Part A: The Lion And The Unicorn

When Alice entered the Forest of Forgetfulness, she did not forget everything; only certain things. She often forgot her name, and the one thing she was most likely to forget was the day of the week. Now, the Lion and the Unicorn were frequent visitors to the forest. These two are strange creatures. The Lion lies on Mondays, Tuesdays, and Wednesdays and tells the truth the other days of the week. The Unicorn, on the other hand, lies on Thursdays, Fridays, and Saturdays, but tells the truth on the other days of the week.

1. One day Alice met the Lion and the Unicorn resting under a tree. They made the following statements:

   Lion: Yesterday was one of my lying days.
   Unicorn: Yesterday was one of my lying days too.

From these two statements, Alice (who was a very bright girl), was able to deduce the day of the week. What day was it?

2. On another occasion Alice met the Lion alone. He made the following two statements.

   (1) I lied yesterday.
   (2) I will lie again two days after tomorrow.

What day of the week was it?
3. On what days of the week is it possible for the Lion to make the following two statements:

(1) I lied yesterday.
(2) I will lie again tomorrow.
(3)

4. On what days of the week is it possible for the Lion to make the following single statement: “I lied yesterday and I will lie again tomorrow.” Warning! The answer is not the same as that of the preceding problem!

Part B: Tweedledum and Tweedledee

During one month the Lion and the Unicorn were absent from the Forest of Forgetfulness. They were elsewhere, busily fighting for the crown.

However, Tweedledum and Tweedledee were frequent visitors to the forest. Now, one of the two is like the Lion, lying on Mondays, Tuesdays, and Wednesdays and telling the truth on the other days of the week. The other one is like the Unicorn; he lies on Thursdays, Fridays, and Saturdays but tells the truth the other days of the week. Alice didn’t know which one was like the Lion and which ones was like the Unicorn. To make matters worse, the brothers looked so much alike, that Alice could not even tell them apart (except when they wore their embroidered collars, which they seldom did). Thus poor Alice found the situation most confusing indeed! Now, here are some of Alice’s adventures with Tweedledum and Tweedledee.
5. One day Alice met the brothers together and they made the following statements:

First one: I'm Tweedledum.
Second one: I'm Tweedledee.

Which one was really Tweedledum and which one was Tweedledee?

6. On another day of that same week, the two brothers made the following statements:

First one: I'm Tweedledum.
Second one: If that's really true, then I'm Tweedledee!

Which was which?

7. On another occasion, Alice met the two brothers, and asked one of them, “Do you lie on Sundays?” He replied “Yes.” Then she asked the other one the same question. What did he answer?
8. On another occasion, the brothers made the following statements:

   First one: I lie on Saturdays.
   First one: I lie on Sundays.
   Second one: I will lie tomorrow.

Which day of the week was it?

9. One day Alice came across just one of the brothers. He made the following statement: “I am lying today and I am Tweedleddee.” Who was speaking?

10. Suppose, instead, he had said: “I am lying today or I am Tweedleddee.” Would it have been possible to determine who it was?
11. One day Alice came across both brothers. They made the following statements:

First one: If I’m Tweedledum then he’s Tweedledee.
Second one: If he’s Tweedledee then I’m Tweedledum.

Is it possible to determine who is who? Is it possible to determine the day of the week?

12. On this great occasion, Alice resolved three grand mysteries. She came across the two brothers grinning under a tree. She hoped that on this encounter she would find out three things: (1) the day of the week; (2) which of the two was Tweedledum; (3) whether Tweedledum was like the Lion or the Unicorn in his lying habits (a fact she had long desired to know!)

Well, the two brothers made the following statements:

First one: Today is not Sunday.
Second one: In fact, today is Monday.
First one: Tomorrow is one of Tweedledee’s lying days.
Second one: The Lion lied yesterday.

Alice clapped her hands in joy. The problem was now completely solved. What is the solution?