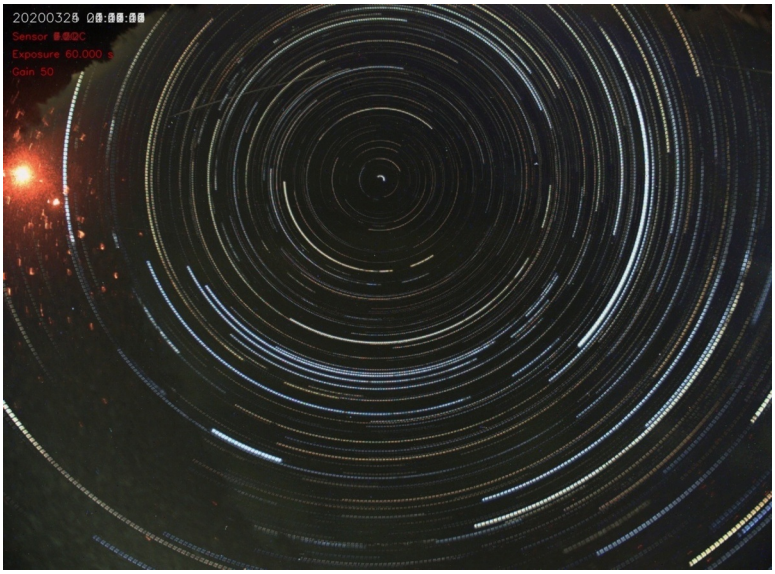
Regulus

The newsletter of The Royal Astronomical Society of Canada - Kingston Centre
Celebrating our 60th anniversary 1961-2021



Startrails

RASC Astroimaging Certificate Program – Wide-field Application

One image from a recent application for one of the three astroimaging certificates available from the RASC. For complete details see:
https://www.rasc.ca/astro-imaging-certificate
Submissions will be accepted from RASC members only.

The purpose of this certificate (Astroimaging - Wide Field) is to introduce beginners to many types of astronomical imaging. The emphasis is on "skyscape" images: these are generally wide-field pictures that capture an astronomical object in the evening, dawn (or nighttime) sky that also include the landscape in the frame. Skyscape images capture a scene the way it looks to the eye of the imager – either a naked-eye view (aka wide field) or a very low-power view as through binoculars. Some objects in this category are better captured with a telescope serving as the camera lens, so the requirements allow for this. Each image should be well framed, well focused, and have a well-managed dynamic range that mimics what the human eye can see. The size and position of the astronomical object(s) in the sky have to be correct with respect to the foreground scenery.

Fifteen pictures from the following list are required for the certificate, with a minimum of ten being skyscape images (the remainder do not

MEETINGS

Wednesday Weekly Social
videoconference. 7pm Eastern all weeks except the 2nd Wednesday of the month. For members and their guests. Email list subscribers receive the link weekly 1 or 2 days beforehand.

Next:: Wed 2021Jan27

Regular Monthly Meeting -
2nd Wednesday of the month 7pm Eastern.
Zoom for members and youtube live stream for the public. Members receive email registration link about 1 week beforehand. For youtube.com search for RASC Kingston.

Next: Wed 2021Feb10

have to have the landscape in the frame). Each picture shall be accompanied with a description of the location, time, equipment used, camera settings, planning done, problems encountered or solved, and whatever else, such as how you feel about the image or what happened that night. Please indicate on the application form which of the objects in the following list each of your pictures represents.

- Sunrise or sunset
- Moonrise or moonset at full Moon
- Gibbous, half, or crescent Moon
- New Moon with earthshine
- Moon and a planet
- Moon or planet beside a deep-sky object
- Two or more planets
- Mercury
- ISS or Iridium flare
- Star trails
- The Milky Way
- Constellation
- Asterism - Big Dipper or Summer Triangle
- Aurora
- Two or more pictures showing movement of a planet or asteroid
- Uranus or Neptune identified in a picture
- Sun or Moon halo, or Sundogs
- Noctilucent clouds
- Lunar or Solar eclipse
- Comet
- Meteor
- Zodiacal light

