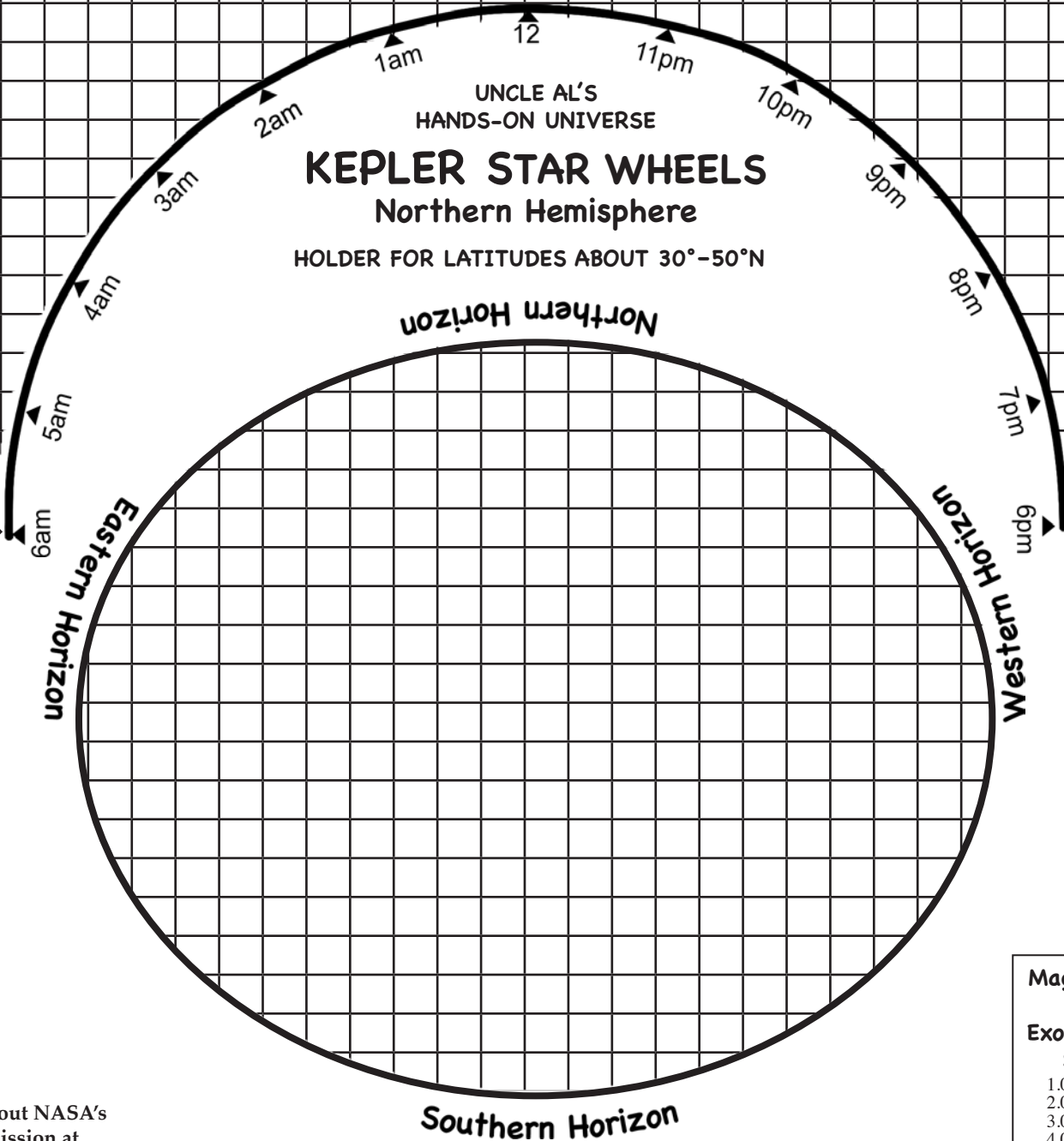


KEPLER STAR WHEELS

Northern Hemisphere

UNCLE AL'S
HANDS-ON UNIVERSE

HOLDER FOR LATITUDES ABOUT 30°-50°N



Magnitude of Exoplanet's Star	
1.0-1.9	◆
2.0-2.9	◆
3.0-3.9	◆
4.0-4.9	◆
5.0-5.9	◆

The Kepler star wheels show Kepler field of view and naked-eye stars known to have planets (stars down to about magnitude 6)

