Group exercises #3

1) Evaluate the following boolean expressions. Assume that x is 10, y is 20, and z is 30. If any expression is always true or false regardless of the values of x, y and z, state so explicitly.
   a. x < 10 || x > 10
   b. x > y && y > x
   c. (x < y + z) && (x + 10 <= 20)
   d. z – y == x && Math.abs(y-z) == x
   e. x < 10 && x > 10
   f. x > y || y > x
   g. !(x < y+ z) || !(x+10 <=20)
   h. !(x == y) && (x!= y) && (x<y || y<x)

2) Simplify the following conditions
   a. !(x >= 10) && !(y < 5)
   b. (distance > 0 && time > 0) || (distance > 0 && time < 100)
   c. (distance > 0 || time > 0) && (distance > 0 || time < 100)
   d. !(x > 10 || y < 5)

3) Consider the following truth table for some logical operator op:

p	q	p op q
true	true	false
true	false	true
false	true	true
false	false	false

Write a method that takes two boolean parameters p and q, and that returns the boolean value p op q.

4) The following table gives the maximum recommended exposure time to a noise level in dB. Write a method that takes the decibel level and returns the maximum exposure time. Use nested conditionals in your solution.

Decibel level	Maximum exposure time (in mins)
dB < 97	60
97 <= dB < 100	30
100 <= dB < 103	15
103 <= dB < 106	7.5
106 <= dB < 109	3
109 <= dB < 112	1.5
112 <= dB	~0 (not recommended)