LABORATORIYA ISHI. SHISHANING NUR SINDIRISH KO‘RSATKICHINI ANIQLASH

9-__ sinf __-guruh o‘quvchisi _____

O‘quvchi to‘plagan ball: ____ (max: 20 ball)

(Ishning maqsadini aniq bilib, kerakli jihozlarni to‘g‘ri tanlasa (**1,5 ball**), ishni bajarilish tartibiga rioya etsa; barcha qurilmalardan to‘g‘ri o‘rinda foydalana olsa (**1,5 ball**))

ISHNING MAQSADI: _____

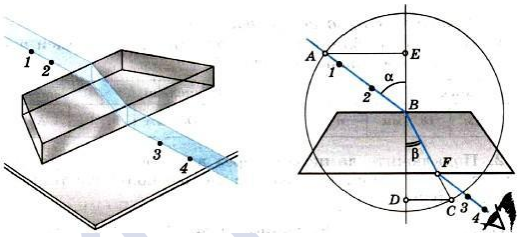
_____

KERAKLI JIHOZLAR: _____

_____

1. Shisha plastinkani varoq ustiga qo‘ying va shishaning parallel yoqlari (nur sindiruvchi yoqlari) bo‘ylab chiziqlar chizing.

2. Lazer nurini shishaga biror burchak ostida tushiring va nurning plastinkaga tushish yo‘lini ikkita nina bilan, shuningdek, plastinkadan chiqish yo‘lini ham ikkita nina bilan belgilab oling.



3. Shisha plastinkani oling. Tushuvchi va singan nurlarni hamda tushish nuqtasida palstinkaga o‘tkazilgan perpendikulyarni chizing.

4. Transportir bilan tushish burchagi α ni va sinish burchagi β ni o‘lchang.

5. Sindirish ko‘rsatkichini berilgan formulaga muvofiq hisoblang: $n = \frac{\sin\alpha}{\sin\beta} = \frac{AE \cdot BC}{AB \cdot DC}$

6. Tajribani tushish burchagining boshqa qiymatlarida ham takrorlab xatoliklarni hisoblang va natijalarni jadval ko‘rinishida ifodalang.

Ishni bajarish

O‘LCHASH VA HISOBLASH

Tajriba №1 (chizma uchun **2 ball**, hisoblash to‘g‘ri bajarilsa **1 ball**)

Chizma:

$$n = \frac{\sin\alpha}{\sin\beta} = \frac{AE \cdot BC}{AB \cdot DC} =$$

Tajriba №2 (chizma uchun **2 ball**, hisoblash to‘g‘ri bajarilsa **1 ball**)

Chizma:

$$n = \frac{\sin\alpha}{\sin\beta} = \frac{AE \cdot BC}{AB \cdot DC} =$$

Tajriba №3 (chizma uchun **2 ball**, hisoblash to‘g‘ri bajarilsa **1 ball**)

Chizma:

$$n = \frac{\sin\alpha}{\sin\beta} = \frac{AE \cdot BC}{AB \cdot DC} =$$

Birinchi, ikkinchi va uchinchi holatlar uchun aniqlangan sindirish ko‘rsatkichlari uchun o‘rtacha qiymatni hisoblang. **(1 ball)**

$$n_{o'rt} = \frac{n_1 + n_2 + n_3}{3} =$$

Olingan natijalami quyidagi jadvalga yozing.

№	α	β	AE, (cm)	AB, (cm)	DC, (cm)	BC, (cm)	n	$n_{o'rt}$	Δn	$\Delta n_{o'rt}$	ε , %
1											
2											
3											

XATOLIKLARNI BAHOLASH (2,5 ball)

Absolyut xatolik: **(1,5 ball)**

$$\Delta n_1 = \left|n_{o'rt} - n_1\right| =$$ (0,5 ball)

$$\Delta n_2 = \left|n_{o'rt} - n_2\right| =$$ (0,5 ball)

$$\Delta n_3 = \left|n_{o'rt} - n_3\right| =$$ (0,5 ball)

Absolyut xatolik o‘rtachasini hisoblash:

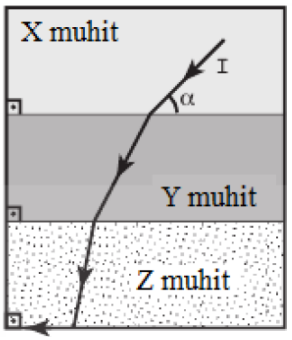
$$\Delta n_{o'rt} = \frac{\Delta n_1 + \Delta n_2 + \Delta n_3}{3} =$$ **(0,5 ball)**

Nisbiy xatolik:

$$\varepsilon = \frac{\Delta n_{o'rt}}{n_{o'rt}} \cdot 100\% =$$ **(0,5 ball)**

XULOSA

1. Yorug‘likning X, Y va Z muhitlardagi yo‘li rasmda ko‘rstilgan. Bunga asosan muhitlarning nur sindirish ko‘rsatkichlari n_x, n_y va n_z lar orasidagi munosabat qanday bo‘ladi? **(1,5 ball)**



_____

2. Nurning suv sirtiga tushish burchagi sinish burchagidan 10° katta. Tushish burchagini toping. **(1 ball)**

_____

_____

3. Shishaning nur sindirish ko‘rsatkichini, nur shishadan xavoga o‘tayotgan vaziyat uchun ham xisoblab, yuqorida olingan natijalar bilan taqqoslang. **(2 ball)**