Two or more planets - Saturn - Jupiter

President's Tidbits - Kim Hay

Happy New Year!
We certainly pushed 2020 out the door but not until we were treated to several Astronomical events that happened in December. On December 14 we were treated to the Solar Eclipse of parts of Chile and Argentina at least by online streaming. The Great Planetary Conjunction (Jupiter and Saturn) of December 21, which was clouded out in the Kingston area but caught online either through the Internet or the Explore Alliance Virtual Global Star party which started the day with Christopher Go in Philippines. The Star party was setup by Explore Scientific and followed across the Earth ending in Canada with the RASC and many contributors. There were many areas clouded out but some people had clearing and were able to see it . Of course it cleared the next night, but it was still nice to see Jupiter and Saturn do the dance of the planets. The next great event was watching the planets throughout the month as they dipped closer to the SW and the Full Moon of December 29th, the Cold Moon.

As we start a New Year we have a few guest speakers lined up. In February will be Judy Black from the Halifax Centre speaking on "How Observant! An Introduction to Observing". In March we will have Dave Lane Observatory Director of St. Mary's University speaking on the Robotic Telescopes, Ralph (Burke-Gaffney Observatory), Little Ralph and his own ARO (Abby Ridge Observatory). These meetings will run on ZOOM and a separate link will be emailed to members. We are also setting these up to stream on the RASC Kingston Centre YouTube Channel.

The Executive would like to know what you the members would like to hear for topics at our meetings? We have our weekly very laid back socials weekly on ZOOM, and will continue as this Pandemic still keeps everything closed, but we want to bring you topics that peak your interest. Please let us know at our Centre email kingston@rasc.ca

Zoom Tips for videoconferencing

Zoom videoconferencing has taken the world by storm this past year. We use it on a daily basis and the Centre has settled into a weekly virtual meeting since the Spring of 2020.
Here are some tips to make your zoom event a better experience.

1. Get the latest version of zoom from zoom.us Scroll down to the bottom footer under "download" then "meetings client" as of this date, the latest version at time of publication for Windows is 5.4.9

2. Reboot your computer before attending a zoom conference, especially if you are presenting.

3. Only have the bare minimum of programs that you need up and running. Spare the CPU and RAM resources for the videoconference.

4. Manage your internet bandwidth during the meeting (ie tell everyone in the household to stop watching netflix! Or other high bandwidth uses).

5. If you intend to speak, please use, at the bare minimum, headphones or earbuds. This helps to minimize the audio feedback between speakers and microphones, noise cancellation and other poor quality issues that arise.

6. If possible use a wired network connection (ethernet) vs wifi as the ethernet is faster and less glitchy (ie 2.4GHz wifi vs microwave oven.. Microwave wins)

7. A headset with mic is ideal as the mic is of better quality than a builtin laptop mic.

8. If you have low bandwidth internet, consider turning off your video, especially if presenting.

In the Sky This Month - January 2021 - Rick Wagner

02 Jan - Earth at perihelion - closest to the Sun 147,093,162 km
03 Jan - Quadrantid meteor shower peaks at 10:30EST today; this is a very strong and sharply peaked shower so best viewing will be before dawn, though the waning gibbous Moon will prevent seeing the fainter meteors. Watch for bright fireballs in spite of the Moon!
06 Jan - Last quarter Moon
08 Jan - asteroid 137 Meliboea occults star TYC 0172-02312-1 at 01:29EST.
10 Jan - Mercury joins Jupiter and Saturn very low in the southwestern sky just after sunset.
13 Jan - New Moon
13 Jan - very young extremely thin crescent Moon - only ~16 hours old, very very low in the SW very shortly after sunset. This one will be hard to see but easy to find the right location just 5º, about one binocular field, below bright Jupiter; Saturn and Mercury are just up and to the left of Jupiter.
20 Jan - First quarter Moon
21 Jan - Uranus is just 1.7º south of Mars in the evening. The Moon is also nearby so you'll need binoculars to see Uranus at mag 5.8.
21 Jan - asteroid 55 Eunomia at opposition, mag 8.4
23 Jan - Mercury at greatest elongation east (19º), mag 0.7. This is Mercury's best evening apparition this year.
24 Jan - asteroid 14 Irene at opposition, mag 9.2.
24 Jan - Saturn in conjunction with the Sun - apparition 2021 begins!
28 Jan - asteroid 10 Hygiea at opposition, mag 9.8.
28 Jan - Full Moon
29 Jan - Jupiter in conjunction with the Sun - apparition 2021 begins!

