

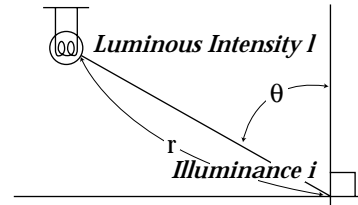
Calculating Illuminance and Luminous Intensity

Enter the luminous intensity of the luminous source, the distance, and the angle between the perpendicular line and light ray, to find the illuminance of the illuminated side. Conversely, find the luminous intensity of the source from the illuminance of the illuminated side.

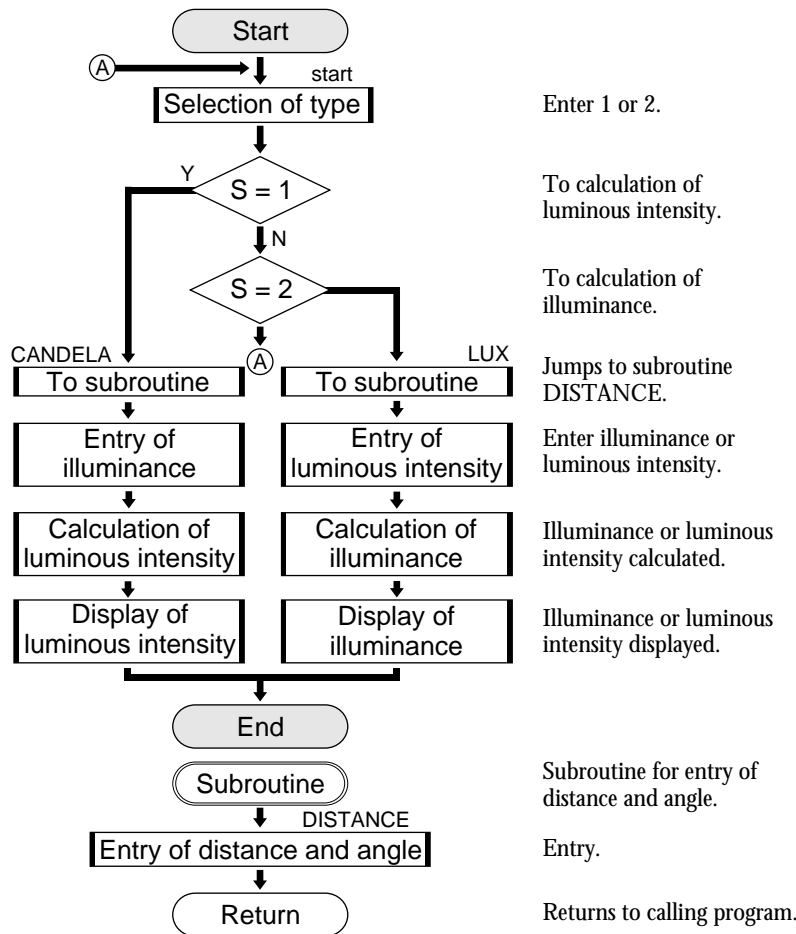
Calculation

$$i = \frac{l \cdot \cos \theta}{r^2} \quad l = \frac{r^2 \cdot i}{\cos \theta}$$

l : luminous intensity [candela] i : illuminance [lux]
r : distance [m] θ : angle [°]



FLOWCHART



PROGRAMME LIST (REAL MODE)

```

Title : CAND LUX
Deg
Label START
ClrT
Print "CANDELA=1 LUX=2
Print "SELECT 1 or 2
Input S
If S=1 Goto CANDELA
If S=2 Goto LUX
Goto START
Label CANDELA
Gosub DISTANCE
Print "Input LUX
Input L
L ð I
R²×I/cos θ ð C
Print "CANDELA
Print C
End
Label LUX
Gosub DISTANCE
Print "Input CANDELA
Input C
C ð K
K×cos θ /R² ð L
Print "LUX
Print L
End
Label DISTANCE
Print "Input DISTANCE
Input D
D ð R
Print "Input ANGLE
Input A
A ð θ
Return
    
```

PARAMETERS

Name of parameter	Content	Name of parameter	Content
I	illuminance of illuminated side	θ	angle
K	luminous intensity of luminous source	A	input of angle
R	distance	L	input and calculating luminous intensity
S	selecting calculation type (S=1: calculation of luminous intensity) (S=2: calculation of illuminance)	D	input of distance
		C	input and calculating illuminance

Exercise

- (1) Find the luminous intensity of the luminous source of distance 10m, angle 60° and illuminance 20 lux.
- (2) Find the illuminance of the illuminated side of distance 10m, angle 60° and luminous intensity 4000 candela.

Set up condition: decimal point in Float Pt Mode.

2ndF **SET UP** **C** **1** **CL**

<u>Step</u>	<u>Key Operation</u>	<u>Display</u>
<p>1 Specify the programme mode. Select the title CAND LUX.</p>	PRGM A	<pre>CANDELA=1 LUX=2 SELECT 1 or 2 S=?</pre>
<p>2 Select calculation of luminous intensity.</p>	1 ENTER	<pre>CANDELA=1 LUX=2 SELECT 1 or 2 S= 1 Input DISTANCE D=?</pre>
<p>3 Enter the values of distance, angle, and illuminance. (Display of luminous intensity)</p>	<p>1 0 ENTER 6 0 ENTER 2 0 ENTER</p>	<pre>CANDELA=1 LUX=2 SELECT 1 or 2 S= 1 Input DISTANCE D= 10 Input ANGLE A= 60 Input LUX L= 20 CANDELA 4000</pre>
<p>4 Select calculation of illuminance. Enter the values of distance, angle, and luminous intensity. (Display of illuminance)</p>	<p>ENTER 2 ENTER 1 0 ENTER 6 0 ENTER 4 0 0 0 ENTER</p>	<pre>Input ANGLE A= 60 Input CANDELA C= 4000 LUX 20</pre>