TELESCOPE OBJECTS TO VIEW

There are many kinds of deep sky objects to see: stars, double stars, open star clusters, globular clusters, galaxies, nebulae, and planetary nebulae.

Different size aperture and types of telescopes can give you different views of objects. The larger the aperture and the darker the skies the better most deep sky objects will look. **PAS has come up with some of our favorite deep sky telescopic objects that look good depending on the size of the scope and the darkness of the night sky.**

(Darkness of the sky is shown in Bortle numbers. Bortle 1-3 is darkest, many miles away from any lights, like the antennas location Bortle 2. Bortle 4-5 is suburban or outskirts of the valley like Cave Creek or Carefree. Bortle 6-9 is inside the Phoenix city limits with various degrees of light pollution.)

5 inch refractor telescope:

Fall: NGC 7009 Saturn Planetary Nebula outskirts of Valley (Bortle 4-5)
Winter: NGC 7662 Blue Snowball Planetary Nebula , NGC 2169 “XY” star cluster outskirts of valley (Bortle 4-5)
Spring: Stargate asterism 2 nested triangles outskirts of valley (Bortle 4-5) NGC 3242 Ghost of Jupiter Planetary Nebula dark skies like the antennas area (Bortle 2)
Summer: deep red carbon star 1 Lyrae, Collinder 399 Coat Hanger asterism outskirts of valley (Bortle 4-5)

6 inch Dobsonian reflector telescope:

Fall: Double Cluster in Perseus, Andromeda Galaxy M31 outskirts of Valley (Bortle 4-5)
Winter: Pleiades Open Cluster M45, Orion Nebula M42 in Phoenix (Bortle 6-8)
Spring: Beehive Open Cluster M44, Hercules Globular Cluster M13 (Bortle 4-5)
Summer: Ptolemy’s Open Cluster M7 in Scorpius (Bortle 4-5) Lagoon Nebula M8 dark sky (Bortle 2)

8 inch Newtonian reflector telescope:

Fall: Gamma Andromeda blue and gold double star in Phoenix (Bortle 6-8)
Winter: Orion Nebula M42 outskirts of the Valley (Bortle 4-5)
Spring: M81 and M82 galaxies dark sky like Antennas location (Bortle 2)
Summer: M13 globular cluster outskirts of Valley (Bortle 4-5)

9 ¼ inch Schmidt Cassegrain telescope:

Fall: Albireo and Gamma Andromeda double stars blue and gold in Phx (Bortle 6 8), Stephan's quintet of galaxies Hickson 92 (NGC's 7317, 7318a, 7318b, 7319,7320) dark sky area (Bortle 2)
Winter: Orion Nebula and Running Man Nebulae M42 &M43 in Phx (Bortle 6-8) M35 Open Cluster Phx (Bortle 6-8)
Spring: Omega Centauri Globular Cluster southern outskirts of Phoenix (Bortle 4-5), M35 Open Cluster in Phoenix (Bortle 6-8)
Summer: Swan Nebula M17 (use OIII filter) and Lagoon Nebula M8, if south of the valley (Bortle 4-5)

14 inch Dobsonian reflector telescope:

Fall: Perseus double cluster Phx (Bortle 6-8), M37 open cluster outskirts of valley (Bortle 4-5), M17 & M20 Nebulae and Open Clusters NGC 7789 and M11 Wild Duck in dark sky area like antennas (Bortle 2)
Winter: Orion Nebula M42 in Phx (Bortle 6-8), Andromeda Galaxy M31 outskirts of Valley (Bortle 4-5), Open Clusters M41 and M50 dark area (Bortle 2)
Spring: M81 and M82 galaxies outskirts of valley (Bortle 4-5) M51 Whirlpool galaxy and M5 &M13 globular clusters, and Virgo region galaxies (M86 and surrounding area) all in dark area (Bortle 2)
Summer: M57 Ring Nebula outskirts of Valley (Bortle 4-5) , NGC 6826 Blinking Planetary Nebula, Helix Nebula NGC 7293, Veil Nebula Caldwell 33/34, Sculptor Galaxy NGC 253, M27 dumbell nebula dark area (Bortle 2)

22 inch Dobsonian reflector telescope:

Fall: NGC217 Galaxy dark area like antennas (Bortle 2), NGC1032 Edge-on galaxy (Bortle 2), NGC Sculptor Galaxy (Bortle 2), NGC891 galaxy (Bortle 2), NGC404 Lost Pearl Galaxy (Bortle 2) , NGC7789 Carolines Rose Open Cluster (Bortle2), NGC225 Sailboat Open Cluster outskirts of valley(Bortle 4-5) , NGC6939 Open Cluster (Bortle 2)

Winter: NGC2392 Eskimo Nebula (Bortle 2), NGC2261 Hubble's Variable Nebula (Bortle 2), NGC 2237 Rosetta Nebula (Bortle 2), IC434 Horsehead Nebula try NPB and H-Beta filters (Bortle 2), NGC 1514 Planetary Nebula (Bortle 2), NGC 2024 Flame Nebula (Bortle 2), NGC2419 Intergalactic Wanderer Globular Cluster (Bortle 2),

Spring: M51 Whirlpool Spiral Galaxies showing the connection (Bortle 2), M64 Black Eye Galaxy (Bortle 2), M104 Sombrero Galaxy southern outskirts of valley (Bortle 4-5), NGC4565 Needle Galaxy (Bortle 2), NGC2903 Galaxy (Bortle 2), NGC4038/4039 Antenna Galaxies colliding (Bortle 2), NGC 5139 Omega Centauri largest Globular Cluster in Milky Way southern outskirts of valley (Bortle 4-5)

Summer: M92 Globular Cluster (Bortle 4-5), M16 Eagle Nebula & M22 Trifid Nebula & M8 Lagoon Nebula all 3 in Saggitarius use OHI or NPB filter southern outskirts of valley(Bortle 4-5), NGC 6543 Cats Eye planetary nebula (Bortle 2), NGC 6960/6995 Eastern and Western Veil Nebula NPB filter (Bortle 2), NGC 6818 Little Gem Planetary Nebula (Bortle 2), NGC 6645 Open Cluster (Bortle 2), NGC 6520 Open Cluster Dead Mans Chest (Bortle 2), NGC 6755 Aquila Open Cluster southern outskirts of valley (Bortle 4-5), NGC 6712 Scutum Globular Cluster southern outskirts of valley (Bortle 4-5), NGC6229 a different Globular Cluster in Hercules (Bortle 2)

Just a note, the Moon and planets can be seen in all of the above telescopes, even in Phoenix (Bortle 6-8). However, the larger the aperture, the more details that can be observed. The best targets are the Moon, Jupiter, and Saturn in all scopes. Mars, Venus, Uranus and Neptune can look good in larger scopes depending on how close the planets are to Earth at the time of viewing.