Astrotips - Visual

Tube Currents degrade telescopic images, but how do you know if you have a problem? Check the out-of-focus image of a fairly bright star. If you see lots of circular motion inside the star's image, you have a severe problem. The best solution is a small, low-flow fan to move warmer air out of the telescope tube and quickly bring your mirror to the same temperature as the ambient air.

For more tips see:
https://spaceandbeyondbox.com/a-beginners-guide-to-observing-15-tips-for-using-your-new-telescope/

Astrotips - Imaging

Astroimagers want their lenses focused at infinity, but newer autofocus lenses can be focused past infinity by hand. To resolve this problem, set the lens at infinity during the day and then lock it there with one or two wraps of tape around the barrel. Use tape that won't leave a residue (no duct tape). Manual focus lenses don't have this problem, but some astrophotographers tape them anyway. Color filters can also help you observe planets easier because they exaggerate brightness differences (contrast).

For more tips see:
https://spaceandbeyondbox.com/a-beginners-guide-to-observing-15-tips-for-using-your-new-telescope/

RASCKC Equipment Loan Program Spotlight

A section where we spotlight one of the pieces of Equipment Loan Program equipment that the RASCKC owns.

Item #1 Telescope 25cm Douglas Dobsonian (1975)

Accessories: telrad finder, 32mm koenig university optics eyepiece (1990 October), 9mm MA meade eyepiece, plywood moon aperture filter, 10" baader solar filter, equipment carry bag,
History: The telescope was named after the Centre's founder: Dr. Allie V. Douglas, a.k.a. Dr. AV Douglas. This is the oldest scope in the centre, being built around 1975. It has had 2 overhauls, once in 1986 and then again in 1989 ($270, $135 by the Centre and $135 from National Special Projects). In December of 1995 the primary and secondary mirrors were realuminized (no overcoatings) at the Dunlop Observatory in Toronto.

Modifications: Velcro straps were added to go across both the top and bottom covers as they have a tendency to fall off easily when moving the scope around. Recent tests have been excellent. Velcro cable ties will be added to reduce the cable clutter when all of the power is connected (as well as when the video camera is attached (2 more cables).

This 25cm scope has travelled to StarFest and has been used to visually observe Pluto from that site. It is now approaching 45 years old!

For More Information see:
https://kingston.rasc.ca/equipment

REPORTS AND OTHER ITEMS

1. On Sunday August 5th, David, Lyte, Mike, and I were pleased to give a visitor a tour of the Holleford Crater. The visitor was Constantine Papacosmos who had been with David in Kingston for the Mall Display and the Star Night. We hope he enjoyed seeing this outstanding meteorite crater.
2. We sincerely congratulate Leslie Roberts on a remarkable achievement for an amateur astronomer. He photographed the planet, Pluto, twice - on June 18th and June 24th and it is quite interesting to compare the movement of the object in the six-day period.

Blast From The Past From Regulus, 1979 August issue

BBC Sky at Night Magazine Tips https://twitter.com/skyatnightmag

How to take care of your telescope
By Anton Vamplew August 5, 2020

Want to make sure your observing equipment serves you well? Here's how need to keep your telescope clean and dry.

When it comes to keeping your telescope clean, prevention is better than cure. Stopping your telescope becoming grubby in the first place is preferable to sorting out the consequences afterwards. It's impossible to keep a scope in perfect condition forever, unless you're guilty of the worst crime against astronomy and have never unwrapped it!

Over time, dust and grime will build up on the surfaces of your telescope's optics and some gentle care will be needed to bring them back to full glory. This is a particular problem with Newtonian scopes and the large Dobsonians with open tube, or truss, designs.

