

What star planet is visible tonight

Jupiter arrives at solar conjunction on March 5, meaning that thereafter, the five brightest planets will be accessible only in the early morning about two hours before sunrise. Mercury will not be favorable for observation because it will remain very low to the east-southeast horizon during the final week of March, while mired deep in the dawn twilight glow. Saturn begins to emerge into view during the final week of March, joining Venus and Mars, with a crescent moon on March 28 making it a foursome. And Jupiter finally makes its presence felt at month's end. Related: Night sky for March 2022In our schedule, remember that when measuring the angular separation between two celestial objects, your clenched fist held at arm's length measures roughly 10 degrees. Here, we present a schedule below which provides some of the best planet viewing times as well as directing you as to where to look to see them.NOTE: Daylight Saving Time returns on March 13 — the second Sunday in March. Except in the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury is approaching the sun and is a difficult object for the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury is approaching the sun and is a difficult object for the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury is approaching the sun and is a difficult object for the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury is approaching the sun and is a difficult object for the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury is approaching the sun and is a difficult object for the states of Arizona and Hawaii, and the Canadian province of Saskatchewan, clocks are to be moved forward, Fall back."Mercury(Image credit: Starry Night Software)Mercury(Image credit: Starry Nig mid-northern observers. On the first day of the month, about a half hour before sunrise, look for the zero-magnitude planet very close to the east-southeast horizon, 22 degrees to Venus' lower left. Binoculars may be required to spot Mercury, especially from northern states; despite coming off of an unusually large solar elongation in mid-February, this smallest of the planets is very low because the ecliptic now makes its smallest annual angle with the morning horizon. On April 2 Mercury passes superior conjunction. Venus (Image credit: Starry Night Software) Venus arrives at its greatest western elongation from the sun (47 degrees) on March 20. In a telescope its crescent shape at the start of this month appears to fatten up to more-or-less half-full today and gibbous shaped by month's end. Venus is certainly easy enough to spot in the east-southeast about two hours before sunup. The eerie, low glimmering of Venus is a harbinger of daybreak, which begins less than an hour after it first peeks up above the horizon. Earth (Image credit: NASA) Earth will go through a change of seasons on March 20. On that day, the sun arrives at the equinox at 11:33 a.m. EDT, crossing the celestial equator heading north for the year. This event inaugurates spring in the Northern Hemisphere and autumn in the Southern Hemisphere.Mars (Image credit: Starry Night Software)Mars is brightening ever so gradually (by just two-tenths of a magnitude this month) while hardly more than a messy "star" in most instruments, especially since it is at a low altitude above the horizon. But wait a few months. The Red Planet is slowly gathering speed for a rush into the evening sky in late summer and a good opposition come December. Mars will be in conjunction with the brilliant planet Venus on the morning of March 16; compared to Venus, the red planet appears only 1/175 as bright. You'll find it sitting about 4 degrees to Venus's lower right.Jupiter(Image credit: Starry Night Software)Jupiter passes through conjunction with the sun on March 5 and enters the morning sky. It finally emerges into view, extremely low in the bright dawn on the final day of March; however, you most definitely will need to use binoculars to scan for it, just above the eastern horizon about 25 minutes before sunrise. Saturn (Image credit: Starry Night Software) Saturn still hides in the sunrise glow during the first half of March, but begins to emerge low in the east-southeastern dawn glow during the first half of March 24 will provide you with an excellent opportunity to identify it courtesy of two other morning planets, Venus and Mars. Today, all three will form a wide isosceles triangle low in the east-southeast about 90 minutes before sunrise. Orange Mars and slightly brighter yellow-white Saturn form the base, while dazzling Venus marks the vertex. On the morning of March 28, a waning crescent moon will join Venus, Saturn and Mars. About 45 minutes before sunrise, look low toward the east-southeast horizon to see the slender lunar sliver positioned about 7 degrees below and to the left of Mars. Saturn will sit about 2 degrees below kenus; they'll be slightly closer tomorrow morning when they're in conjunction. Joe Rao serves as an instructor and guest lecturer at New York's Hayden Planetarium. He writes about astronomy for Natural History magazine, the Farmers' Almanac and other publications. Follow us on Twitter @Spacedotcom and on Facebook. Some of the best telescope views of the night sky come from the planets, particularly Mercury, Venus, Mars, Jupiter, and Saturn, the five brightest planets visible to the naked eye. But, you wonder, which planets are out tonight and where should I look to see them? Well, showing you which planets are visible tonight and where to look for them is what this guide is all about. Use the 'Quick Navigation' box to quickly get details on the planet of your choice. Let's jump in and discover which planets we can see tonight. Introducing... The Planets There are eight official planets in our solar system (if you thought there were nine, read this). We live on one of them, which leaves seven for us to look at in the night sky. From the sun outwards, they are Mercury, Venus, [Earth], Mars, Jupiter, Saturn, Uranus, and Neptune. The Five Visible Planets The five planets closest to us are bright enough to be easily seen in the night sky with the naked eye. For