

INSTRUCTIONS FOR ASSEMBLING UNCLE AL'S KEPLER STAR WHEELS

- Step 1: Copy Star Wheel and Star Wheel Holder pages on heavy cardstock or use glue stick or doublestick tape to adhere pages onto a file folder or heavy cardstock.
- Step 2: Cut along the black outer circle of the Star Wheel and along the solid lines on the Star Wheel Holder. Remove the interior oval shape on the Star Wheel Holder.

- Step 3: On the Star Wheel Holder, fold the cardboard along the dotted lines.
- Step 4: Tape the sides of the Star Wheel Holder on the back to form a pocket.
- Step 5: Place the Star Wheel in the Star Wheel Holder.

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 Uncle Al's Star Wheels are based on LHS Sky Challengers created by Budd Wentz.
 Uncle Al's Star Wheels - <http://www.uncleal.net/uncle-als-starwheels>
 Kepler Star Wheel - <http://kepler.nasa.gov/ed/skywheel>

STAR WHEEL HOLDER

KEPLER STAR WHEEL

UNCLE AL'S HANDS-ON UNIVERSE

HOLDER FOR LATITUDES
ABOUT 30°-50°N

NORTHERN HORIZON

EASTERN HORIZON

WESTERN HORIZON

SOUTHERN HORIZON

2AM 1AM 12AM 11PM 10PM 9PM 8PM 7PM 6PM
3AM 4AM 5AM 6AM

Star wheels have Kepler field of view & naked-eye stars known to have planets (down to magnitude 5)

Green circles denote stars with exoplanets. Magnitude numbers are written right in the stars for 1st, 2nd, & 3rd mag

See separate page for star & planet details.

Learn about NASA's *Kepler* Mission at <http://kepler.nasa.gov>

Instructions for Using Uncle Al's Star Wheels

1. Align your date and time, and then look up at the sky.
2. Locate the constellation you want to find on the map.
3. Turn your map so the horizon it is closest to is at the bottom.
4. The star positions in the sky should match those on the wheel.

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Uncle Al's Star Wheels - <http://lhs.berkeley.edu/hou/img/uncleal>
Kepler Star Wheel - <http://kepler.nasa.gov/ed/skywheel>

Version: August 2012

Tape

Tape

STAR/PLANET DETAILS

PLANET NAME	V	RA	DEC	Unit:	Period	Semi-major axis	Planet Mass (min)	Distance	Star Mass	Star Temp	Star Radius
				day	au	mjupiter	pc	msun	k	rsun	
1 beta Gem b	1.15	07:45:19.364	+28:01:34.72	589.64	1.73	2.69	10.36	2	4666	11.01	
2 alpha Ari b	2	02:07:10.286	+23:27:46.00	380	1.18	1.86	20.18	1.5	4553	17.65	
3 gamma Leo A b	2.12	10:19:58.162	+19:50:30.70	428.5	1.19	8.82	39.89	1.23	4300	42.55	
4 gamma Cep b	3.21	23:39:20.982	+77:37:55.08	905.57	2.14	1.77	14.1	1.59	4888	5.01	
5 iota Dra b	3.29	15:24:55.784	+58:57:57.68	511.1	1.53	12.72	31.03	1.82	4545	11.99	
6 epsilon Tau b	3.53	04:28:36.933	+19:10:49.88	594.9	1.93	7.62	44.96	2.7	4901	12.28	
7 epsilon Eri b	3.72	03:32:56.422	-09:27:29.90	2500	3.38	1.05	3.22	0.82	5145	0.74	
8 7 CMa b	3.95	06:36:40.999	-19:15:20.55	763	1.88	2.65	19.75	1.52	4792	2.3	
9 upsilon And c	4.1	01:36:47.977	+41:24:22.99	241.33	0.83	1.92	13.49	1.31	6212	1.38	
upsilon And d	4.1	01:36:47.977	+41:24:22.99	1278.12	2.52	4.12	13.49	1.31	6212	1.38	
upsilon And b	4.1	01:36:47.977	+41:24:22.99	4.62	0.06	0.67	13.49	1.31	6212	1.38	
10 HD 60532 b	4.45	07:34:03.206	-22:17:46.25	201.3	0.76	1.03	25.3	1.44	6095	2.35	
HD 60532 c	4.45	07:34:03.206	-22:17:46.25	604	1.58	2.46	25.3	1.44	6095	2.35	
11 tau Boo b	4.5	13:47:16.037	+17:27:24.39	3.31	0.05	4.12	15.62	1.34	6387	1.42	
12 xi Aql b	4.71	19:54:14.822	+08:27:41.94	136.75	0.68	2.81	56.27	2.2	4780	10.45	
13 11 Com b	4.78	12:20:43.093	+17:47:33.55	326.03	1.29	19.43	88.89	2.7	4742	18.39	
14 kappa CrB b	4.79	15:51:13.937	+35:39:29.62	1261.94	2.8	2.01	31.1	1.84	4970	3.52	
15 42 Dra b	4.83	18:25:58.988	+65:33:48.77	479.1	1.19	3.89	96.53	0.98	4200	36.15	
16 61 Vir c	4.87	13:18:24.972	-18:18:31.00	38.02	0.22	0.03	8.56	0.94	5571	0.98	
61 Vir d	4.87	13:18:24.972	-18:18:31.00	123.01	0.47	0.07	8.56	0.94	5571	0.98	
61 Vir b	4.87	13:18:24.972	-18:18:31.00	4.22	0.05	0.02	8.56	0.94	5571	0.98	
17 70 Vir b	4.97	13:28:25.950	+13:46:48.68	116.69	0.48	7.46	17.99	1.1	5544	1.6	