For the complete article, look here;
https://www.skyatnightmagazine.com/advice/diy/how-take-care-of-telescope/

Headlamp Review - Kevin Kell

Headlamps are a wonderful invention. From harvesting veg after sunset to working in the dark with astronomy. One requires white light and the other requires red light.

White light makes it easier to see with your higher resolution day vision, and red light preserves your lower resolution and lower light level night vision.

In astronomy we use the red light exclusively until the end of the session when we often use white light to find dropped bits of equipment on the ground.

Headlamps also give you the ability to keep both hands free and aim the light where you need it. Most headlamps have adjustable straps, some better than others, and the ability to tilt the lamp downward in increments.

Most headlamps only allow you to cycle through the various modes: bright white, less bright white, red, flashing red.

This causes a problem for astronomers. From off, to get to red you must cycle through two settings of white light. This affects not only your vision but also those around you, resulting in curses and threats. And typically the light will be on until you put your eye to the eyepiece, at which time you must turn it off. Then when leaving the eyepiece, you generally turn it on again.

So here follows a review of three models of headlamp that I have used over time:

1) basic $10 From amazon.ca

Sunix® LED Headlamp with Adjustable Headband And Angles Perfect for Running, Dog Walking, Fishing, Biking, Camping, Watching

Nature - 4 Light Modes With 3x CREE R3 + 2 Red LED, Waterproof IPX-6, 3 x AAA battery (Not included) Sold by: Nexo-CA

This is a general purpose LED headlamp that works well. It's biggest drawback is the cycling through white light modes to get to the red light. Recommended for the price point alone and the fact that it is still working two years later. These seem to be a generic headlamp sold under many retail names.

2) Cabellas inova touch switch headlamp. I thought this would be perfect... a nonmoving switch that allows you to go directly to red light or white light and not have to cycle through the white. It was much more expensive but most of Cabellas (Ottawa) equipment is quality. What a piece of *^@#$%@#$. First off, you can never remember which way to swipe across the surface to get red. It is simply not pressing a spot but a motion.

But the killer is, the switch rarely works. It often takes 10 swipes before it activates. And then sometimes it does in fact activate at a touch, when you are adjusting the downward tilt for instance. Very frustrating, dislike with a passion.

3) The newest and greatest: vekkia from amazon.ca
Ultra Bright CREE LED Headlamp - 160 Lumens, 5 Lighting Modes, White & Red LEDs, Adjustable Strap, IPX6 Water Resistant. Great for Running, Camping, Hiking & More. Batteries Included. Brand: Vekkia 4.6 out of 5 stars 2,661 ratings | Amazon's Choice for "headlamp red"
Price: CDN$ 16.99

This one has TWO touch switches: white on the left, red on the right. white modes include: bright, less bright, flashing.
The red modes include: bright and flashing

Summary: Until a dual switch white/red headlamp comes along *WITHOUT FLASHING mode* #3, the Vekkia model, is the recommended best headlamp for astronomers.

