

establish that Sunday is the 1st day of the week ↘

## DEDUCTION PUZZLES

### Problem 1: The Seven Witches

Once upon a time  
On top of a magical peak,  
Seven witches wished wishes one week.

Sunday the first witch sought beauty.  
On Wednesday one asked for wealth.  
(Broomhilda just wanted her health.)

The day after Broomhilda had finished,  
Morgana wished to be queen.  
One witch was named Jolene.

On Friday one witch said,  
"I wish most of all for fame."  
Drusella was not this one's name.

Saturday's witch asked for diamonds  
To hang from her door like a wreath  
(Poor Greta just wanted some teeth.)

Samantha wished before Hannah,  
Who didn't want diamonds or fame.  
And now you can play the game.

If each day a witch wished a wish  
In this magical land far away,  
Which witch wished which wish which day?

### Problem 2: The ESP Experiment

In an experiment in extrasensory perception, the tester showed the four subjects three pictures -- one of a dog, one of a girl, and one of a hat. Next, she shuffled the pictures, placed them in a pile face-down, and asked each subject to guess the order of the pictures. Of the four subjects, no two guessed the same order, but all four correctly guessed the position of at least one of the three pictures. None of the four subjects guessed the order dog, hat, girl, or the order hat, girl, dog. From this information, can you deduce the correct order of the three pictures?

### Problem 3: The Baffling Bobolinks

"This Bobolink murder really has me puzzled," Chief Inspector Atticus Dimm said to his friend, Roland Sharp, as the famous private detective led him inside. "And that's why I've come to you, Sharp."

The two men took their usual comfortable chairs flanking Sharp's fireplace. Sharp leaned back, closed his eyes, and said, "Tell me the facts."

"Well, said Inspector Dimm, "at first glance, the case seems simple. The Bobolinks are a most unusual family. All blonde family members always tell the truth and all dark-haired members always lie. Plus, we know the person who killed old Benjamin Bobolink was one of his five nieces and nephews."

The Inspector sighed. "However, in order to protect one another, all the dark-haired Bobolinks have dyed their hair blonde. They still must lie, of course, but now we can't tell who is lying. To make it worse, two of the suspects speak no English, and the other three have interpreted their statements. By the time we got our own interpreter, their lawyer was there and they all refused to say another word."

Sharp opened his eyes. "Do you have their original statements?"

The inspector took out his notebook. "Right here. But they're not worth anything. We couldn't understand a word either Martha or John said. The others all protect one another. First Matilda says: "I did not dye my hair. John said he did not dye his hair. I did not kill my uncle. John said he did not kill our uncle."

Then young Tom says, "Matilda lied. John said he killed our uncle. But I killed our uncle."

And last, George says, "Tom lied. Martha said she killed our uncle. But I killed our uncle." The Inspector put down his notebook. "So Sharp, you see why this case has me completely baffled?"

"On the contrary," Sharp answered, "I not only know the color of each one's hair, I know exactly who killed Benjamin Bobolink." Do you?

there are no new facts — just insights

in doing these exercises the students know more after then @ beginning through a 1st class of session

## **SOLUTIONS**

### **Deduction Problem 1: The Seven Witches**

Sunday's witch asked for beauty, Wednesday's asked for wealth (verse 2), Friday's asked for diamonds (verse 5). Broomhilda asked for health (verse 2), and the following day Morgana wished to be queen (verse 3). Broomhilda made her wish on Monday, and Morgana Tuesday. By elimination, the wish for teeth was made Thursday, and this wish was made by Greta (verse 5). Hannah didn't ask for diamonds or fame (verse 6), so she didn't wish on Friday or Saturday. Since Samantha made her wish before Hannah (verse 6), Hannah wished on Wednesday for wealth, and Samantha wished on Sunday for beauty. Drusella did not wish for fame (verse 4), so she wished for diamonds on Saturday and, by elimination, Jolene is the witch that wished for fame on Friday. In summary:

Sun: Samantha, beauty  
Mon: Broomhilda, health  
Tues: Morgana, to be queen  
Wed: Hannah, wealth  
Thurs: Greta, teeth  
Fri: Jolene, fame  
Sat.: Drusella, diamonds

### **Deduction Problem 2: ESP**

There are six possible orders of the three photos:

hat, dog, girl;  
hat, girl, dog;  
dog, girl, hat;  
dog, hat, girl;  
girl, dog, hat;  
girl, hat, dog.

Since no two guessed the same combination, four of these orders were guessed. Of the six possible orders, each order has two others that are completely different. Since each subject guessed at least one correct placement, one subject guessed all three correctly, and the other three guessed one placement correctly. The two not guessed, then, were the two that were completely wrong. These two were dog, hat, girl and hat, girl, dog. Neither dog nor hat, then, were in first place; girl was. Neither hat nor girl was in second place; dog was. By elimination, hat was in third place. The correct order, then, was GIRL, DOG, HAT.

### **Deduction Problem 3: The Baffling Bobolinks**

Since all blonde Bobolinks told the truth and all brunettes lied, everyone would have denied dying his or her hair. Matilda states that John says he did not dye his hair, so she is telling the truth; she is blonde, and all of her statements are truthful (although John may be lying in what he says to her). She states that she is innocent, and she is. Tom says that Matilda is lying, so he is lying. He is a brunette, and is lying when he says he killed his uncle; he is innocent. George says Tom is lying, and is telling the truth; he is blonde and, as he states, guilty of killing his uncle. Martha, who says she is guilty, is telling a lie, so she is brunette. John, who says he is not guilty, is telling the truth; he is blonde. In summary:

Matilda: blonde.          John: blonde.  
Martha: brunette.        Tom: brunette  
George: blonde, guilty