

Solutions to App “Audio Sky Tours”, Episode 4 The Autumn Constellations

	Solution	Points
1	In the chart.	2
2	Cassiopeia, Cepheus, Perseus, Andromeda, the Winged Horse (Pegasus), the Whale.	3
3	It pulsates, i.e. it changes its radius (surface size) and temperature.	2
4	The Fishes.	1
5	The Charioteer, Perseus, Cassiopeia, Cepheus, the Swan (Cygnus) and the Eagle (Aquila).	3
6	If we look out of the Milky Way we look outside its plane and thus don't see as many stars merging to a diffuse luminous area.	2
7	$2 \cdot 10^{11} \cdot 2 \cdot 10^{11} = 4 \cdot 10^{22} = 40 \text{Tria.} = 40 \text{ trillionard (GB), 40 sextillion (US)}$	2
8	25,000 Ly	1
9	Because the space ship travels 10,000 times slower than light it needs 10,000 times longer than light, i.e. $10,000 \times 25,000 \text{ y} = 250 \text{ million y}$ another approach: $t = \frac{s}{v} = \frac{25,000 \cdot 9,461 \cdot 10^{12} \text{ km}}{30 \frac{\text{km}}{\text{s}}} = 7.884 \cdot 10^{15} \text{ s} = 250 \text{ million y}$	2
10	a) M31 is the Andromeda galaxy resembling our own Milky Way. It is 2.5 million Ly away and the only one we can see with the unaided eye. b) The XDF is a photograph exposed for 23 days by the Hubble Space Telescope (HST). The field is in the Furnace (Fornax) and as tiny as 2.3' x 2'. 5,500 galaxies were found on this photograph.	2

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