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 : Miscallenous

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

(a)

☐ Index errror is on the arc
☐ Index error is off the arc
☐ Index error is positive
☐ Index error is negative
☐ Index correction is positive
☐ Index correction is negative

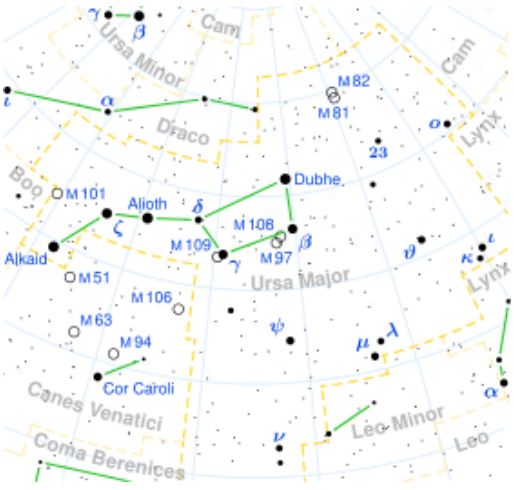
(b)

☐ Index errror is on the arc
☐ Index error is off the arc
☐ Index error is positive
☐ Index error is negative
☐ Index correction is positive
☐ Index correction is negative

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

Atelier 2 : Altitude of Stars

Exercise 2.1 : Altitude of Dubhe



On 23th july 1981, the sextant altitude of Duhbe 50°20,2 was taken at 20h 53min 39s UT.
Your DR position was 40° 25’ N / 32° 40’W.
The index error is 2’ on the arc ; height of eye 9,7m meter; temperature 29°C pressure 1030 mb

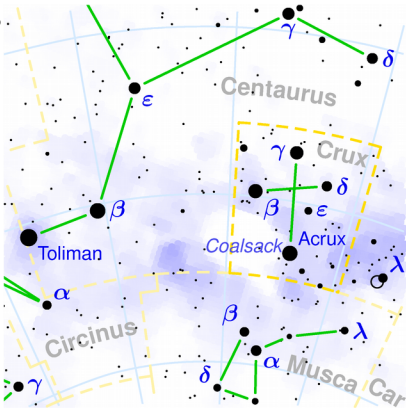
Find the true altitude of Duhbe.

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

Exercise 2.2 : Altitude of Acrux

On 12th october 1981, the sextant altitude of Acrux 64° 35,2’’ was taken at 20h 53min 39s UT.
Your DR position was 40° 25’ S / 32° 40’W.
The index error is 2’ off the arc ; height of eye 6.0 meter; temperature 20°C and pressure 1030 hPa.

Is there a correction for the temperature/pressure ? Why ?
Find the true altitude of Acrux.



Acrux is the brighest star in the constellation Southern Crux

Atelier 3 : Altitude of the Sun

Exercice 3.1 *[050150]*

On 2 January 1981, you observe the lower limb of the Sun at a sextant altitude (hs) of 35°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) ?

Exercice 3.2 (050168)

You observe the lower limb of the Sun at a sextant altitude (hs) of 45°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

Exercice 4.1 *050173*

You observe the planet Jupiter at a sextant altitude (hs) of 66°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)?

Exercice 4.2 *050174*

During the evening twilight on 28 December 1981, the sextant alitude (hs) of the planet Venus was 29°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

Exercice 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° 37,1’.
At 18h30, the dead reckoned position was 60° 12,6’N / 80° 49,8’E.
The height of eye is 68 feet, pression is 1030 hPa, temperature 20°C.
The index correction is +0.2'.
Determine ho.

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 hs = 18° 15,3'.
At 02h 30min, the dead reckoned position was 60° 12,6'S/ 80° 49,8'W
The height of eye is 15m, pression 1030 hPa, temperature 20°C.
The index error is 2' on the arc..
Determine ho.

Corrections partielles

Exercice 2.1 : ho = 50° 11,9'
Exercice 2.2 : ho = 64° 32,4'
Exercice 3.1 : ho = 35°59.7'
Exercice 3.2: ho = 45°56.4'
Exercice 4.1 : ho = 66°15,0'
Exercice 4.2 : ho=:29°34,1'
Exercice 5.1: ho = 32° 21,9'
Exercice 5.2: ho = 18° 42,6'