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

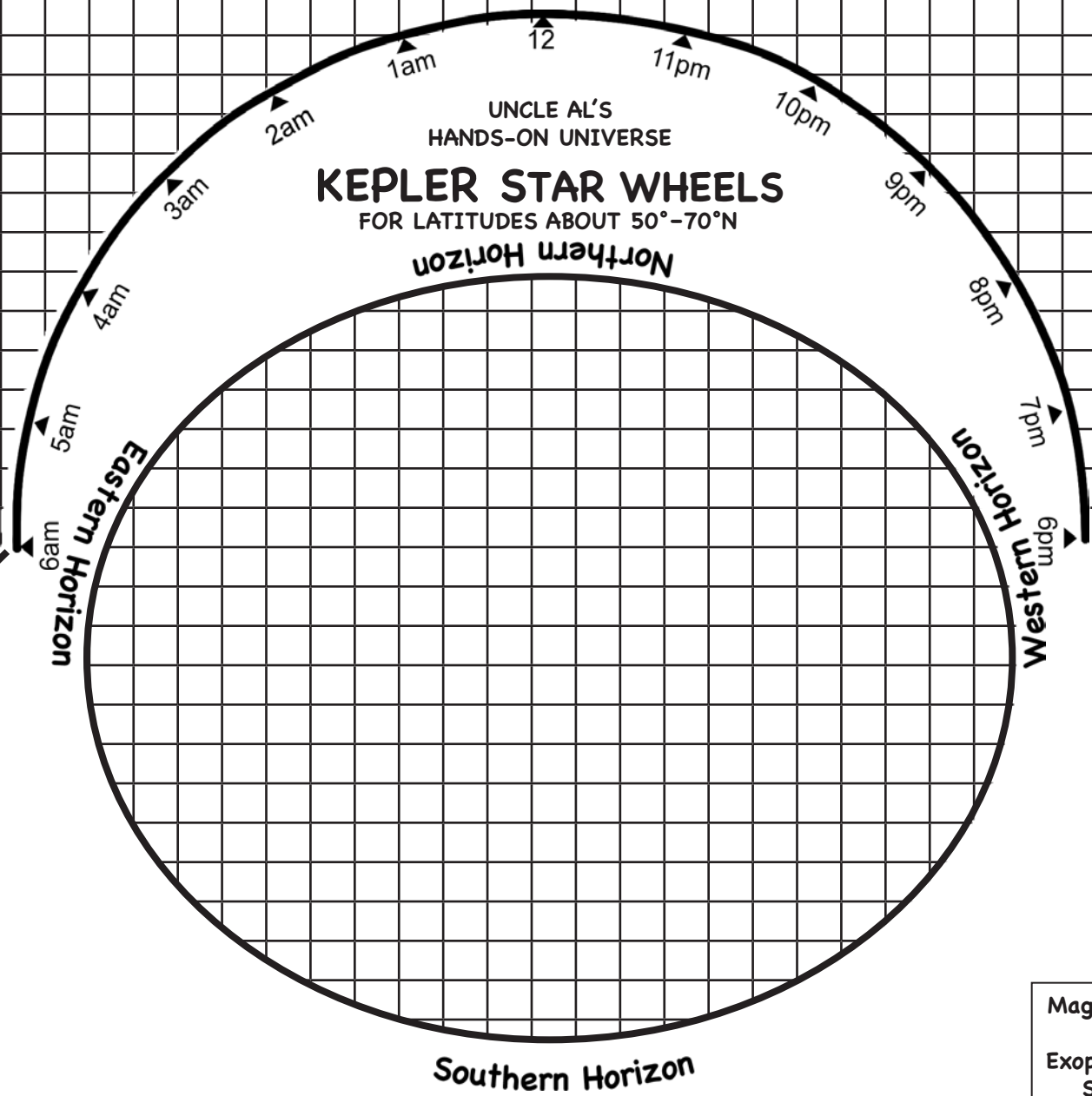
Instructions for Using Uncle Al's Star Wheels

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.

