

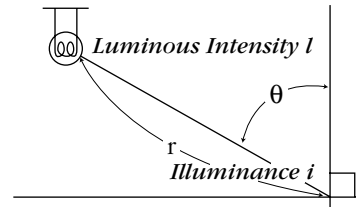
Calculating Illuminance and Luminous Intensity

Enter the luminous intensity of luminous source, distance, 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.

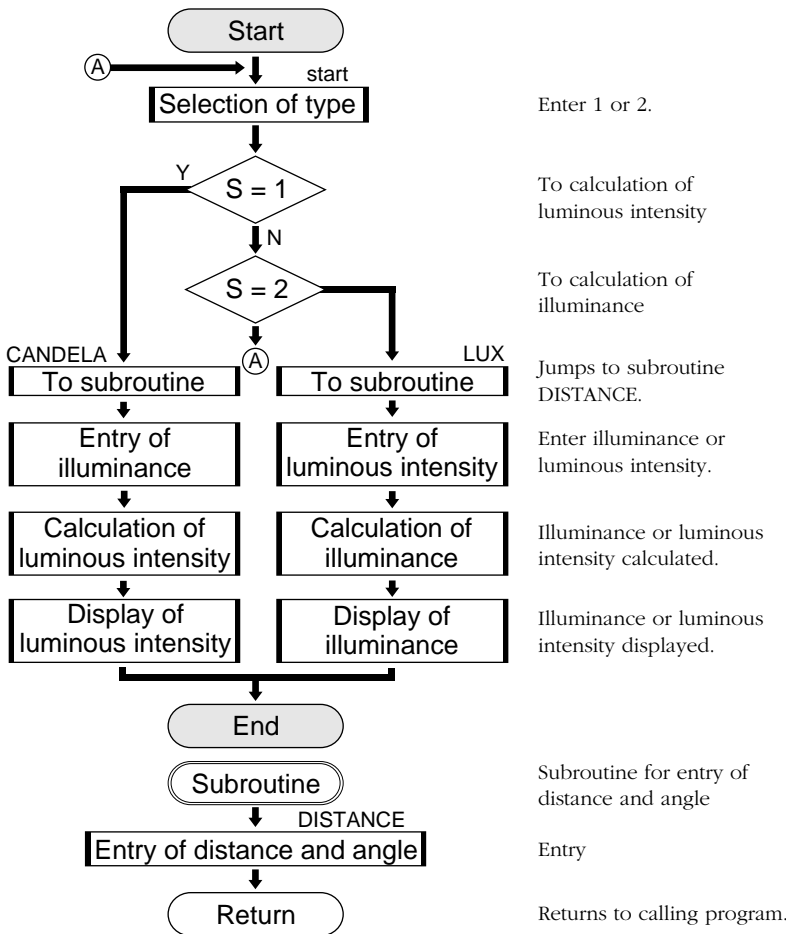
Calculation

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

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



FLOWCHART



PROGRAM LIST (REAL MODE)

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

PARAMETERS

Name of parameter	Content	Name of parameter	Content
I	illuminance of luminated 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: angle unit in Deg Mode and decimal point in Float Pt Mode.

2ndF **SETUP** **B*** **1*** **C*** **1*** **CL**

Step	Key Operation	Display
<p>1 Specify the program mode. Select the title CAND LUX.</p>	<p>2ndF PRGM A*</p>	
<p>2 Select calculation of luminous intensity.</p>	<p>1 ENTER</p>	
<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>	
<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>	