

A. Charbonnel	LE SEXTANT	V1.3 – 01/25
NAV-ASTRO	TRAVAUX PRATIQUES - CORRECTION DE HAUTEUR- NA	1/3

Recommandation :

- 1) Revoir votre cours sur ce sujet.
- 2) Noter dans votre carnet du marin les éléments qui vous sont nécessaires pour réaliser ces exercices AVANT de commencer les exercices.
- 3) Connaître les notations et abréviations anglo saxonnes

Matériel nécessaire : Nautical Almanac 1981 et calculatrice

Atelier 1 : Miscallenus


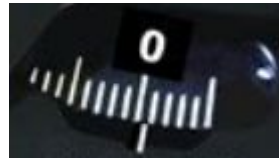
Exerice 1.1 Abbreviations

Explain the following abreviations :

- UL
- LL
- DR

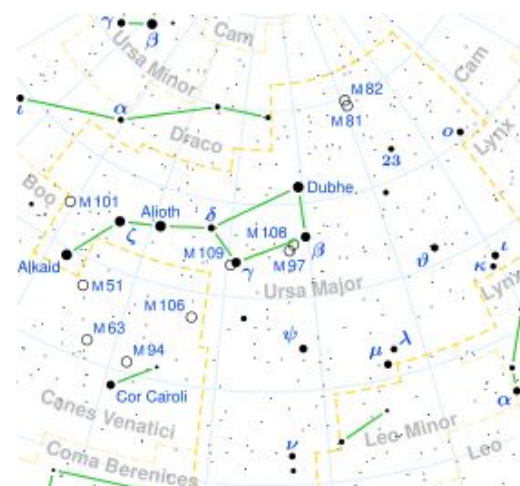
Exercice 1.2 On/Off the arc and error versus correction

1) Choose the right answer(s) for each picture

 <p>(a)</p>	 <p>(b)</p>
<input type="checkbox"/> Index error is on the arc <input type="checkbox"/> Index error is off the arc <input type="checkbox"/> Index error is positive <input type="checkbox"/> Index error is negative <input type="checkbox"/> Index correction is positive <input type="checkbox"/> Index correction is negative	<input type="checkbox"/> Index error is on the arc <input type="checkbox"/> Index error is off the arc <input type="checkbox"/> Index error is positive <input type="checkbox"/> Index error is negative <input type="checkbox"/> Index correction is positive <input type="checkbox"/> Index correction is negative

Atelier 2 : Altitude of Stars

Exercise 2.1 : Altitude of Dubhe



On 23th july 1981, the sextant altitude of Duhbe $50^{\circ}20,2$ was taken at 20h 53min 39s UT.

Your DR position was $40^{\circ} 25' N / 32^{\circ} 40' W$.

The index error is $2'$ on the arc ; height of eye 9,7m meter ; temperature $29^{\circ}C$ pressure 1030 hPa,

Find the true altitude of Duhbe.

Dubhe is also name Apha Ursae Majoris. Dubhe is, despite being designated « alpha, the second-brightest star in the constellation of Ursa Major

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Exercise 2.2 : Altitude of Acrux

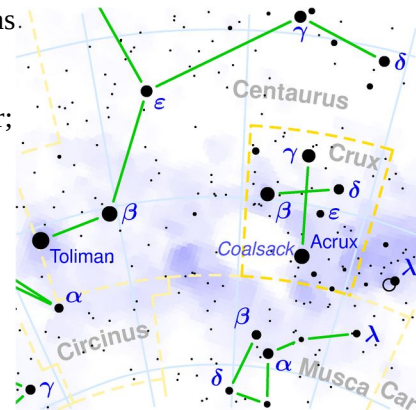
On 12th October 1981, the sextant altitude of Acrux $64^{\circ} 35,2'$ was taken at 20h 53min 39s UT.

Your DR position was $40^{\circ} 25' S / 32^{\circ} 40' W$.

The index error is $2'$ off the arc ; height of eye 6.0 meter; temperature $20^{\circ}C$ and pressure 1030 hPa.

Is there a correction for the temperature/pressure ? Why ?

Find the true altitude of Acrux.



Acrux is the brightest star in the constellation Southern Crux

Atelier 3 : Altitude of the Sun

Exercise 3.1 [050150]

On 2 January 1981, you observe the lower limb of the Sun at a sextant altitude (hs) of $35^{\circ}50.4'$. The index error is $0.8'$ on the arc. The height of eye is 24 feet (7.3 meters). What is the observed altitude (Ho) ?

Exercise 3.2 (050168)

You observe the lower limb of the Sun at a sextant altitude (hs) of $45^{\circ}49.7'$ on 13 November . The index error is $1.0'$ on the arc. The height of eye is 61 feet (18.6 meters). What is the observed altitude (Ho) ?

Atelier 4 : Altitude of planet

Exercise 4.1 050173

You observe the planet Jupiter at a sextant altitude (hs) of $66^{\circ}27,6'$ on 26 May 1981. The index error is $5,2'$ on the arc. The height of eye is 52 feet. What is the observed altitude (Ho)?

Exercise 4.2 050174

During the evening twilight on 28 December 1981, the sextant altitude (hs) of the planet Venus was $29^{\circ}43,2'$. The height of eye was 40 feet. The index error was $2.0'$ on the arc. What is the observed altitude (Ho) ?

Atelier 5 : Altitude of the Moon

Exercise 5.1 Altitude of the moon (LL)

At 18h 38min 11s UT, March 23, 1981, the navigator obtains a sight of the Moon's lower limb.

The azimuth is 043° and the altitude on the sextant is $hs=32^{\circ} 37,1'$.

At 18h30, the dead reckoned position was $60^{\circ} 12,6' N / 80^{\circ} 49,8' E$.

The height of eye is 68 feet, pression is 1030 hPa, temperature $20^{\circ}C$.

The index correction is $+0.2'$.

Determine ho.

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Exercice 5.2 Altitude of the moon (UL)

At 02h 38min 11s UT, May 23, 1981, the navigator obtains a sight of the Moon's upper limb.

The bearing is 100° and the altitude on the sextant is $h_s = 18^\circ 15,3'$.

At 02h 30min, the dead reckoned position was $60^\circ 12,6'S / 80^\circ 49,8'W$,

The height of eye is 15m, pressure 1030 hPa, temperature $20^\circ C$.

The index error is 2' on the arc.

Determine h_o .

Corrections partielles

Exercice 2.1 : $h_o = 50^\circ 11,9'$

Exercice 2.2 : $h_o = 64^\circ 32,4'$

Exercice 3.1 : $h_o = 35^\circ 59,7'$

Exercice 3.2: $h_o = 45^\circ 56,4'$

Exercice 4.1 : $h_o = 66^\circ 15,0'$

Exercice 4.2 : $h_o = 29^\circ 34,1'$

Exercice 5.1: $h_o = 32^\circ 21,9'$

Exercice 5.2: $h_o = 18^\circ 42,6'$