© 2008, 2009, 2010 by the Regents of the University of California
 Uncle Al's Star Wheels are based on LHS Sky Challenges created by Budd Wentz and available through LHS Museum Stores 10-642-1016 <http://www.lhs.berkeley.edu/pass/ast110&111&121.html>
 Uncle Al's Star Wheels - <http://lhs.berkeley.edu/hou/img/uncleal>
 Kepler Star Wheel - <http://keplernasa.gov/ed/skywheel>

Version: August 2011

UNCLE AL'S
HANDS-ON UNIVERSE
KEPLER STAR WHEELS
FOR LATITUDES ABOUT 50°-70°N



The Kepler star wheels show Kepler field of view and naked-eye stars known to have planets (stars down to about magnitude 6)

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

For Northern Hemisphere—High Latitudes

Magnitude of Exoplanet's Star	
1.0-1.9	◆
2.0-2.9	◆
3.0-3.9	◆
4.0-4.9	◆
5.0-5.9	◆

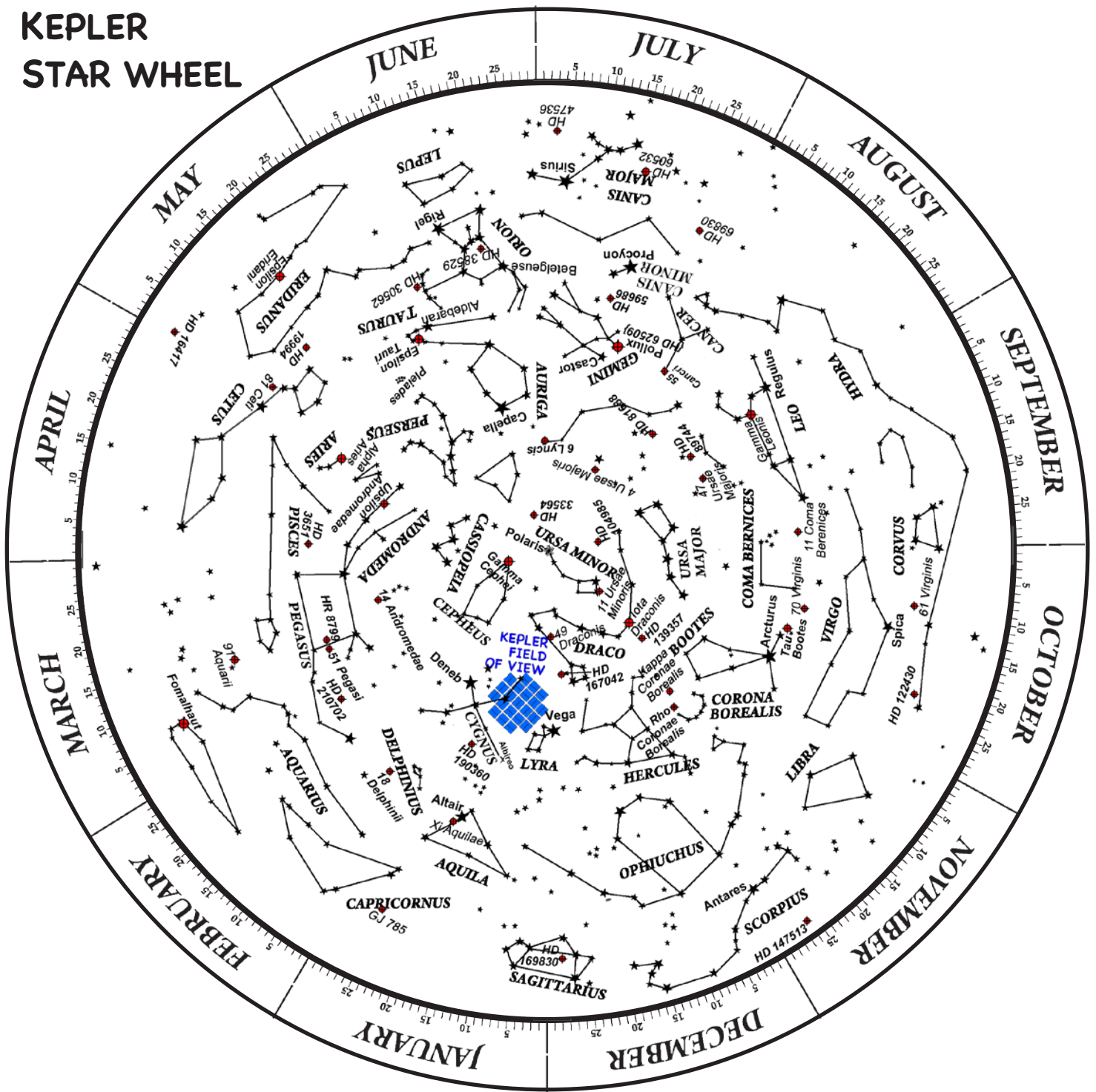
Instructions for Using Uncle Al's Star Wheels

