

NAV-ASTRO	LE SEXTANT	V1.2 – 11/23
A. Charbonnel	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

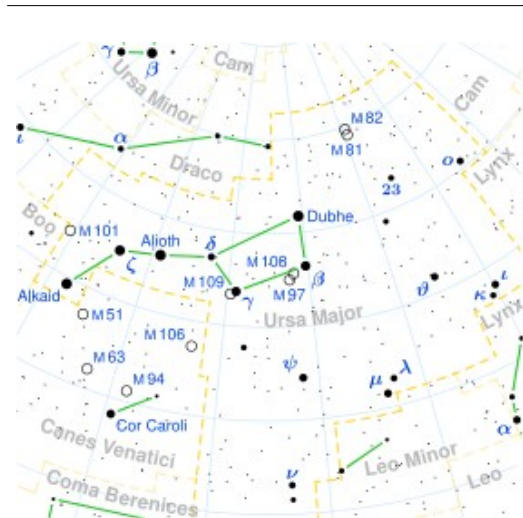
1) Choose the right answer(s) for each picture

 <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

2) Determine the relation between the index error (IE) and the index correction(IC) .

Atelier 2 : Altitude of Stars

Exercice 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 mb

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

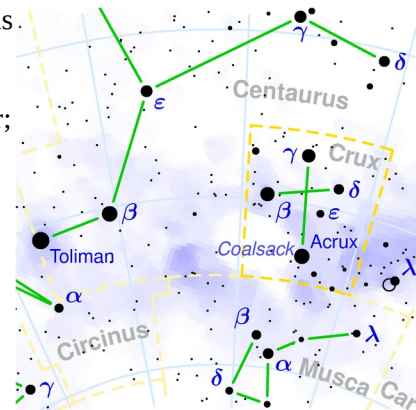
On 12th October 1981, the sextant altitude of Acrux $64^{\circ} 35,2'$ was taken at 20h 53min 39s UT.

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 (H_o) ?

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 (H_o) ?

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 (H_o)?

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 (H_o)?

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, pressure is 1030 hPa, temperature $20^{\circ}C$.

The index correction is $+0.2'$.

Determine h_o .

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

