## Crater Formation

1. Crater formation starts with the impactor reaching the ground with a velocity of tens of kilometres per second. 2. The impactor penetrates into the surface by one or two diameters, compressing the rock ahead of it, before its momentum is lost. (milliseconds) 3. A very high pressure shock wave moves outwards, compressing the rock to very high pressures. (~seconds) 4. With the energy released, and the impactor completely vaporised, the rock around the impact site expands again, blowing vast amounts of debris out of the area in a spherical crater as the shock wave reflects backwards. (seconds-minutes) 5. Over longer time scales, re-expansion of the rock continues (sometimes lifting up a central peak), and the crater walls collapse, forming a larger, shallower crater. (minutes-hours) 6. Over geological time scales, erosion and sediment blur or bury craters.

$$
\begin{aligned}
& \text { Diverting Objects } \\
& \text { Diverting the orbit of an object is } \\
& \text { technically possible, if we can } \\
& \text { predict a collision years or } \\
& \text { decades in advance. • For } \\
& \text { strong, solid objects (solid rock } \\
& \text { or metal), nuclear explosions } \\
& \text { could vaporise asteroid material } \\
& \text { and slightly alter the orbit, a few } \\
& \text { metres/second for every } \\
& \text { Megaton of explosion. • Rockets } \\
& \text { could be attached to the surface } \\
& \text { of an asteroid to push it, but } \\
& \text { thrusts would be very low. • } \\
& \text { Much harder for 'rubble piles': } \\
& \text { loosely bound collections of } \\
& \text { rocks, like 'Mathilde' - they } \\
& \text { would just disperse slightly, then } \\
& \text { clump back together under their } \\
& \text { own gravity. • Even if you could } \\
& \text { break up and disperse an object, } \\
& \text { it would be worse than doing } \\
& \text { nothing - it would spread the } \\
& \text { effects over a larger area. • } \\
& \text { Diversionisessentiallyimpossib- } \\
& \text { lefornewlyfoundcomets: much } \\
& \text { higher velocities, very weak } \\
& \text { material, and less warning time } \\
& \text { (weeks to months). }
\end{aligned}
$$

| 1. Gudjyt The sky the | 1. Ngangar the stars 2. |
| :---: | :---: |
| firmament 2. <br> Kangal The <br> east; or, <br> more | Godoitch One of the constellations. 3. Wul-lajerang The |
| properly, the | Pleiades |
| spot of sun-rising, as it | 4.Bulgut A star, the wife of |
| varies | Tdadam 5. |
| throughout the year. 3 . | Dedam A name given to two |
| Nganga the Sun. The | stars, one male, the other |
| Sun is a | female, of |
| female, and | which the |
| the Moon is a | following story |
| male. They say the | is told. Dedam the man |
| Daran, or | speared Dedam |
| eastern men, see where | the woman, because she let |
| the Sun rises | his brother's |
| out of the | two children |
| water; where | stray away. The |
| the water and | children are |
| the sky meet | represented by |
| together. (cf. | two small stars |
| ngangan $=$ | at some |
| mother) 4. | distance higher |
| Djaat the Sun | in the heavens. |
| (KGS) 5. | The spear is |
| Julagoling | represented by |
| Name of the planet Venus. | two stars |
| She is | each side of the |
| described as | woman's body. |
| a very pretty | 6. Wurdoitch or |
| young | Wurdytch The |
| woman, | name of a star, |
| powerful in | supposed to |
| witchcraft. | have been a |
| Manilyen | native. 7. |
| Jupiter (KGS) | Djingun A star; |
| 6. Binnar A | one of the |
| meteor, | wives of |
| described by | Wurdytch |
| the natives | 8. Other star |
| as a star of | names Jindang, |
| fire ; seldom | Bwolluk, |
| visible, but | Muninjingerang, |
| when seen | Narragara, |
| considered | Wurjallak |
| by them as |  |
| an omen of |  |
| death. |  |

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## Cheatography

## Solar Systems Cheat Sheet

by rajiabraham via cheatography.com/99372/cs/21013/

| Noongar words | Models of SS |
| :---: | :---: |
| 1. Maik The moon. The moon is a male, and the sun a female. <br> Also miga, miki 2. Mikang <br> Moonlight Moon Waxing: 1. <br> Werberang warri New moon 2. <br> Marongorong First quarter 3. <br> Bangal Half-moon 4. Kabbul <br> Second quarter 5. Gerradil katti <br> Full moon Moon Waning: 1. Bina <br> bardok 2. Burno wandat Three <br> quarters 3. Jidik golang Half- <br> moon 4. Narrat Last quarter <br> Seasons: 1. Makuru June and <br> July 2. Djilba August and <br> September 3. Kambarang <br> October and November. 4. Birak <br> December and January 5. <br> Bunuru February and March 6. | Aristotle, utilising Pythagoras' deductive reasoning, put forward the first convincing argument for a spherical Earth by observing the lunar eclipse • He also argued for geocentricism (the Earth at the centre of the Universe). Ptolemy (incorrectly) argued the Earth was stationary at the centre of the Universe and the celestial bodies orbit it in perfect circles in uniform circular motion • Ptolemy's geocentric model required the insertion of epicycles and other mathematical complexities to explain the observed retrograde motion of the celestial bodies | May

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