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.

© 2008, 2009 by the Regents of the University of California
 Uncle Al's Star Wheels are based on LHS Sky Challengers created by Budd Wentz and available through LHS Museum Store
 510-642-1016 <http://www.lhs.berkeley.edu/pass/ast110&ast111&ast112.html>
 Download Uncle Al's Sky Wheels from <http://lhs.berkeley.edu/hou/img/uncleal>

Version: August 2011

KEPLER STAR WHEEL



INSTRUCTIONS FOR ASSEMBLING UNCLE AL'S STAR WHEELS

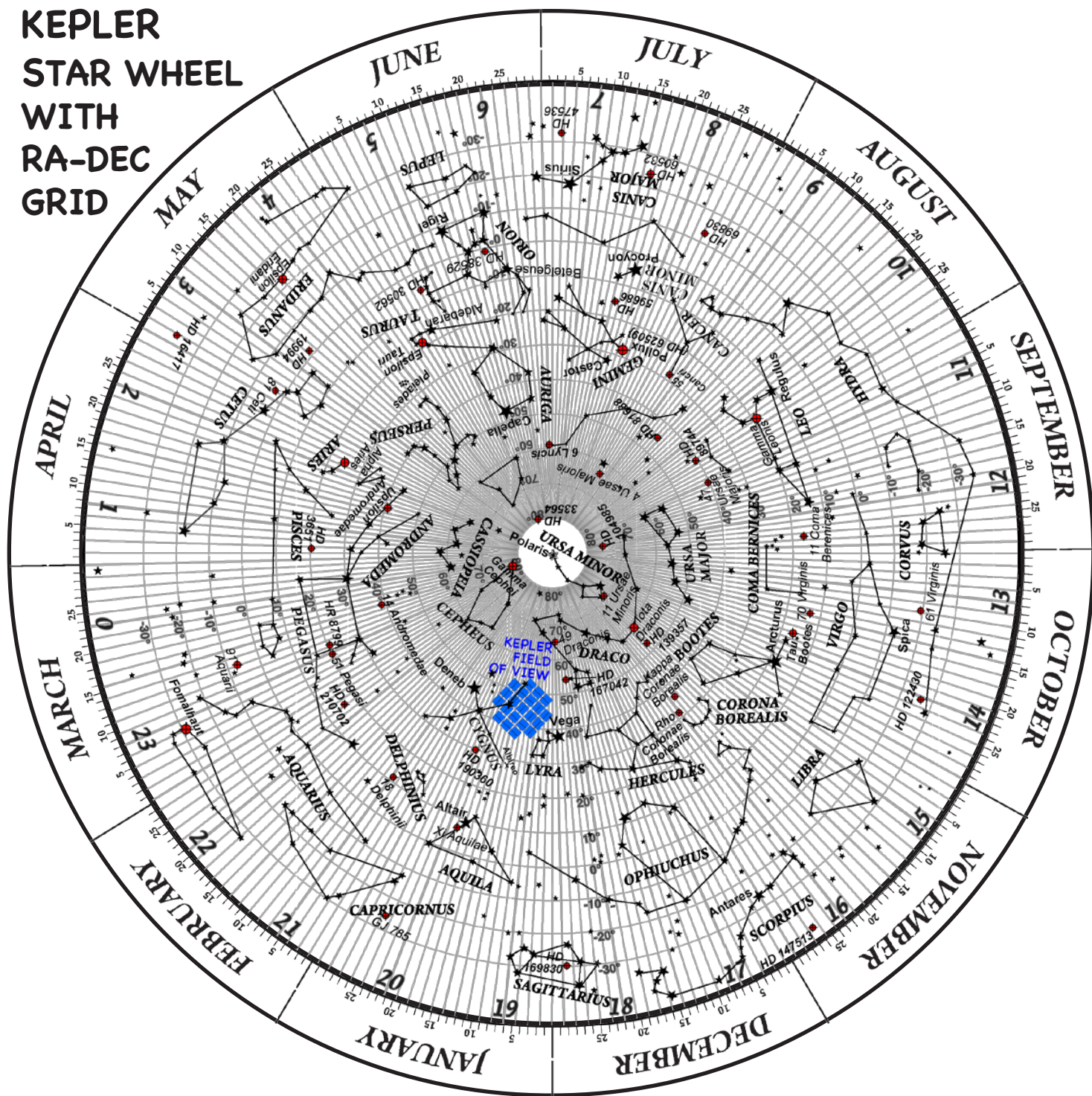
- Step 1: Print out all pages either on heavy cardstock or paste them onto a file folder or any other sturdy piece of cardboard.
- Step 2: Cut along the black outer circle of the Star Wheel and along the solid lines on the Star Wheel Holder. Remove the interior oval shape on the Star Wheel Holder.
- Step 3: On the Star Wheel Holder, fold the cardboard along the dashed lines.
- Step 4: Tape or staple along the edges of the Star Wheel Holder forming a pocket.
- Step 5: Place the Star Wheel in the Star Wheel Holder.

© 2008, 2009 by the Regents of the University of California
 Uncle Al's Star Wheels are based on LHS Sky Challengers created by Budd Wentz and available through LHS Museum Store 510-642-1016 <http://www.lhs.berkeley.edu/pass/ast110&111&121.html>

Version:
 August 2011

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

KEPLER STAR WHEEL WITH RA-DEC GRID



Planets on the Kepler Star Wheel in order of the brightness of the planet's star

Kepler Star Wheel constructed with data from exoplanet.org
(those at declinations south of -39° are not plotted)

