

Optical Measurements - Answer Sheet

Part A: The refractive index of a disk (5.5 points)

A.1 (1.0 pt)

A sketch of the experimental setup for $N = 3$:

Fill in Table 1 on the next page.

A.2 (1.0 pt)

Fill in Table 1 on the next page if needed.

Draw an appropriate graph on the supplied millimetric paper.

Analysis of the graph:

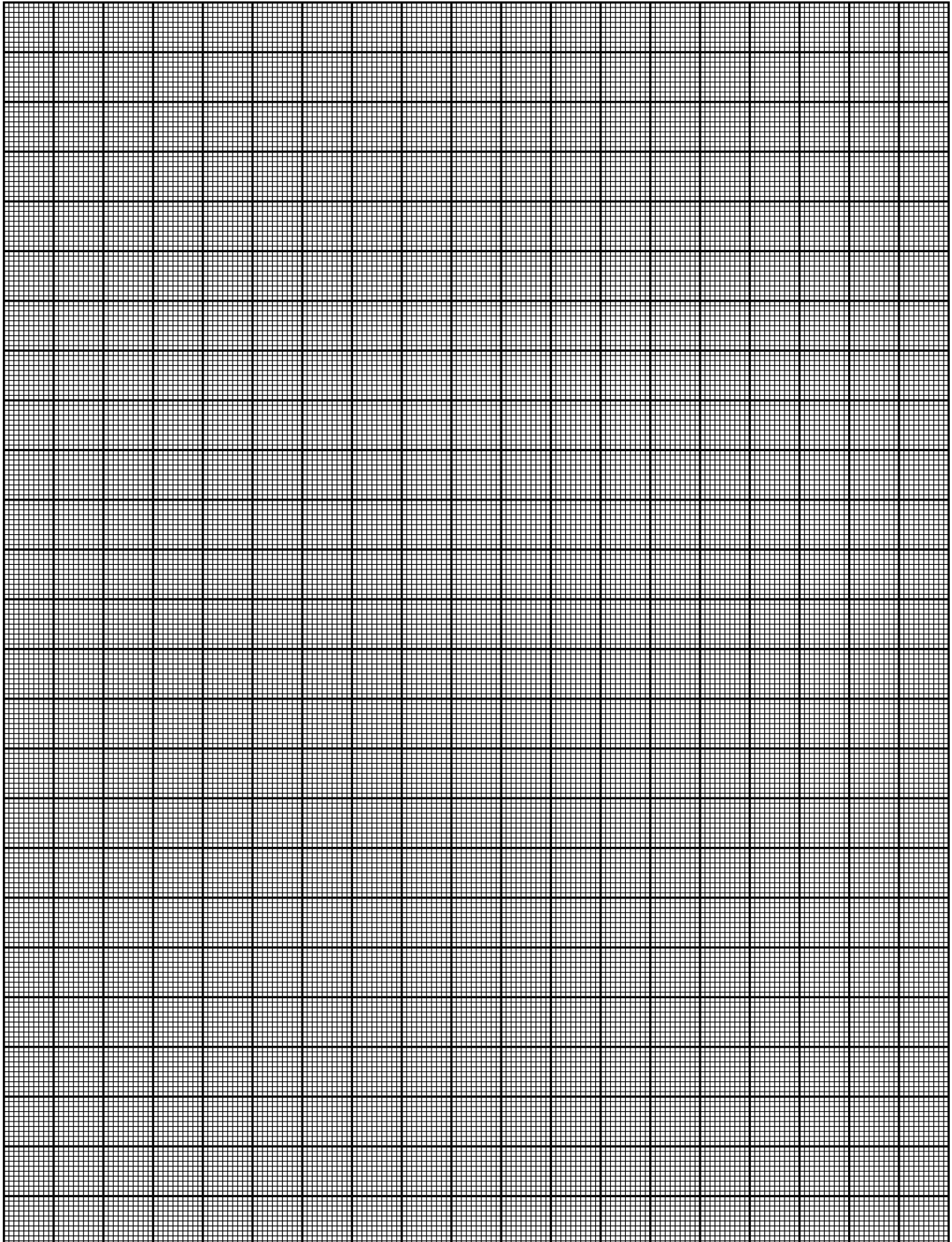
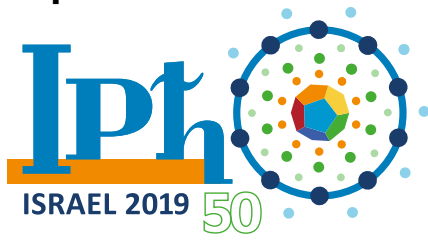
Results:

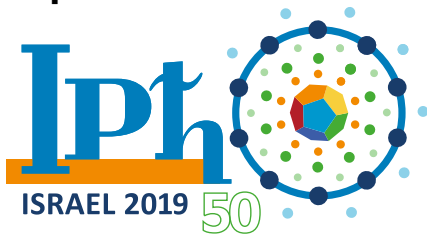
$n =$

$\Delta n =$

Table 1, to be used in tasks A1 and A2:

[illegible]