MINUTES - 2020 Annual General Meeting of The RASC - Kingston Centre

Virtually via zoom videoconference, based out of corporate address above.
Thursday 2020 November 11th 7pm Eastern
1. Welcome
President Kim Hay welcomed everyone to the meeting.
Housekeeping tips by Kevin Kell on the Zoom technology. Pease bear with us for any technical or procedural difficulties. Please stay muted unless the Chair asks for input, discussion, etc. For voting, the Chair will call the vote. To facilitate voting this I have renamed your name virtual presence with a prefix of "OK"-name. Those not on the 2020Nov01 membership list I have put an "X". Raise your physical hand on the video display.
2. Presentation and approval of Agenda by Kim Hay as presented . Carried. Motion AGM2020-01
3. Presentation and approval of 2019 AGM minutes by Kevin Kell -Copies of the 2019 Draft AGM minutes had been published in the August 2020 issue of Regulus. Moved to accept by Secretary Kevin Kell. The Secretary went on describing the wrong report, namely the annual secretary report, for a minute or two before being corrected. . The draft AGM minutes were then correctly presented and discussed Carried. Motion AGM2020-02.
4. Annual Reports:
4a Secretary Kevin Kell moved to accept the Secretarys Annual Report 2020. Questions and answers followed. Bruce asked about the noninclusion of events in 2020 that were cancelled. Kevin answered that he only included items and events that we did in fact carry out. Carried. Motion AGM2020-03
4b Treasurer Susan Gagnon presented the Financials and read her report. Profit Loss Statement: Total annual (Oct 01 – Sept 30) Income was $3,636, Total Expense $1,667, Net Profit: $1,968 Balance Sheet Total Assets: $32,876. Membership =65. Signing authority remains two out of three with the Treasurer being one. Bookkeeping remains on a simple spreadsheet showing a general journal and account/line item tabs. Donations continue to outpace membership fee income. GIC Interest will be hitting record lows. A question about Directors Insurance was explained as liability insurance for directors and officers of the Centre. What is the special projects fund? It was used for startup funding for the Lottery we had two years back.. a special project.
The Auditors report as presented as well (Steve Craig) which indicated all was good.
Moved by Susan Gagnon that the Financials and Auditors report be accepted as presented. Carried. Motion AGM2020-04
4c Librarian Kim Hay noted a report had been created and sent out..
6. Centre Elections: (nominees must be a member in good standing, be at least 18 years old, be mentally competent and cannot be bankrupt). Some questions and answers about duties were asked and answered.
Secretary – Asser Elgindy
Librarian – Francesco Ambrogi
Editor- no nominees or volunteers
NC Representative- John Hurley
Secretary, Librarian and National Council Rep were volunteers with no election needed.
The remaining Board consists of: President Kim Hay, Vice President Laurie Graham, Treasurer Susan Gagnon.
The Board will ask for volunteers or nominees going forward and make appointments as needed.
7. Appointment of Auditor – Stephen Craig volunteered. Susan Gagnon moved to appoint him. Carried Motion AGM2020-05
8. Other business
Webmaster Walter MacDonald– no report
Equipment Coordinator Kevin Kell– no report
President Kim Hay read out a short report on the social and outreach activities of the year.
9. A request from the Secretary Kevin Kell to ensure that there was a motion and vote to accept the annual secretarys report as it may have been unclear earlier in the meeting.
Moved by Kevin Kell to accept the Secretarys Annual Report. Carried. Motion AGM2020-06
9. Adjourn with thanks Motion to Adjourn by Kim Hay. Carried at 21:40 EST Motion

AGM2020-07
Kevin Kell, Secretary The RASC Kingston Centre
Revision 20201113-0800

MINUTES - 2020Dec09 Regular Monthly Meeting

The seventh Regular Meeting since the onset of the COVID-19 pandemic, was held remotely with Zoom video conferencing software and started at 19:00EST
35 people were in virtual attendance
Kim Hay Started the meeting at 19:02 EST and welcomed everyone with season greetings. The YouTube live stream and session recording were started. .All participants were muted so that the presenters could be heard without interruption.
Kim introduced the new executive team and asked every board member to wave to be known by others
Kim handed over to Dr. David Levy to give a few minutes. David greeted everyone from Arizona, Then he shared a poem with the members by Jane Taylor, The Star
Kim presented the Agenda for tonight's meeting
Kim Handed over to John Hurley to present the updates from RASC National Meetings
John announced the following:

1. There is a new center in the society, Fraser Valley
2. A national General Assembly (GA) will be held virtually in the last weekend of June 2021 over a couple of days
3. There will be updates on Green Laser Pointers
4. There's satisfaction with how Sky News Magazine is performing nowadays
5. We are about few short of 5000 members in the society
6. There will be a new computer system to allow members to enter their own details and host a database
7. This year there will be a small budget deficit while next year is expected to have a surplus
8. They are hoping the virtual telescope will generate revenue.

Kim introduced the guest speaker Jenna Hinds, outreach coordinator of National RASC and handed over to her.