Naked eye stars with exoplanets

STAR

PLANET

DATE	NAME	Mag	RA	DEC	Dist (pc)	Mass	Radius	SPTYPE	Semi-major axis	MSINI	Period
1993	HD 62509 b	1.150	7:45:19	+28:01:34.72	10.358	2	11.007	K0 III	1.735	2.687	589.640
	Fomalhaut	1.73	22:57:39	-29:37:20	7.66	2.1	1.832	A3V	115		872
2011	alpha Ari b	1.996	2:07:10	+23:27:46.00	20.178	1.5	17.653	K2 III	1.176	1.860	380
2010	gamma Leo A b	2.120	10:19:58	+19:50:30.70	39.888	1.230	42.552	K1III	1.195	8.818	428.5
1988	gamma Cep b	3.210	23:39:21	+77:37:55.08	14.102	1.590	4.301	K	2.139	1.772	905.574
2002	iota Dra b	3.290	15:24:56	+58:57:57.68	31.027	1.050		K2III	1.275	8.820	511.098
2007	epsilon Tau b	3.530	4:28:37	+19:10:49.88	44.964	2.700	12.278	K0III	1.929	7.620	594.900
2000	epsilon Eri b	3.720	3:32:56	-09:27:29.90	3.216	0.856	0.783	K2V	3.424	1.085	2500
1999	upsilon And d	4.100	1:36:48	+41:24:22.99	13.492	1.310	1.383	F8V	2.525	4.116	1278.122
1999	upsilon And c	4.100	1:36:48	+41:24:22.99	13.492	1.310	1.383	F8V	0.830	1.919	241.333
1997	upsilon And b	4.100	1:36:48	+41:24:22.99	13.492	1.310	1.383	F8V	0.059	0.669	4.617
2008	HD 60532 c	4.450	7:34:03	-22:17:46.25	25.297	1.440	2.351	F6IV-V	1.580	2.463	604
2008	HD 60532 b	4.450	7:34:03	-22:17:46.25	25.297	1.440	2.351	F6IV-V	0.759	1.035	201.3
1997	tau Boo b	4.5	13:47:16	+17:27:24.39	15.618	1.341	1.418	F7V	0.048	4.120	3.312
2008	xi Aql b	4.710	19:54:15	+08:27:41.94	56.275	2.200	11.243	K0 III	0.676	2.807	136.75
2008	11 Com b	4.783	12:20:43	+17:47:33.55	88.889	2.700	18.386	G8 III	1.294	19.434	326.03
2008	kappa CrB b	4.790	15:51:14	+35:39:29.62	31.100	1.840	3.522	K0 IV	2.801	2.009	1261.94
2009	42 Dra b	4.833	18:25:59	+65:33:48.77	96.525	0.980	36.145	K1.5III	1.192	3.892	479.1
2010	61 Vir b	4.866	13:18:25	-18:18:31.00	8.555	0.942	0.979	G5V	0.050	0.016	4.215
2010	61 Vir c	4.866	13:18:25	-18:18:31.00	8.555	0.942	0.979	G5V	0.217	0.033	38.021
2010	61 Vir d	4.866	13:18:25	-18:18:31.00	8.555	0.942	0.979	G5V	0.475	0.072	123.01
1996	70 Vir b	4.970	13:28:26	+13:46:48.68	17.986	1.101	1.598	G5V	0.484	7.461	116.688
2009	11 UMi b	5.024	15:17:06	+71:49:25.96	122.100	1.800	44.650	K4 III	1.535	11.087	516.22
1996	47 UMa b	5.030	10:59:28	+40:25:48.44	14.063	1.063	1.119	G0V	2.101	2.546	1078
2002	47 UMa c	5.030	10:59:28	+40:25:48.44	14.063	1.063	1.119	G0V	3.572	0.546	2391
2004	HD 19994 b	5.070	3:12:46	-01:11:45.36	22.578	1.365	1.404	F8 V	1.306	1.327	466.2
2005	HD 33564 b	5.080	5:22:34	+79:13:50.72	20.886	1.25		F6V	1.124	9.128	388
2008	14 And b	5.220	23:31:17	+39:14:11.05	79.177	2.150	11.791	K0 III	0.823	4.684	185.84
2004	HD 147513 b	5.370	16:24:01	-39:11:34.76	12.778	1.072	0.850	G5V	1.310	1.180	528.400
