your question using the search function, you may submit a question (otherwise known as a "ticket") for a member of the Help Desk staff to answer. You submit a question by clicking on the "Get Help" icon on the homepage. This will send you to a page of "catalogs" to choose from to get an answer quicker (See example screenshot below). If you can't determine what catalog to choose you may also choose "General". What catalog would you submit to if you have a question about adding an investigator to your proposal?
(You may have noticed while answering Question 2 that your search results may also send you directly to the page to submit your question, that is also fine.)

JWST Science Policies

4. Practice using the Help Desk by submitting a practice ticket to the catalog "JWST Master Class". Request that your ticket be proprietary, use the subject "My Test Ticket", and the description "Hello, I am practicing using the Help Desk for the JWST Masterclass, please send me a response. Thank you."

Did this, but I already am very well versed in the help desk as I have already asked for help getting backgrounds to work.

5. After submitting your question you will see your ticket under "My Open Tickets" in the top menu bar. You can view and update your tickets here. You may add an attachment or a collaborator to the "watchlist" (the collaborator will then receive all future updates to the ticket in an email. Note: you can add also someone to watchlist when you first submit your ticket). Re-open the practice ticket you submitted in Question 4 and either add someone to the watchlist or send an attachment image of your favorite astronomical target. See example screenshot below:

Done