**A.3** (0.5 pt)

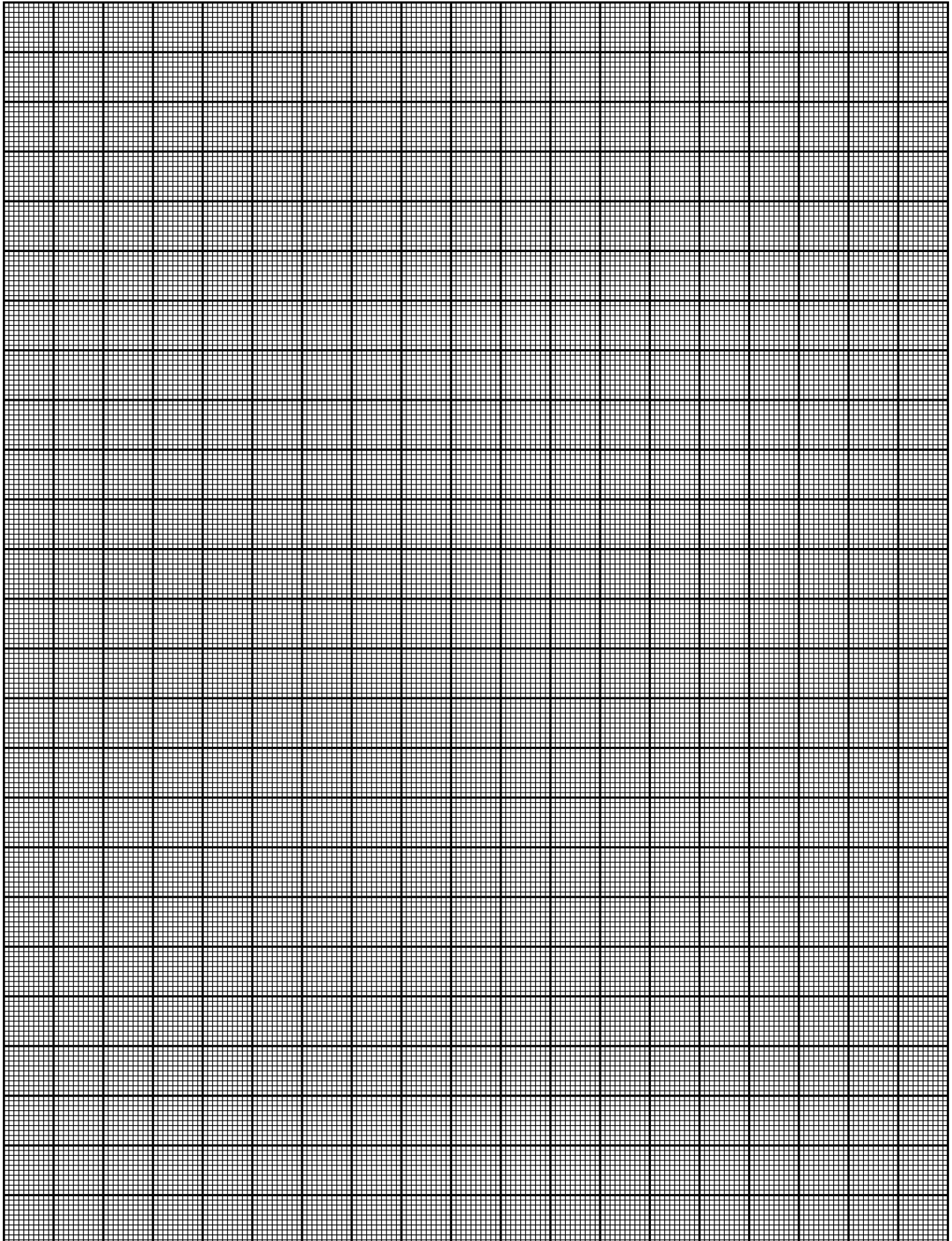
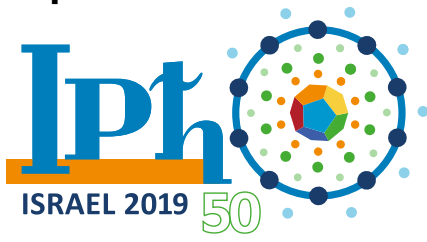
Plot δ as a function of α on the supplied millimetric paper.

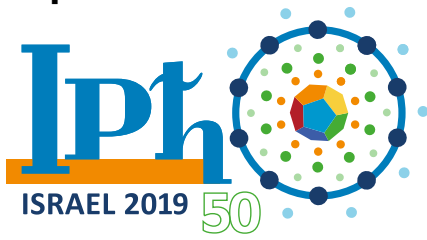
$$\delta_{\min} =$$

$$\alpha_{\min} =$$

A.4 (0.7 pt)

Equations used to find the refractive index using one preferred incident angle:



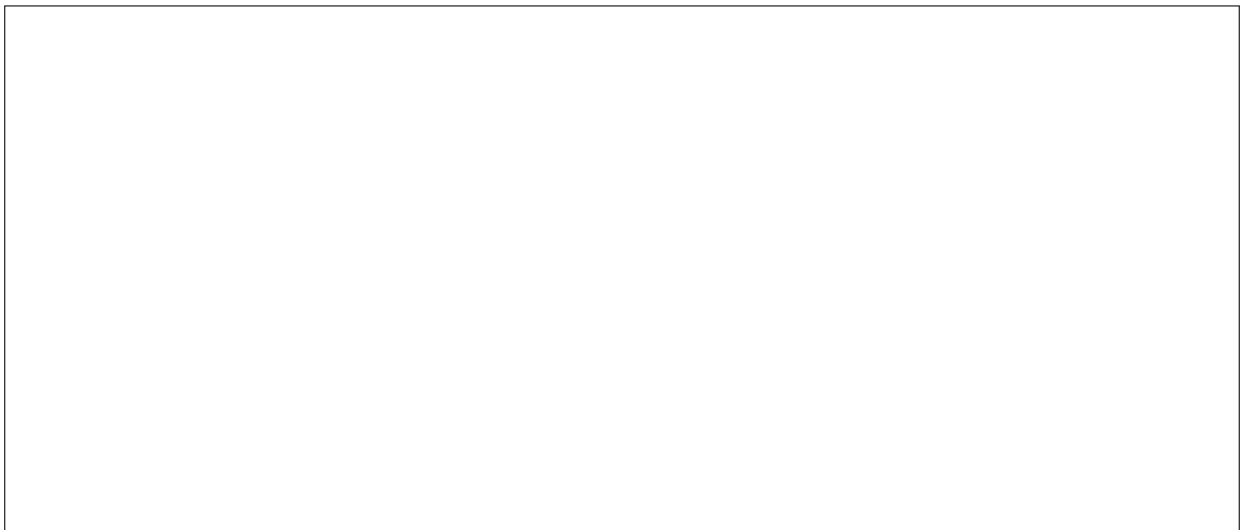


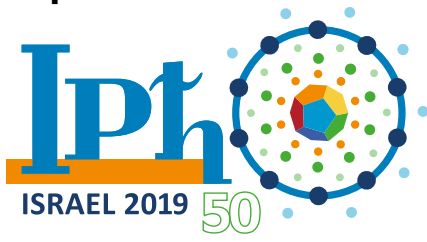
A.5 (0.8 pt)

A diagram of the disk, the beam path, indicating on the diagram the quantities you have measured:



Measurements performed at $N = 3$:

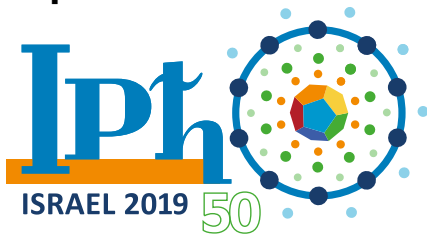




A.5 (cont.)

Analysis and results:

$n =$

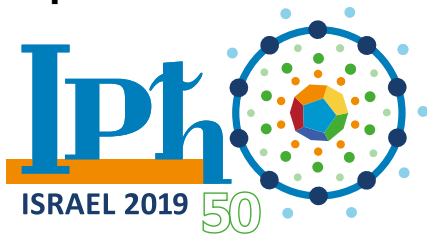


A.6 (1.5 pt)

Measurements performed at $N = 4$:

Analysis and results:

$n =$



A.6 (cont.)

Measurements performed at $N = 5$:

Analysis and results:

$n =$

The average value of the refractive index given by the measurements at $N = 3$, $N = 4$ and $N = 5$:

$\langle n \rangle =$

$\Delta n =$

Part B: The parameters of a diffraction grating (2.5 points)**B.1** (0.7 pt)

The grating id:

The cubicle and the table, a sketch of the apparatus used to measure λ/d :

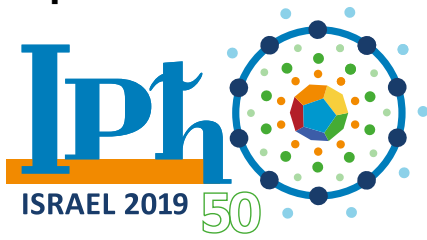


Measurements performed at $m = 1$:

Analysis and results:

$\theta_1 =$

$\lambda/d =$



B.1 (cont.)

Measurements performed at $m = 2$:

Analysis and results:

$\theta_2 =$

$\lambda/d =$

B.2 (1.8 pt)

The cubicle and the table, a sketch of the apparatus used to measure λ/d at $m = 3$:



Measurements performed at $m = 3$:

Analysis and results:

$\theta_3 =$

$\lambda/d =$

B.2 (cont.)

The cubicle and the table, a sketch of the apparatus used to measure λ/d at $m = 4$:



Measurements performed at $m = 4$:

Analysis and results:

$\theta_4 =$

$\lambda/d =$



Part C: The refractive index of a triangular prism (2.0 points)

C.1 (0.4 pt)

Equations used to find the refractive index of the prism:

C.2 (1.6 pt)

Table for your measurements:

Analysis and results:

$n =$

$\Delta n =$

