Relational Operators

Because last week they just took a test, this section will provide a little fun. I would like to try out the game technique this week.

1. Divide them into 3-4 groups (there are 17 students) 2-5 minutes
2. Five questions about relational operators will be given to each team. Each member of the group will be in charge of one problem. However, they should work as a group in solving these problems. (25 minutes)
3. I will state one of the problems and pick one student randomly to present the problem to the whole class. After stating the problem, I will give 30 seconds to the student to process the question. Then, the presenters have to come on the board after 30s and write down the answer (2-3 minutes). Each point will be given to every right answer.
4. Chocolate will be the prize for the winning group.

Questions:

a. What is the output for this code?
   ```java
   double b = 3.0/7.0 + 2.0/7.0 + 2.0/7.0;
   if (b == 1.0)
       System.out.println("Value of a equals 1.0");
   else
       System.out.println("Value of a does not equal 1.0");
   ```
   Answer: Value of a does not equal 1.0 (reference page 171 of textbook)
b. Given x and y are floating-point numbers, what does `Math.abs(x-y)` method do? What is the practical purpose of this method (clue: What is the purpose of this expression `Math.abs(x-y) < 0.000001`)?

Answer: This method will determine whether `x` equals to `y`.

c. What is the result of these two expressions? Explain your answers
   a. 8 < '5'
   b. 8 < 5

Answer: a. true (integer compare with char, using Unicode character set)
   b. false

d. What is the difference between `equals()` and `compareTo()`?

Answer: `equals()` returns Boolean type
            `compareTo()` returns Integer type

e. Put these operators in precedence order:
   
   - `&&` (6)
   - `=` (8)
   - `!`, `+`, `-` (unary operators) (1)
   - `+`, `-` (3)
   - `==`, `!=` (5)
   - `||` (7)
   - `*`, `/`, `%` (2)
   - `<`, `<=`, `>=`, `>` (4)