Jenna started presenting the RASC Robotic Telescope Project (RTP). The telescope is 16" and located in Sierra Nevada, California. The telescope has a CCD camera along with a Canon DSLR with 200mm lens for wider FOV shots. The project held an astrophotography contest and the data is available for sale. She hopes the project can inspire the younger generation in science.
There are two tracks, Basic with ready made data or Advanced with full customization by the students. They asked students to participate in Jupiter Saturn conjunction as well. Data is now for sale on RASC's store. She logged in on a computer remotely and started showing how to use the system to control the different subsystems. She asked to promote the project among school boards in our area.
Kim handed over to Bruce Eliott who is working on science fair projects. He mentioned some of the projects presented in the fair in previous years. He is excited to promote the project with his teacher contacts.
Kim handed over to Rick Wagner to continue talking about the RTP and what's up in the sky
Rick presented the RASC RTP Science Team. He explained differential photography currently being used. He presented his images for his recent acquisitions. Lastly he encourages others to join the science team

Rick then presented what's up in the sky:
1. Queen's University will run their physics astronomy quantum optics seminar after the holidays
2. 16th Dec BAA Webinar
3. 13th Jan Regular RASC-KC meeting
4. Queen's University Observatory does a podcast called Fast Radio Burst
5. New possible Nova V1112 Periseid
6. 13-14th Dec Geminid Meteor Shower peak
7. 17th Dec Tamara Asteroid
8. 21st Dec Jupiter-Saturn conjunction, possible 3 nights in same FOV

9. 21st Dec Usrid Meteor Shower peak
10. 21st Dec Asteroid 39 Laetita at opposition
11. 1st Jan Quadrantid Meteor shower peak (with moonlight)
12. 8th Jan Meliboea asteroid Occultation
Kim handed over to Stephen Craig
Stephen has been struggling for clear nights. However, he presented different faint galaxy and nebula pictures.
Kim handed over to Kevin Kell
Kevin is working on a Wide-Field Astrophotography certificate. He also described the Solar System and Deep Sky certificates. He presented wide field images of Jupiter and Saturn using 18-55mm lens. He presented spectacular fireball videos on 8th December.
Kim handed over to Walter MacDonald
Walter presented a magnitude curve for nova V339 which he has been imaging since 2013.
Kim handed over to Graeme Hay
Graeme presented a photo of Jupiter and Saturn along with his imaging setup. He also presented a picture of M42. He also cleaned and added a retainer inside a spectograph which is available if someone wants to try it.

Jenna presented live view from RTP camera as the clouds are clearing up at Sierra Nevada. Jenna took a test photo of Deneb to focus. Then she slewed to GSC 6326:542 planet. She started the DSLR run. The photography and science teams can be joined in february. She tried multiple imaging runs but it was not clear enough. She shut the telescope down.
Rick started presenting more images from the RTP telescope. He showed a beautiful image of M31.

Kim adjourned the meeting at 21:07
Meeting prepared by Asser ElGindy 2020-12-12

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Youtube:youtube.com search for RASC Kingston
Facebook Page: facebook.com/rasckingston
Facebook Group: facebook.com/groups/681409686039729/

RASC-KC Board of Directors

President: Kim Hay
Vice-President: Laurie Graham
Secretary: Asser ElGindy
Treasurer: Susan Ganon
Librarian: Francesco Ambrogi
Editor: Kevin Kell
National Council Rep: John Hurley

Executive

Past President: Rick Wagner
Webmaster: Walter MacDonald
Equipment: Kevin Kell

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The Fine Print: Members of the Kingston Centre receive
Regulus as a benefit of membership.
Non-commercial advertisements are free to members of the Centre. Paid commercial advertising is also welcome and should be in electronic format.
Submitted material may be edited for brevity or clarity.

Attention Young Astronomers!

Are you thinking of entering the

FLASF 2021 Science Fair?

(March 22nd-26th)

The Kingston Astronomy Club is offering the

Leo Enright Award

for the best project in

Astronomy and related sciences

The awardee will receive **$100**

and an *Explore the Universe Guide*

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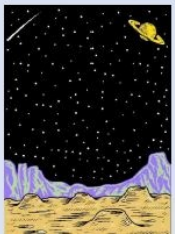
For starter ideas
please check out the next pages!