that reason, these are collectively known as the five visible planets. From closest to the Sun, outwards, the five visible planets are: MercuryVenus[Earth]MarsJupiterSaturn All of the planets look wonderful through a telescope, with many different and dynamic features to try and observe. If you've never seen the awesome sight of Jupiter's cloud belts, Saturn's rings, and Martian ice caps, then it's time you checked out our reviews of the best telescopes to see the planets (opens in a new tab). The Outer Planets The two outermost planets of the solar system are much trickier to see than the five discussed above. The closer of these ice giants, Uranus, is technically visible to the naked eye but, unless you know where to look, it is not brighter stars. Neptune, the most distant planet in the solar system, can only be seen with binoculars or a telescope. We show you how to see if Neptune and Uranus are visible tonight towards the end of this guide. Seeing The Five Visible Planets in 2022 All 5 visible planets are well placed for observing and others when they are not visible. Discover our reviews of this year's best telescopes Imagine the five planets: Inferior Planets: Inferior Planets: Nercury and Venus lie inside Earth's orbit, closer to the Sun than we are Superior Planets: Mars, Jupiter, and Saturn lie outside Earth's orbit, further from the Sun When to See the Inferior Planets Moon, Venus & Mercury (source) Mercury and Venus orbit the Sun inside Earth's orbit, which means a number of significant things: They orbit faster than Earth, so they planets' surfaces that are not facing the SunThe best time to see them is at 'greatest elongation', which is when they are in conjunction. This is the name given to the moment when Earth, the Sun, and the planets is when they are in conjunction. This is the name given to the moment when Earth, the Sun, and the planet are all in a straight line. There are two types of planetary conjunction: Superior conjunctions happen when the planet is on the opposite side of the Sun from us, i.e. the Sun is in between us and the planet, and Inferior conjunctions are when the planet is in the middle, i.e. it sits between us and the sun See both types of conjunction highlighted with the red rings on the diagram below. The inner planets are invisible to us at and near conjunctions because they are lost in the glare of the Sun. The rare exception to this is when an inferior conjunction happens and the sun. When that happens we see a spectacular transit of Venus or Mercury across the face of the Sun. Sadly, they are quite rare. To see Venus pass in front of the sun you need to be a young person, and ideally not even born yet because there are 95 years to go before the next one. Fortunately, we all stand a better chance of seeing little Mercury is when they are at greatest elongation, shown inside the pink rings on the diagram below. At greatest elongation, these planets are as far from the Sun as they get in our sky. That still normally means challenging viewing for Mercury. The tiny planet orbits so close to the sun that it is rarely visible for more than an hour before sunrise or after sunset, so we only ever find the planet in the glow of dusk or dawn. Venus orbits further out, so we do get to see it against the inky blackness of night, but it too sets or rises within a few hours of the Sun. This brings us to the final point you need to be aware of as a planet hunter: at greatest eastern elongation, the planet is visible after sunset. At its greatest western elongation, we'll see the planet in the morning, before sunrise. When is the Best Time to See A Planet? The diagram below shows an idealized position of inferior planets (outer ring) hitting conjunction, greatest elongation, and opposition with Earth (blue circle, middle ring). A guide to conjunctions, oppositions, and elongations. (Source) You can see that at both superior and inferior conjunctions the planet is in the same line of sight as the Sun, so we can't see it in the sky; the Sun's glare is too bright. The best time to see superior planets is at opposition because they are directly opposite the sun but behind Earth (green ring in the diagram), which makes them visible in the sky all night long. The best time to see inferior planets is at their Greatest Elongation. When to See The Superior Planets Mars, Jupiter, Saturn, Uranus, and Neptune all orbit further away from the inferior Mercury and Venus: They take longer to complete an orbit of the Sun than Earth, which makes them appear to move only slowly across the night sky, i.e. they only move a short distance compared to the background constellationsBeing inside their orbit, we can only see the side facing the sun, so they are always a complete disc. i.e. we never see them in crescent form The best time to see the superior planets is at opposition Just like Mercury and Venus, the superior planets also form [superior] conjunctions with Earth and the Sun. And, unsurprisingly, they too are invisible at this time because they are lost in the Sun's glare. The best time to see the outer planets of the solar system is at opposition. If you refer to the green circle in the diagram above, it's easy to see why. Unlike the inferior planets, the outer planet at opposition, we sit directly between them and the Sun. This is an awesome time for planet at opposition, we sit directly between them and the Sun. This is an awesome time for planet at opposition. is visible all night long and highest in the sky (transiting) around midnight! We get hours to see the planet high above the horizon during the hours of darkness. This often coincides with the planet's closest approach to Earth too, offering even more spectacular views. Okay, that's more than enough understanding of why we can or can't see the planets tonight. Let's turn now to the most important part of this article: which planets can we see tonight? Which Planets can is even tonight?" use the table below which is the perfect quick solution for you. It shows which of the five visible planets can be seen tonight?" dates for Mars, Jupiter, and Saturn, and greatest elongation dates for Mercury and Venus. For each of the five