COT High-Yield Study Guide

EyeAce • by Dr. Dan Fleming, MD • eyeaceprep.com

A free head-start for the IJCAHPO Certified Ophthalmic Technician (COT) written exam. The single best habit: study to **understand**, not memorize — the exam rewords things, so the reasoning is what carries you.

1. Where the points are — the COT blueprint

The written exam is 200 questions. Weight your study by these proportions:

Domain	Weight	~Q of 200
Clinical Optics	14%	28
Visual Fields	12%	24
Ocular Motility	10%	20
Contact Lenses	10%	20
General Medical Knowledge	10%	20
Basic Skills & Lensometry	8%	16
Ocular Pharmacology	8%	16
Tonometry (basic + intermediate)	8%	16
History Taking	7%	14
Instrument Maintenance	6%	12
Patient Services	4%	8
Photography	3%	6

2. How to study it

- **Spend your time by weight.** Optics, fields, motility, contacts, and general medical are over half the exam.
- **Do a lot of questions** — practice under exam conditions beats re-reading.
- **Always ask "why?"** For every miss, understand the reason before moving on. That is what survives a reworded question.
- **Don't keep delaying the test.** If you have been in the field a while, you know more than you think.
- **The written exam is only half.** The hands-on skill stations need in-person practice — this guide covers the written side.

3. High-yield facts and memory hooks

Optics

- Power (D) = 1 ÷ focal length in meters. Reading at 40 cm needs a +2.50 add.
- Spherical equivalent = sphere + 1/2(cylinder).
- Prentice's rule: prism (in prism diopters) = decentration in **cm** × power in D. Convert mm to cm!
- Minus lenses **lose** effective power moving toward the eye; plus lenses **gain** (matters above ±4 D).
- Transposition: add sphere + cyl, flip the cyl sign, rotate axis 90°.

Ocular motility

- Innervation: **LR6, SO4**, all the rest CN III.
- Superior oblique — primary **intorsion**. Inferior oblique — primary **extorsion**.

- Superior rectus elevates in abduction; inferior oblique elevates in adduction.
- Hering's law: yoke muscles get equal, simultaneous innervation.

Retinoscopy

- **WITH** motion — add **plus**. **AGAINST** motion — add **minus**. Neutral = the reflex fills the pupil and stops moving.

Tonometry

- Normal IOP is about 10–21 mmHg.
- A **thick** cornea reads falsely **high**; a thin cornea reads falsely low.
- Too much fluorescein (wide mires) or pressing too hard — falsely high.
- Disinfect the tip between **every** patient, then rinse/dry — residual disinfectant is toxic to the cornea.

Ocular pharmacology

- **Phenylephrine** dilates **without** cycloplegia. Tropicamide/cyclopentolate/atropine dilate **and** cyclopleg.
- Timolol (beta-blocker) lowers IOP by decreasing aqueous production — caution in asthma/COPD.
- Latanoprost (prostaglandin) increases uveoscleral outflow; darkens iris and lashes.
- Pilocarpine causes miosis (cholinergic). Carbonic anhydrase inhibitors are sulfonamides — ask about sulfa allergy.

Visual fields

- Glaucoma: arcuate scotoma / nasal step; central vision is preserved the longest.
- Bitemporal hemianopia = optic chiasm. Homonymous = behind the chiasm (opposite side).
- The physiologic blind spot sits ~15° temporal to fixation (it is the optic disc).

Red flags — escalate promptly

- Sudden painless vision loss with a "curtain" — retinal detachment.
- Eye pain + halos + nausea + a hard, red eye — acute angle-closure glaucoma.
- Cherry-red spot at the macula — central retinal artery occlusion.
- New flashes + a shower of floaters — possible retinal tear.
- On tamsulosin (Flomax) before cataract surgery — intraoperative floppy iris syndrome (IFIS).