Abbreviations:

RA - Right Ascension

DEC - Declination

V - Magnitude of star

Greek letters used

α alpha

β beta

γ gamma

ε epsilon

κ kappa

ξ xi

And - Andromeda

Aql - Aquila

Ari - Aries

Boo - Boötes

Cep - Cepheus

Cma - Canis Major

Com - Coma Berenices

CrB - Corona Borealis

Dra - Draco

Eri - Eridanus

Gem - Gemini

Tau - Taurus

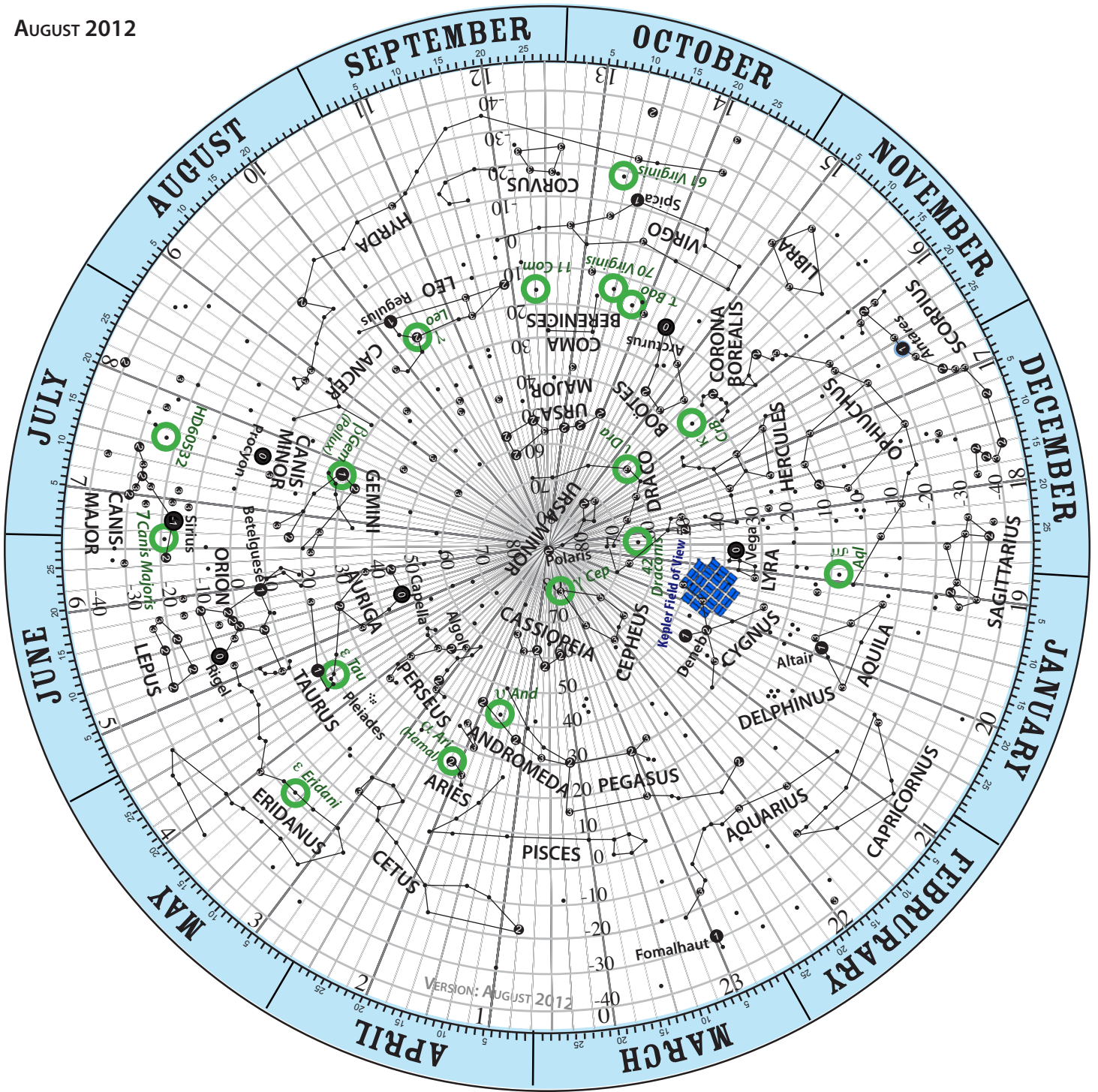
Vir - Virgo