visible planets, we show you whether it is visible all night. Where there is '--' in the table, the planet is not visible during this month Elongation visible evening, Opp = Opposition, M = Morning, i.e. rises after midnight, E = Evening, i.e. rises before midnight, - = Not Visible for 1-2 weeks on either side of that date. Planets Visible Today - The Details Now you know which planets are visible in the sky tonight, let's look at them individually for more detail on where to see them throughout 2022. Is Mercury Visible Tonight? For the smallest planet in the solar system, you may be wondering can we see Mercury Visible Tonight? For the smallest planet in the solar system, you may be wondering can we see Mercury Visible Tonight? of the five brightest planets, Mercury is definitely the trickiest one to glimpse. For the best chance of success, find an elevated position, e.g. a hill that overlooks an open horizon. Mercury skirts so close to the ground - even at its best - that trees and buildings can prevent you from seeing it. Planet Mercury (source) Where Can You Find Mercury? The challenge to seeing Mercury comes from the short distance between it and the Sun, and the rapid orbit the planet has. Mercury is so close to the sun that we can never see it in true darkness. Its proximity to the sun also means that the little planet is never very high in the sky - it rarely rises more than 10° above the horizon after sunset or before sunrise. Ten degrees is about the width of your fist at the end of your outstretched arm, i.e. it's not very high. Our time to see it is also limited. Even at its best seeing, Mercury is usually only visible for up to an hour before sunrise in the morning or after sunset in the evening. And, because of its rapid orbit, we don't get to see Mercury for many days in a row either before it returns to the Sun, it's visible in the west straight after sunset and in the east immediately before sunrise. Mercury Seeing Challenges: Mercury. Yes, your first challenge is to see the planet itself. Whilst it is bright, it's always in the glare of the dawn or dusk low towards the horizon. Seeing the planet Mercury is a great first achievement! Mercury's phases. What is worth looking out for is the crescent of Mercury. Sky & Telescope Magazine always carry an almanac of how much of the surface is illuminated. (Read our Sky & Telescope review here). When Can We See Mercury from Earth? Mercury has a speedy orbit, so it does not hang around long and we have to grab opportunities to see it. Thankfully, Mercury has six greatest elongation events this year, three each in the evening and morning. Mercury has a speedy orbit, so it does not hang around long and we have to grab opportunities to see it. after sunsetFebruary 16, before sunriseApril 29, after sunsetJune 16, before sunriseAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetOctober 08, before sunriseDecember 21, after sunsetAugust 27, after sunsetAug For more details click this link for our dedicated guide to seeing Mercury with a telescope. 2022 Mercury Viewing Calendar Always be careful when searching for and viewing Mercury, especially if using binoculars or a telescope. telescope can blind you. January: Mercury is in Capricornus at the start of 2022. It's an evening 'star' best viewed between the third and eleventh of the month. It will be shining at magnitude -0.6 and quickly shrinks from 3/4 illuminated to less than a third over that viewing window. We can see it for a second time at the end of January when it will appear before sunrise low in the east. February: Although the little planet is a good distance from the sun in mornings at the start of Feb, the ecliptic is shallow and so Mercury doesn't rise very high over the horizon before sunrise. That said, with a good view of the eastern horizon, you may glimpse it in the growing light of dawn all through the first half of Feb. March: Mercury is as far as it gets from the sun, but we can't practically observe it this month because it is barely above the horizon as the sky gets too bright for us to observe it. Effectively, we're unable to observe it his month because it is barely above the horizon as the sky gets too bright for us to observe it. the planet is behind the sun from our perspective, and Mercury, the sun, and Earth are all in a straight line. We obviously can't see it at this point, but it marks the moment when Mercury transitions back to being an evening planet once again. We get good evening viewing for the whole of the second half of April, when the small planet starts in the constellation of Aries before crossing into Taurus on 25 April. Look for the planet low on the western horizon 40 minutes after sunset. It shines around magnitude -0.6, which is very bright and, once again, we'll see its disc shrink from 75% to 30% illuminated over the last two weeks in April. This is probably the best viewing opportunity of the year for Mercury. May: We can still see Mercury after sunset at the beginning of May. At the end of the first week, we find it not too far from the Pleiades and about 8° over the western horizon at 9pm. You'll observe that its small disc is less than 20% illuminated as its orbit steadily takes it in from tor for more perspective. By the middle of the month, Mercury is too close to the sun for us to observe it and it passes in front of the sun - inferior conjunction - on the 21st. June: Still in Taurus, Mercury starts the month of June as a morning planet once again. We're going to struggle to see it because of the shallow ecliptic in the morning. Its maximum elongation (farthest from the sun) is on 16 June. On this date, Mercury is just 5° above the western horizon for observers in mid-northern latitudes. This changes very little for the rest of June, however, you will see the disc fattening and brightening as the month progresses. By the end of June, Mercury shines at magnitude -0.8. If you're looking for more detail than this, take a look at the Virtual Astronomy Club. Each month we issue detailed guides for observing Mercury, including exactly where to look each day. July: The closest planet to the sun crosses into Cancer. It reaches superior