Problems should be in the following format when solved:

Scenario
Scenario: When a home security device is triggered it can be disarmed if the owner enters a code into the device or owner answers a challenge call from the security service, but not if a window has been broken.

Given the following variables:

C: Owner enters code

A: Answers challenge call from security service

B: Window is broken

The expression can be represented as:

(C or A) and not B

Create a truth table to solve for the expression.
Show all intermediate steps in the order that they are evaluated. Each logical operator is an intermediate step.
Highlight all truthful outcomes in green.

C	A	B	(C or A)	not B	(C or A) and not B
T	T	T	T	F	F
T	T	F	T	T	T
T	F	T	T	F	F
T	F	F	T	T	T
F	T	T	T	F	F
F	T	F	T	T	T
F	F	T	F	F	F
F	F	F	F	T	F

Scenario: A student is eligible for a scholarship if they have a GPA of 3.5 or above, and have a high SAT score or strong extracurricular involvement

Given the following variables:

| G	Has GPA 3.5 or above
S	Has high SAT score
E	Has strong extracurricular involvement.

The expression can be represented as:

G and (S or E)

Create a truth table to solve for the expression.
Show all intermediate steps in the order that they are evaluated. Each logical operator is an intermediate step.
Highlight all truthful outcomes in green.

G	S	E	(S or E)	G and (S or E)
T	T	T	T	T
T	T	F	T	T
T	F	T	T	T
T	F	F	F	F
F	T	T	T	F
F	T	F	T	F
F	F	T	T	F
F	F	F	F	F
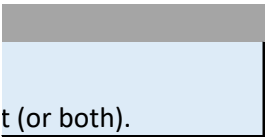
t (or both).

Scenario: At a four-way stop a car can proceed if it's their turn and there are no pedestrians crossing, or if there is a police officer directing traffic to car through.

Given the following variables:

T	Is car's turn
P	Pedestrian is crossing
O	Police officer is directing traffic.

The expression can be represented as:

T and not P or O

Create a truth table to solve for the expression.
Show all intermediate steps in the order that they are evaluated. Each logical operator is an intermediate step.
Highlight all truthful outcomes in green.

T	P	O	not P	T and not P	T and not P or O
T	T	T	F	F	T
T	T	F	F	F	F
T	F	T	T	T	T
T	F	F	T	T	T
F	T	T	F	F	T
F	T	F	F	F	F
F	F	T	T	F	T
F	F	F	T	F	F

o let the

Scenario: A heating system turns on if the temperature is below 68°F or if the override sw

Given the following variables:

B	Temperature below 68
O	Override switch activated
M	Under maintenance

The expression can be represented as:

(B or O) and not M

Create a truth table to solve for the expression.
Show all intermediate steps in the order that they are evaluated. Each logical operator
Highlight all truthful outcomes in green.

B	O	M	(B or O)
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	T
F	T	T	T
F	T	F	T
F	F	T	F
F	F	F	F

switch is activated, but not if the system is under maintenance.

is an intermediate step.

not M	(B or O) and not M
F	F
T	T
F	F
T	T
F	F
T	T
F	F
T	F

Scenario: A vehicle's automated emergency braking system engages if the forward collision sensor d
not respond within a critical time frame, the vehicle is moving above a predifined minimum speed, a
flagged as icy.

Given the following variables:

O   Obstacle detected
D   Driver responds in time
M   Vehicle is moving above minimum speed
I   Roads are icy

The expression can be represented as:

O and not D and M and not I

Create a truth table to solve for the expression.
Show all intermediate steps in the order that they are evaluated. Each logical operator is an intern
Highlight all truthful outcomes in green.

O	D	M	I	not D	not I	O and not D	O and not D and M
T	T	T	T	F	F	F	F
T	T	T	F	F	T	F	F
T	T	F	T	F	F	F	F
T	F	T	T	T	F	T	T
T	T	F	F	F	T	F	F
T	F	F	T	T	F	T	F
T	F	T	F	T	T	T	T
T	F	F	F	T	T	T	F
F	T	T	T	F	F	F	F
F	T	T	F	F	T	F	F
F	T	F	T	F	F	F	F
F	F	T	T	T	F	F	F
F	F	F	T	T	F	F	F
F	F	T	F	T	T	F	F
F	T	F	F	F	T	F	F
F	F	F	F	T	T	F	F

detects an obstacle, the driver does
and current road conditions are not

mediate step.

O and not D and M and not I
F
F
F
F
F
F
T
F
F
F
F
F
F
F
F
F