

## Prediction of the Start of the Month of DhulHejja 1436 Hejriah

The Calculations are done for the Longitude and Latitude of Makkah AlMukarramah Area and the times are for the Local Time of Saudi Arabia

Makkah Al-Mukarramah: Latitude = 21.43 ° N , Longitude = 39.82 ° E

Prediction: [ Monday 30 DhulQada 1436 Hejriah corresponds to 14 September 2015 ]  
[ Tuesday 01 DhulHejja 1436 Hejriah corresponds to 15 September 2015 ]

New Moon of DhulHejja Occurs on Sunday 13 September 2015 at 9:42 am.

Day	(2015) Date	Sun Set	Moon Set	Moon Age	Moon altitude & azimuth at sunset	Sun azimuth at sunset	According to:	
							UmmUIQura	Prediction
Sunday	13 / 09	18:27	18:32	8.8 hrs.	01.1 ° , 271.2 °	274.4 °	29 DhulQada	29 DhulQada
Monday	14 / 09	18:26	19:08	32.7 hrs.	09.4 ° , 263.8 °	273.9 °	01 DhulHejja	30 DhulQada
Tuesday	15 / 09	18:25	19:44	56.7 hrs.	17.4 ° , 256.1 °	273.5 °	02 DhulHejja	01 DhulHejja
Tuesday	22 / 10	<b>Arafa Day (According to UmmUIQura Calendar)</b>					09 DhulHejja	08 DhulHejja
Wednesday	23 / 10	First Day of Eid AlAdh'ha Al-Mubarak (According to UmmUIQura Calendar)					10 DhulHejja	09 DhulHejja

According to the astronomical calculations, the birth of the new moon (conjunction) occurs at about 9:42 am on Sunday 13 September 2015 and the moon sets about five minutes after the sun in Makkah AlMukkaramah, therefore and according to calculations and possibility of actual sighting of the crescent, it is extremely difficult (not possible) to sight the crescent moon on that evening due to its extremely low altitude (about 1° above the horizon) , very low brightness (phase is about 0.12% of full Moon), extremely thin crescent (2 arc-seconds) and its small elongation with the Sun (about 3.5 °). It is possible to sight the crescent moon, but with difficulty and only using telescopes from West-Southern regions of South America.

But on the evening (just after the sunset) of Monday 14 September, which may (most probably) be the 30th of DhulQada, it is possible to sight the crescent moon by naked eyes with perfect atmospheric conditions, where just after the sunset, the age of the moon in Makkah AlMukkaramah will be about 32.7 hours, it is about 9.4 ° above the horizon, its visible part (phase) is about 1.7 % of the full moon, its thickness is about 27 arc-seconds, its elongation with the Sun is about 14.1 °, and it stays about 42 minutes above the horizon before setting.

According to previous calculations and possibility of actual sighting, the possibility is that the first day of DhulHejja could be (In-Shaa-Allah) on Monday 14 September for those how do not require eye-sighting of the crescent or go with possibility of sighting the crescent in regions which share part of the night with our region or go with conjunction. And it will be on Tuesday 15 September for those who require local region eye-sighting (aided or unaided) of the crescent.

Therefore if the crescent is sighting on the evening of Sunday in any region of Saudi Arabia (the possibility is almost null) then the **Arafa Day** (the ninth day of month of DhulHejja) will fall on Tuesday 22 September and Eid Al-Adhha (Sacrifice) falls on Wednesday 23 September. If it is not sighted on that evening then the Arafa Day will fall on Wednesday 23 September and Eid Al-Adhha falls on Thursday 24 September and Allah has the knowledge (wAllahuAllam).

**For crescent sighting:** Find a dark area away from cities, provided that the sky is clear, free of clouds, dust, and other sources of pollution. One should face approximately toward the west at the sunset on Monday where the altitude of the moon above the horizon will be about 9.4 °, it will be about 10.1 ° to the left (south) of the setting sun (11.2 ° south of west), its elongation will be about 14.1 °, it stays about 42 minutes before setting and the shape of the crescent moon will be tilted to the left as shown in the figure.



The above prediction is based on astronomical formulas and calculations and may be used for the purpose of a general guidance and one should go with the method of actual sighting of the moon, the method which, our Prophet Mohammad peace and blessing be upon him (SallAllhuAlihiWassallam) (ﷺ) guided and ordered us to observe and follow, and Allah has the knowledge.

Note that birth of the "visible" crescent moon happens after the new moon (conjunction) which may not exceed half a day or it may extend up to a day or more depending on the Moon location relative to the Sun, duration of its presence above the horizon, its luminosity (phase), crescent width, and of course the atmospheric condition just after sunset. Adding to that, the physical, psychological, health conditions, eye sensitivity and its speed of adaptation to light and accumulated experience of the person doing the sighting should be considered as important factors. Usually the contract is very small between the color and brightness of the crescent and the sky, which adds difficulty to observation.