conjunction on the 16th, meaning that it's practically where to look each day. unobservable for most of the month. We may just catch a glimpse of it very low on the western horizon after sunset on the last couple of days of the month, by which time it has moved into Leo. August: We get a similar situation in August to that of February, but in the evening, i.e. although Mercury is a long way from the sun, the ecliptic is so shallow that the small planet is barely over the horizon forty minutes after sunset. This is not a good month for Mercury observing. September: Now in Virgo, there is little improvement in the conditions for seeing Mercury. It passes between Earth and the sun on 23 September, which is when it transitions back to be a morning object. We might just spy it very low on the eastern horizon before dawn in the last couple of days of the month. As the first week of October ends, Mercury is about 8° over the eastern horizon forty minutes before sunrise and shining at magnitude -1.0. Its disc is increasing over the month - we can see it grow from quarter illuminated to over 90% lit during the first three weeks of October. We'll lose sight of Mercury from about the 23rd of the month. November 2022 too close to the sun to be observed. It passes directly behind our star on the eighth of the month. It has brief stints in the constellations of Libra and then Scorpius, before ending the month in Ophiuchus. Viewing is practically not possible this month December: The last month of 2022 sees Mercury transition into Sagittarius. Viewing is not great but around the time of its greatest separation from the sun, which happens on 21 December, we'll observe it about 7° above the southwest horizon forty minutes after sunset. At that time, it will shine at magnitude -0.6 and its disc is about two-thirds illuminated. Viewing quickly deteriorates as Mercury heads for inferior conjunction in the first week of 2023. Is Venus Visible Tonight? The next planet out from Mercury is Venus. After the Moon, Venus is the brightest object in our night sky Planet Venus without Clouds (source) Like Mercury, Venus orbits relatively close to the Sun and is known as either a morning or evening 'star' because it either rises in the morning before the Sun or sets after it in the evening. Unlike Mercury, Venus is far enough from the sun that we can see it in the darkness of nighttime and not just in the glow of dawn or dusk. Venus also has crescent phases, like our own Moon, which can be seen through a small telescope (link opens our favorites in a new tab). This is the only feature to observe on Venus because it has no moons of its own, nor any visible surface features. Where Can You Find Venus? Like all planets, Venus is found on the ecliptic but never strays too far from the western horizon when it's an evening star or the eastern horizon in the morning. The planet is unmistakably bright, shining much brighter than any other object in the night sky which makes it easy to view, even with a pair of binoculars. At its furthest from the Sun, Venus can spend a few nights where it is visible all night long. From central latitudes of the US, it can climb about 30° above the horizon. For more details click this link for our dedicated guide to seeing Venus with a telescope. Venus from Earth? Venus only has one greatest elongation in 2022, on April 20th, which is best viewed before sunrise. 2022 Venus Viewing Calendar January: Venus is not visible at the start of the sun from our perspective. However, we don't need to wait long to catch our first views of it in the new year. By the middle of the month, we can see it a few degrees above the southeast horizon forty minutes before sunrise. By the end of January, Venus shines at an incredibly bright magnitude -4.6 and is already 15° over the southeast horizon as dawn begins to take hold. Point your telescope in its direction and you'll observe a thin crescent disc just 10% illuminated on 25 January. February: Venus is in Sagittarius all month, as it was throughout January. The planet's disc is steadily filling in as it begins to swing around towards the back side of the sun. As it travels away from us, the apparent size of the disc shrinks from 50 arcseconds wide at the start of February to 31 at its end. All the while, pre-dawn viewing is great as the planet is high over the southeast. March: The brightest planet passes into Capricornus a week into March, when Venus will still be 15° above the southeast horizon forty minutes before sunrise. Very little changes before the end of the month, when we see a nice cluster of planets as Saturn and Mars keep Venus close company. April: The Venusian disc is only half lit as we begin April and it shrinks below 20 arcseconds wide during the course of this month. It still shines magnificently brightly at magnitude -4.2 as it commits to a move into Aquarius after the first week of April. We finally see viewing begin to wane a little by the end of the month, with the planet only reaching 10° over the horizon as dawn takes hold of the sky. Look out for a superb conjunction with Jupiter on 30 April, when the two planets are just 0.5° apart and easily fit into the same eyepiece view. May: Except for a brief trip into Cetus, Venus spends May in the constellation of Pisces. Find it by looking 12° over the eastern horizon throughout the month. Over the four weeks of May, the disc shrinks from 17 to 14 arcseconds as the planet travels farther from us on a journey that takes it behind the sun in October. Over the same period, we'll see the disc increasingly illuminated from two-thirds to three-quarters lit. June: Venus moves into Aries and the changing angle of the ecliptic has already brought the maximum height over the horizon down from its peak earlier this year. Venus observations hold steady in June, rewarding very early risers with great views of the planet over the eastern horizon. If you're looking for more detail than this, take a look at the Virtual Astronomy Club. Each month we issue detailed guides for observing Venus, including exactly where to look each day. July: Now moving through Taurus and then Gemini, Venus continues to shrink as it heads away