HD - Henry Draper catalog #

b - 1st planet discovered

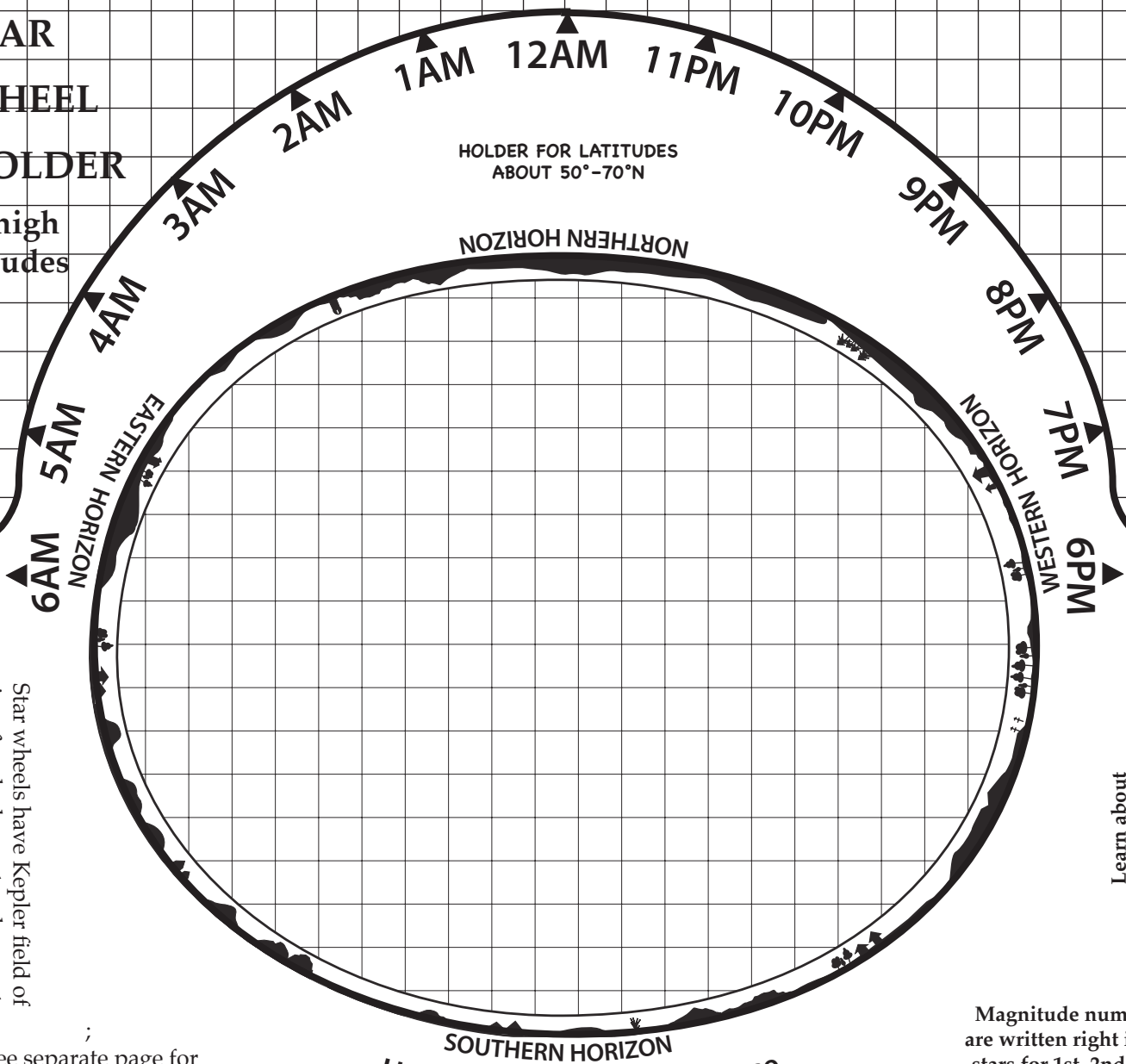
c - 2nd planet discovered

d - 3rd planet discovered



STAR WHEEL HOLDER

for high latitudes



HOLDER FOR LATITUDES ABOUT 50°-70°N

NORTHERN HORIZON

EASTERN HORIZON

WESTERN HORIZON

SOUTHERN HORIZON

Uncle Al's Hands-On Universe Kepler Star Wheel

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