

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use an Euler diagram to determine whether the syllogism is valid or invalid.

- 1) Not all that glitters is gold.

My ring glitters.

\therefore My ring is not gold.

- 2) Students who study get better grades.

Roger is a student who studies.

\therefore Roger will get better grades.

- 3) No even number is divisible by 3.

18 is an even number.

\therefore 18 is not divisible by 3.

- 4) All painters use paint.

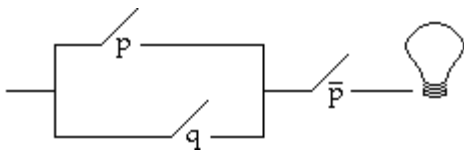
All painters use brushes.

Some people who use paint are teachers.

\therefore Some painters are teachers.

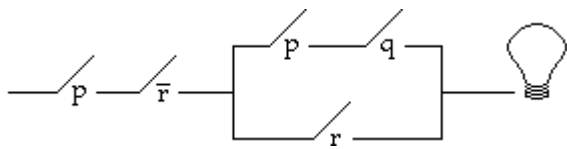
Construct a truth table to determine when the lightbulb is on. That is, determine which switches must be open and which switches must be closed for the lightbulb to be on.

5)



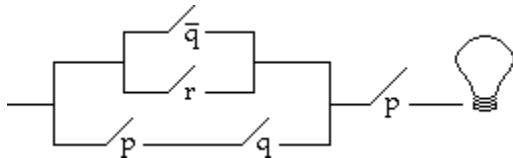
	p	q							
1	T	T							
2	T	F							
3	F	T							
4	F	F							

6)



	p	q	r						
1	T	T	T						
2	T	T	F						
3	T	F	T						
4	T	F	F						
5	F	T	T						
6	F	T	F						
7	F	F	T						
8	F	F	F						

7)



	p	q	r						
1	T	T	T						
2	T	T	F						
3	T	F	T						
4	T	F	F						
5	F	T	T						
6	F	T	F						
7	F	F	T						
8	F	F	F						

Construct a circuit to represent the corresponding symbolic statement.

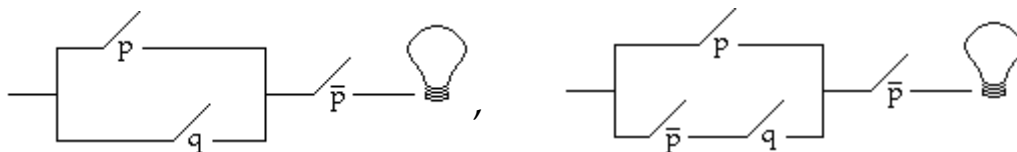
8) $(p \vee q) \wedge \sim p$

9) $(\sim q \vee r) \vee (p \wedge q)$

10) $(p \vee \sim r) \wedge [(p \wedge q) \vee r]$

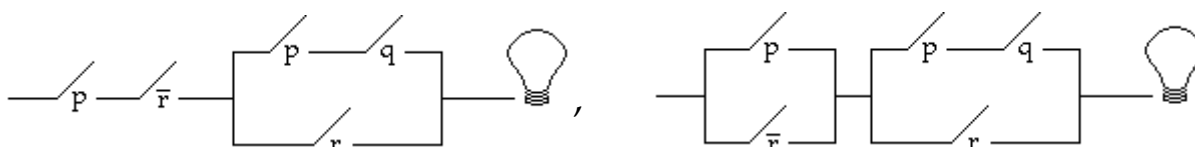
Represent each circuit with a symbolic statement. Using a truth table, state whether the circuits are equivalent.

11)



	p	q							
1	T	T							
2	T	F							
3	F	T							
4	F	F							

12)



	p	q	r						
1	T	T	T						
2	T	T	F						
3	T	F	T						
4	T	F	F						
5	F	T	T						
6	F	T	F						
7	F	F	T						
8	F	F	F						