from us on its own journey around the sun. Its disc is just 10 arcseconds wide at the end of the month but it is also 90% illuminated, so it continues to shine brightly at magnitude -3.9. Only at the end of this month do we see it finally less than 10° over the horizon forty minutes before sunrise - the first time its been this low since February. August: The changes happen more rapidly this month. Venus begins the month in Gemini and then passes through Cancer, before ending up in Leo for the last week of August. Over the same period, its disc continues to shrink and fill, ending the month 97% illuminated but only 10 arcseconds wide. Look for it shining at magnitude -3.9 9° over the eastern horizon in the middle of the month and just 5° high by the last days of August. September: Superior conjunction is a few weeks away now for Venus, which is why we see it shining at magnitude -3.9 9° over the eastern horizon in the middle of the month and just 5° high by the last days of August. rapidly approaching the sun this month. Venus is in Leo and then Virgo, but our viewing opportunities come to an end by the middle of the September, when this bright planet will be too close to the sun for us to see it. October: Superior conjunction is on the 23rd of the month. Venus is directly behind the sun on that date and is not visible for us to observe it for the whole of October. November: Although Venus is steadily pulling away from the sun once more, the ecliptic is so shallow in the evening that we won't get chance to spy the planet this month. December: Finally, we'll catch our first glimpses of Venus in quarter of a year when we spy it low over the western horizon after sunset towards the end of December. By this time, Venus is back in Sagittarius and shines at magnitude -3.9. Its disc is still only 10 arcseconds across and is 96% illuminated on the last day of 2022. We can look forward to better viewing again in 2023. Is Mars Visible Tonight? Passing our home planet, we begin the journey through the superior planets with Mars. Hubble picture of Planet Mars (source) Famous to everyone, astronomer or not, the ease with which it can be picked out in the night sky varies. But, if you've ever wondered 'can you see Mars without a telescope?' the answer is a definite Yes! Mars reaches opposition approximately every two years. The last time we enjoyed one was in October 2020 and the next one is in December of this year. The Red Planet spends much of its surface features out of reach of a regular backyard telescope. However, at the end of 2022, we'll get much better views as the planet becomes one of the larger night sky objects. Where Can You Find Mars? Mars travels along the ecliptic, just like Venus and Mercury, but, being further away from the Sun than we are, Mars orbits our star more slowly. Mars before soon moving to Sagittarius. The best time of the year to observe it is from around August onwards. Not only can we begin to see it in the late evening, but it will rapidly grow and reveal more of itself as it heads for its closest approach to Earth for two years in December. Click here for our dedicated guide to seeing Mars with a telescope. Mars Seeing Challenges: There are lots of features we backyard astronomers can look for on the Martian surface but many of them are not available to us this year given the distance of the planet. Redness of the disc. It is apparent in any size of telescopeGibbous Shape. Mars a gibbous shape a gibbous shape. Mars a gibbous shape a gibbous sha shape which you'll see in a 'scope.Polar Ice Caps. Easier to see in Martian winter. The last winter solstice was on Sep 02, 2020. The next one will be July 21, 2022. Shades of Color. Unless you have a truly enormous telescope you're unfortunately not going to see detail in Mars' surface features. However, you should be able to make out smudges of color, where darker and lighter areas of the Martian surface rub against each other. Phobos and Deimos. Meaning fear and panic, these are the two small moons of Mars. They are very dim (magnitude 11.3 and 12.4 respectively) putting them beyond the reach of smaller scopes. You'll need at least an 8" - 10" aperture with decent seeing conditions to find them.Dust Clouds. Mars experiences dust storms and you may be fortunate enough to see one of those through your scope. They don't run to a schedule, so it's all in the luck of your timing. For more details click this link for our dedicated guide to seeing Mars with a telescope. When Can We See Mars from Earth in 2022? January: It's not many weeks since Mars was at its most distant on the other side of the sun from us. Right now, it is on its return journey but the Red Planet is still small and dim. It begins the year in Ophiuchus before moving into Sagittarius mid way through January. The tiny red disc is just four arcseconds wide, so we're not going to see any surface features just yet, but it is easy enough to find 10° over the southeast horizon before dawn begins to break. February: Very little changes in February: Very little changes in February: Nars crosses the border from Sagittarius to Capricornus. This month, the Red Planet's disc will reach five arcseconds wide - which is still only about the size of Uranus. It is bright though, shining red at magnitude 1.1. April: It feels like a long time has passed with little to show for it. Still Mars is only 12° over the eastern horizon an hour before sunrise and its disc not appreciably larger. May: The Red Planet moved into Aquarius last month and stays there until May 18, when it crosses over to Pisces. In the meantime, it is growing larger, the disc reaches 6.5 arcseconds across by the end of the month, which is 50% wider than at the start of 2022. Mars is also much higher in the sky by the time dawn breaks, see its magnitude 0.8 disc 17° over the eastern horizon. June: We won't see the best of Mars until December, so we shouldn't expect too much at this stage in the year but there are signs of improvement. For a start, the planet is much brighter than six months ago, shining at magnitude 0.5. Its disc will be seven arcseconds wide by the end of the month and we can now see it almost a third