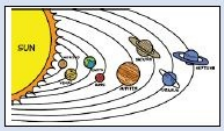
The RASC* Kingston Centre
Kingston's Astronomy Club
***Royal Astronomical Society of Canada**

Email: kingston@rasc.ca
Web: kingston.rasc.ca

Facebook: RASC Kingston Centre
Twitter: @AstroKingston

Some Suggestions To Get You Started!

1) Try observing by naked eye at night:



The Solar system:

- Check out the sun, moon and planets rising and setting times in your area. Saturn, Jupiter, Mars, Venus and Mercury will be visible by naked eye.
  https://www.timeanddate.com/astronomy/night/canada/Kingston

- Identify the **planets** visible each night or at dawn. Note that some appear to come very closely together - called a conjunction. For example: Jupiter, Saturn and Mercury at dusk in January; Jupiter and Venus at dawn in February; and Mars and the Pleiades cluster in early March. Check out the Internet to see what's visible each night: *https://earthsky.org/tonight*.

- Explore the **Moon**: Observe and record the phases of the Moon. Do you know why they occur? Here's a video to show you: *https://www.youtube.com/watch?v=wz01pTyuMa0*
  Can you see and draw the shaded areas on the Moon? They are called **Mares**. How were they formed? -Which is the largest? – Can we tell their age? Here's a link to an observer's guide for the **Moon**: *https://www.rasc.ca/sites/default/files/EtM_Binoculars_V3.pdf*

Constellations and Bright stars:

- Learn to use a sky chart to help you look for constellations. Well-known examples are Ursa Major and Minor, Cassiopeia, Taurus (Hyades), Pleiades, Orion and more!
  Here is a link to one that you can print, cut out, and glue onto thin cardboard:
  https://www.uaf.edu/museum/education/educators/heliophysics-aurora-outre/activities/pdfs/Create-A-Star-Wheel-Activity.pdf

- Find out what ***double stars*** are, and whether any of your constellations have them:
  https://www.astropix.com/html/observing/20_fun_naked_eye_doubles.html
  What colours are they? – Why are they different colours? – Why are they different sizes? – How do they differ using binoculars*?

**Choosing binoculars: Any simple pair of binoculars (e.g. 7x or larger) would be fine.*

2) Try observing "Deep Sky" objects using binoculars:

Some "Deep sky" objects are visible through binoculars on a dark clear night, such as the "Nebula" in Orion's dagger, or Andromeda (closest galaxy to us). Using the internet and a sky chart, can you locate these favorite targets, and research further what they are, and how they were formed? Here is a sky chart including the location of some Deep Sky objects during the month of January 2021: *http://www.skymaps.com/skymaps/tesmn2101.pdf*.
Charts for following months will appear at similar links (...2102.pdf or ...2103.pdf, etc.).

3) Explore the moons of Jupiter with a small telescope:

There are four moons visible on Jupiter using a small telescope. Each day they change their position and sometimes go behind or in front of the planet. Try observing each night over several days/weeks and record their movement. Check the internet to confirm what you see:
https://skyandtelescope.org/wp-content/plugins/observing-tools/jupiter_moons/jupiter.html

4) Track the International Space Station (ISS)!

Here is a link how to find when and from where the ISS can be seen:
https://spotthestation.nasa.gov/sightings/index.cfm
Can you name any Canadian astronauts who have served on the ISS? What are some of the experiments that have been done and what have they discovered? How may times doe the ISS orbit the earth per day, and how high is it? Draw a star map of where you saw it and what planets or constellations it passed.

5) Additional Resources:

- **Observer's Work sheets**: *https://www.rasc.ca/sites/default/files/LogBookPageRight_3.pdf*
- **Explore the Universe program**:
  https://rasc.ca/sites/default/files/ExploreTheUniverse6a.pdf
- ***Stellarium***: A software planetarium that generates an interactive display of the night sky:
  https://stellarium-web.org/

- **The Cosmic Club**: An online series on the latest Astro News for space-loving youth in grades 8-12. Organized by the **Institute for Research on Exoplanets** and **Plateau Astro** (Saturdays 11am starting January 23rd). YouTube link:
  https://www.youtube.com/watch?v=6HNBuq_G50Y&pbjreload=101