1997	rho CrB b	5.390	16:01:03	+33:18:19.40	17.235	0.965	1.101	G2V	0.226	1.064	39.845
2008	HD 81688 b	5.400	9:28:40	+45:36:06.46	85.837	2.100	20.823	K0 III-IV	0.811	2.691	184.02
1995	51 Peg b	5.450	22:57:28	+20:46:07.26	15.608	1.054	1.025	G5V	0.052	0.461	4.231
2008	18 Del b	5.510	20:58:26	+10:50:21.73	75.301	2.300	9.323	G6 III	2.575	10.210	993.3
2008	81 Cet b	5.650	2:37:42	-03:23:46.23	100.908	2.400	17.997	G5 III	2.539	5.341	952.7
2000	HD 89744 b	5.730	10:22:11	+41:13:47.52	39.432	1.558	1.800	F7V	0.918	8.472	256.78
2005	HD 190360 c	5.730	20:03:37	+29:53:53.09	15.858	0.983	1.075	G6IV	0.129	0.059	17.111
2003	HD 190360 b	5.730	20:03:37	+29:53:53.09	15.858	0.983	1.075	G6IV	3.973	1.535	2915.037
2011	GJ 785 b	5.730	20:15:17	-27:01:57.13	8.911	0.780	0.767	K1 V	0.319	0.068	74.39
2009	HD 30562 b	5.770	4:48:36	-05:40:24.38	26.420	1.277	1.391	F8 V	2.341	1.333	1157
2009	HD 16417 b	5.780	2:36:59	-34:34:38.44	25.780	1.115	1.456	G1V	0.135	0.067	17.24
2003	HD 104985 b	5.780	12:05:15	+76:54:21.45	102.041	1.600		G9III	0.783	8.300	199.505
2007	4 UMa b	5.787	8:40:13	+64:19:40.34	78.493	1.234	34.610	K1 III	0.877	7.132	269.300
2008	6 Lyn b	5.860	6:30:47	+58:09:48.44	56.948	1.820	5.496	K0 IV	2.186	2.209	874.774
2003	HD 3651 b	5.880	0:39:22	+21:15:04.95	11.060	0.882	0.935	K0	0.295	0.229	62.218
2001	HD 169830 b	5.900	18:27:49	-29:49:00.85	36.603	1.407	1.803	F8	0.813	2.889	225.62
2004	HD 169830 c	5.900	18:27:49	-29:49:00.85	36.603	1.407	1.803	F8V	3.602	4.064	2102
2007	HD 210702 b	5.930	22:11:51	+16:02:26.15	54.945	1.850	4.643	K1 IV	1.203	1.965	354.29
2001	HD 38529 b	5.950	5:46:35	+01:10:06.74	39.277	1.477	1.751	G4	0.131	0.857	14.310
2003	HD 38529 c	5.950	5:46:35	+01:10:06.74	39.277	1.477	1.751	G4	3.719	13.080	2146.050
2006	HD 69830 b	5.950	8:18:24	-12:37:47.17	12.494	0.849	0.922	K0V	0.078	0.032	8.667
2006	HD 69830 d	5.950	8:18:24	-12:37:47.17	12.494	0.849	0.922	K0V	0.627	0.056	197
2006	HD 69830 c	5.950	8:18:24	-12:37:47.17	12.494	0.849	0.922	K0V	0.185	0.037	31.560
2002	55 Cnc d	5.960	8:52:36	+28:19:53.00	12.341	0.963	0.956	G8V	5.936	3.969	5371.821
2008	55 Cnc f	5.960	8:52:36	+28:19:53.00	12.341	0.963	0.956	G8V	0.789	0.146	260.669
2004	55 Cnc e	5.960	8:52:36	+28:19:53.00	12.341	0.963	0.956	G8V	0.016	0.026	0.737
2002	55 Cnc c	5.960	8:52:36	+28:19:53.00	12.341	0.963	0.956	G8V	0.242	0.171	44.379
1997	55 Cnc b	5.960	8:52:36	+28:19:53.00	12.341	0.963	0.956	G8V	0.116	0.844	14.651
2008	HD 167042 b	5.970	18:10:32	+54:17:09.43	50	1.720	3.513	K1 IV	1.317	1.697	420.77
2009	HD 139357 b	5.977	15:35:16	+53:55:19.70	118.064	1.350	7.764	K4III	2.346	10.075	1125.7