of the way between horizon and overhead as the sky begins to brighten for dawn. If you're looking for more detail than this, take a look at the Virtual Astronomy Club. Each month we issue detailed guides for observing Mars, including exactly where to look each day. July: Mars moves into Aries at the end of July's first week. As it moves farther from the sun, we see it higher in the sky before sunrise. The change comapred to just a couple of months ago is quite dramatic because we now see Mars midway between horizon and overhead as dawn breaks. The Martian disc reaches 8 arcseconds across now and shines at magnitude 0.3. Larger telescopes should begin to reveal detail we've not been able to see for a year, but the views keep getting better over the course of 2022. August: For the first time this year, Mars rises before midnight. It is highest in the sky around 7:30 am, so not quite yet before sunrise, but it is closer to the zenith than the horizon when the day begins to break. Look for it two-thirds of the way towards the overhead point in the southeast an hour before sunrise. Mars is now in the constellation of Taurus and hard to miss shining red at magnitude zero. September: Mars is close to overhead now when the sun is an hour away from rising and can be observed before bedtime as well - on the last day of the month, we'll be able to see it 15° above the eastern horizon at midnight. Whenever you look for it, you'll note that it's hard to miss now. It shines at magnitude -0.4, making it one of the brightest objects in the night sky, and its disc is 12 arcseconds across by the end of the month, meaning smaller scopes have a fighting chance of observing surface details. October: With just two months to go until the planet's closest approach to Earth, Mars is increasing in size and brightness rapidly. By the end of this month, the Red Planet's disc is 15 arcseconds wide - almost four times wider than it was in January - and shines at magnitude -1.2. Mars transits the southern horizon. Mars rises at 9:30 pm in the middle of the month, so there is decent viewing to be had in the later evening now - no need to set an alarm for an incredibly early start. At midnight, Mars is 23° over the eastern horizon. Look for it in Taurus, where it will remain until 2023. November: Opposite the sun with us in the middle, is only a few weeks away now and all the data shows us that too. However, the planet is closest to Earth on the last day of this month. We'll see the disc grow to over 17 arcseconds wide by the end of November and it shines at magnitude -1.8. This month and next are prime for hunting down all the surface features your telescope can reveal. Evening astronomers can see the Red Planet 36° over the eastern horizon at 10pm in the middle of the month. It is at its highest when it transits the southern horizon at 2am, when it will be 75° high. December: Opposition happens on 07 December: Mars is visible all night long and highest in the sky at midnight. Peak viewing is the first week of the month because the disc has already shrunk back down to 15 arcseconds as 2022 gives way to 2023. After opposition, Mars is technically an evening planet and in the middle of the month, we'll see it 56° above the eastern horizon at 9pm. If you, or someone you know, receives a Christmas telescope, get them to immediately point it towards Mars for the best views they'll get until January 2025! Is Jupiter Visible Tonight? The fourth of our five visible planets is the solar system's giant: Jupiter from Hubble (source) Even though it is much further from us than Mars, the fact it's well over a thousand times and the red planet means Jupiter shines more brightly than it in our skies. At its brightest, Jupiter is the third brightest, Jupiter is the third brightest object in the night sky, beaten only by Venus and the Moon. So, if you're wondering 'can I see Jupiter without a telescope', you absolutely can! It's a bright planet and can be found shining in the constellations of Aquarius, Cetus, and Pisces in 2022. Whilst you can see the brightest moons of Jupiter too. If you don't own one yet, take a look at our reviews of the best telescopes. Even binoculars will show you the famous Galilean moons of Jupiter? Is Jupiter in the sky tonight? Well, happily, for most of 2022 the answer to that question is... Yes! However, it leaves evening skies in February and can't be seen again until before the Sun rises at the end of April. After that, it stays visible all year long, reaching opposition on 26 September. From then onwards, Jupiter is visible in evening skies to the end of the year. More detail follows below. If you want to know where to find Jupiter's moons tonight, then we recommend this simple tool from Sky & Telescope (link opens a new tab). Put in the date and time of your observing and discover where the Galilean moons will be. Jupiter Seeing Challenges: Galilean moons will be. Jupiter Seeing Ch moons) were discovered by Galileo Galilei over 400 years ago 1610. Outwards from the planet, they are Io, Europa, Ganymede (itself bigger than planet Mercury), and Callisto. They are easily visible as pinpricks of light on either side of Jupiter when they're not behind it. They move quickly and this almanac from Sky & Telescope will tell you which ones can be seen on any given day. Bands of Color. Jupiter is famous for its gas bands and even a relatively small telescope will show you the main bands as faint shades of grey. Larger scopes will reveal more detail and some color. Great Red Spot. This is perhaps Jupiter's most famous feature, which is why we have a dedicated guide to seeing the Great Red Spot. You'll need a decent magnification (250x) to see it, and this almanac to make sure you're looking for it at the right time. Moon Transits. Seeing the moons themselves is simple, but can you see them and their shadows cross in front of the planet? With good seeing, optics, and this almanac, you'll be proud of managing to see one of these events. For more details click this link for our dedicated guide to seeing Jupiter with a telescope. When Can We See Jupiter from Earth in 2022? January: As the year begins, Jupiter is a few weeks