

Boolean & if — Handwritten FRQ

Name: _____ Period: _____ Date: _____

AP objective: CON-2.A Points: 20

Why handwritten, in class: this replaces a typed task AI can complete. Work every item by hand and **show all your steps** — no AI, phones, or notes. A correct answer with no work earns half credit; the work is what proves it's yours.

Complete each item by hand — show all work

1. Evaluate each Boolean expression for the given values (write true or false) — 6 pts

GIVEN

Let $a = \text{true}$, $b = \text{false}$, $x = 7$, $y = 2$

- (a) $a \ \&\& \ !b$
- (b) $!(x > 5)$
- (c) $(x > y) \ || \ b$
- (d) $!(a \ || \ b)$
- (e) $(x \% 2 == 0) \ \&\& \ (y < x)$

2. Rewrite each expression using De Morgan's laws (remove the outer NOT) — 6 pts

GIVEN

- (a) $!(x > 0 \ \&\& \ y > 0)$
- (b) $!(a \ || \ b)$

3. Write an if / else-if that sets grade to A/B/C/D/F from int score (cutoffs 90/80/70/60) — 8 pts

Watch your boundary conditions (\geq vs $>$).

Oral defense (teacher — 60 sec)

Student answers one cold question aloud before grading. A student who did their own work can answer instantly; a copied one can't. Strong OK Weak

Scoring (20 pts)

Criterion	Pts	Earned
Booleans evaluated	6	
De Morgan correct	6	
Grade logic (boundaries)	8	
<i>Gate</i> : passed oral defense (can explain the work aloud)	req'd	<input type="radio"/> Y <input type="radio"/> N
Total	20	

Integrity gate: if the student can't explain their work aloud, cap the score at 50% and require a resubmit.