from it superior conjunction, which is when it will be directly behind the sun from our perspective. As it heads behind the sun, the largest planet in the solar system begins to disappear from our night sky. As it is, we'll see it after sunset for a couple of hours before Jupiter itself sets. Jupiter is 25° over the southwest horizon 40 minutes after sunset. When you spy it in Aquarius, you'll see its 34 arcsecond disc shining at magnitude -2.1. By the end of the month, Jupiter is only 14° over the southwest after the sky gets dark. February. The middle of the month is the practical cut-off for being able to see this giant planet. If you look for it after sunset, you'll see Jupiter is only just over the horizon. A few days after that, the gas giant is too close to the sun to be seen. March: Jupiter's superior conjunction happens on the seventh of this month. After that point, Jupiter puts distance between it and the sun, it barely rises above the horizon before the dawn breaks. Practically, Jupiter is unobservable this month. April: Forty minutes before sunrise in the middle of February, Jupiter is just 5° over the eastern horizon. That improves to 11° by the end of the month. If you point your telescope its way, you'll see the planet has crossed into Pisces, has a disc 34 arcseconds wide, and shines at magnitude -2.1. May: Viewing improves steadily again in May. At the middle of the month, Jupiter is 18° high as dawn breaks, and 25° high at the same time on the last day of the month. May 30 is a great day to look for Jupiter because it is with half a degree of planet Mars - we'll be able to see both planets in the same eyepiece view. June: Jupiter's opposition this year happens on 26 September. This is the point when we are closest to the largest planet in our solar system. Right now, Jupiter is getting closer to us with every day that passes and we see the pace of that increase throughout June. What we see over the course of this month is that the size of Jupiter's disc grows 10% from 36 arcseconds to 40 arcseconds, revealing more detail to our telescopes. To find the planet, look one third of the way above the southeastern horizon before dawn - it is the brightest object in the night sky except for the moon and Venus. If you're looking for more detail than this, take a look at the Virtual Astronomy Club. Each month we issue detailed guides for observing Jupiter, including exactly where to look each day. July: Jupiter spends July in the constellation of Cetus and, for the first time this year, it rises before midnight and reaches its highest point in the sky before sunrise. If we look for Jupiter at 5am on the last day of the month, we'll see it over halfway between the horizon and overhead point. The Jovian disc grows to 44 arcseconds wide. It's rising in the evening and, by the end of the month, we can observe it before we go to bed. If you look for the giant planet at 11pm on the last day of the month, you'll see it 23° over the eastern horizon. In the middle of August, this happens at 4am when Jupiter will be midway between the horizon and the overhead point. September: The opposition takes place on 26 September, which is also when the Jupiter is closest to us. At that time, the Jovian disc is in Pisces (where it remains for the rest of 2022), is almost 49 arcseconds wide, and shines at magnitude -2.9. The planet is visible all night long this month, reaching its highest point around midnight. Those of us who prefer early evening astronomy can also enjoy this spectacle - Jupiter is 25° above the southeast horizon at 9pm. October: The Jovian disc stays large and wonderful for telescopes throughout October; it doesn't shrink below 48 arcseconds until the 17th of the month. The planet is now an evening object and, in the middle of October, Jupiter transits the southern horizon 50° high just before midnight. November: During November, Jupiter's disc shrinks to (a still huge) 44 arcseconds across and remains shining brightly at magnitude -2.6. The big change this month is when it is best to view the planet. In the middle of November, Jupiter is highest in the sky at 8:30 pm when it will be midway between the horizon and zenith. December: We finish the year with Jupiter's transit now happening before 7pm in the middle of December. It is still bright, shining at magnitude -2.5, but the disc is 20% smaller than it was at its peak in September, being 40 arcseconds wide. Is Saturn Visible Tonight? Next, we come to the last of the five planets visible from Earth with the naked eye. And, for many, the most spectacular to look at with a telescope. Saturn and her glorious rings (source) If you're wondering "can I see Saturn without a telescope. Saturn and her glorious rings (source) If you're wondering "can I see Saturn and her glorious rings (source) If you're wondering "can I see Saturn and her glorious rings (source) If you're wondering "can I see Saturn without a telescope." easy to pick out. For many astronomers, nothing beats their first view of Saturn and its awe-inspiring rings through the eyepiece of a telescope. It's a pleasing and surreal sight that keeps many of us coming back to the ringed planet time and again. Where Can You Find Saturn? Like Jupiter, Saturn is a gas giant and even with its truly enormous distance from us it shines brightly in the sky and is easy to pick out with the naked eye. Saturn's distance from the Sun means it takes a leisurely 30 years to orbit the sun so, throughout 2022, it doesn't move much against the background of stars. The planet spends the whole year in the constellation of Capricornus. Much like Jupiter, Saturn has poor visibility for the first quarter of 2022. It improves as a morning object from March until it reaches opposition (its closest approach to Earth) on 14 August. After that, Saturn is an evening object visible for the rest of the year. Saturn seeing Challenges: Saturn's rings. Of course, this is where we start! In 2018 the rings appeared wider (more angled towards Earth) than since 2003. They will be edge-on to us in March 2025, so we see them angled below 14° in 2022. Binoculars won't show them, but even the most modest telescope and more magnification, it's a good challenge to break the rings down into their component parts: rings A, B, C, and D, and the Cassini Division. Titan. Saturn's largest moon (which, like Ganymede, is also larger than Mercury) shines at magnitude 8.3 and is visible with a 4" scope. It orbits quite a distance from the planet but is relatively easy to find if you look at the right time. There are another 61 moons around Saturn, but none even close to the size of Titan. However, if you're fortunate enough to have an 8" scope, you could try spotting the next four largest moons, which are Enceladus, Dione, Tethys, and Rhea. Use this almanac to help you find them. When Can We See Saturn from Earth in 2022? January: Saturn is fading from view as we start the new year. It will be directly behind the sun on February 04 (known as superior conjunction), which means we only have a few days to glimpse it low on the western horizon - near Mercury - forty minutes after sunset. The ringed planet itself sets just 45 minutes later. February: We can't observe Saturn this month because it is too close to the sun. March: Gradually, we welcome Saturn back to morning skies this month. In the middle of March, the planet is in Capricornus, where it will spend the rest of 2022, and can be seen a few degrees above the eastern horizon an hour before sunrise. It is shining at magnitude 0.8 and has a disc which is 15 arcseconds across. April: Views are much better this month, but you'll see it 15 degrees over the southeast horizon, with Mars and Venus to its east. At magnitude 0.9, this is the faintest Saturn will be in 2022. That's because it is gradually coming closer to Earth, heading for its closest approach in August. May: The ringed planet is still best viewed before dawn starts to break. An hour before sunrise, we'll find it 25° above the southeast horizon, still in Capricornus. Its disc grows to 17 arcseconds this month but the difference is too subtle for us to notice yet. June: As opposition comes closer, we're in a position to see Saturn at its highest point before sunrise. At mid-month, the ringed planet crosses the south horizon before 5am at an angular height of 33°. Pay attention, when you see Saturn in your eyepiece, to the angle of the rings. They are steadily tipping in our direction so that on 23 March 2025, they will be edge of to us. In the middle of June 2022, the rings are at tipped at an angle of 12.4°. This time last year they were at 17.0° and in a year from now, they'll be tipped just 7.3° towards us. The reality for us as observers is that we'll be able to see less and less of the famous rings as time passes from now until March 2025. If you're looking for more detail than this, take a look at the Virtual Astronomy Club. Each month we issue detailed guides for observing Saturn, including exactly where to look each day. July: Saturn now rises before midnight and can be seen a few degrees above the eastern horizon as today gives way to tomorrow. It is highest in the sky when it transits the southern horizon around 3:30 in the morning. At that time, the planet is 36° over the horizon. Viewing improves markedly over the course of July because opposition is not far away. By the end of this month, the planet shines brightly at magnitude 0.4 and has a disc which is almost 19 arcseconds wide. Earth are at their closest to each other. The two planets are lined up in a straight line with the sun and we have viewing opportunities all night long. The ringed planet rises around 8pm, reaches its highest in the sky at 1am, and sets at 6:30am. Your telescope will reveal a 19 arcsecond disc and rings now tipped at less that 14° towards us. September With opposition behind us, Saturn moves firmly into evening observation territory. It is highest around 11pm in the middle of the month, when we can see it 35° over the southern horizon. The planet rises around 6pm, so there is good viewing to be had as soon as the sky is dark. October: Peak viewing moves forwards two hours to 9pm. We're two months past opposition and the disc has shrunk a little (it doesn't vary much over the year) to below 18 arcseconds. Saturn's brightness has also faded a bit to 0.6. November: Transit happens at 6pm and because its late fall, we have dark skies then and can still enjoy lovely views of Saturn. The disc has shrunk below 17 arcseconds and shines at magnitude 0.7. December: For the first time since January, Satun reaches its highest point in the sky before the sun sets, which means the best time to observe it now is as soon as darkness falls. An hour after sunset, we still see Saturn a third of the way over the southwest horizon. Its 16 arcsecond disc shining at magnitude 0.8 still provides great observation opportunities. Can I See Uranus and Neptune Tonight? We touched on them briefly in the introduction. Uranus and Neptune are the last two planets in the solar system. We've not covered them in detail as they are a much harder spot than the other five, but they may be a challenge you want to take on as you become more proficient at looking around the sky with your telescope. Click here for our detailed guide to seeing Uranus. Click here for our detailed guide to seeing Uranus and more for Neptune. You'll also need a detailed finder chart for Uranus and Neptune so you know where to look. It can be hard to know if you've found what you're looking for, but they both shine with a blue/green light and, of course, they move over successive nights with respect to the background stars. Summary All five visible planets put on spectacular shows at various points in 2022, with Saturn, then Jupiter, and finally Mars delivering wonderful oppositions from summer until the end of the year. Each planet offers its own unique challenges from simple to moderately difficult. Make a reminder to look for Mercury and Venus when they are at opposition. 2022 Opposition Dates for the Planets Mars - 07 December Jupiter - 27 SeptemberSaturn - 14 AugustUranus - 09 NovemberNeptune - 16 September Planet-Finding Resources These are some useful resources to help you further with your planet observation. Written by Adam Kirk

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