#### S1A011314 I fratelli Dalton Les frères Dalton

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The Dalton Brothers are four ruthless outlaws from the Wild West. Three of the four, Bill, Grat and Emmett, have been imprisoned. Each one is locked up on his own in one of the 12 cells of the prison shown here. Each cell has only one window.

In order to set his brothers free the fourth brother, Bob, uses this information :

* The window of Bill’s cell faces south.
* Bill is on the floor above Grat.
* The window of Grat’s cell faces east.
* Emmett is on the 2nd floor in a cell which lies more to the west than Grat’s cell.
* There is just one cell beneath Bill’s.

On the diagram you can see the prison warder at position (2, A, II).

***Help Bob set his brothers free by finding the position of each brother. Justify your answer***

#### S1A011415 Dov’è il ritratto?

Once upon a time there was a beautiful princess who had three caskets: A, B and C. She had put her portrait into one of the caskets.

Anyone who wished to marry her had to find out which casket contained her portrait.

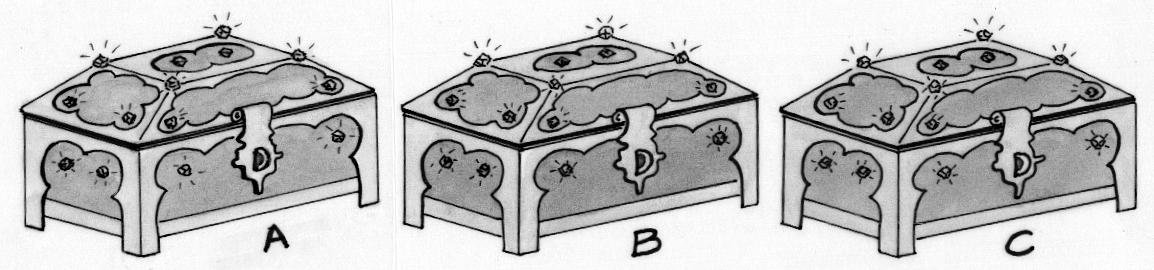
A sentence was written on each casket:

Casket A:  “The portrait is not here.”

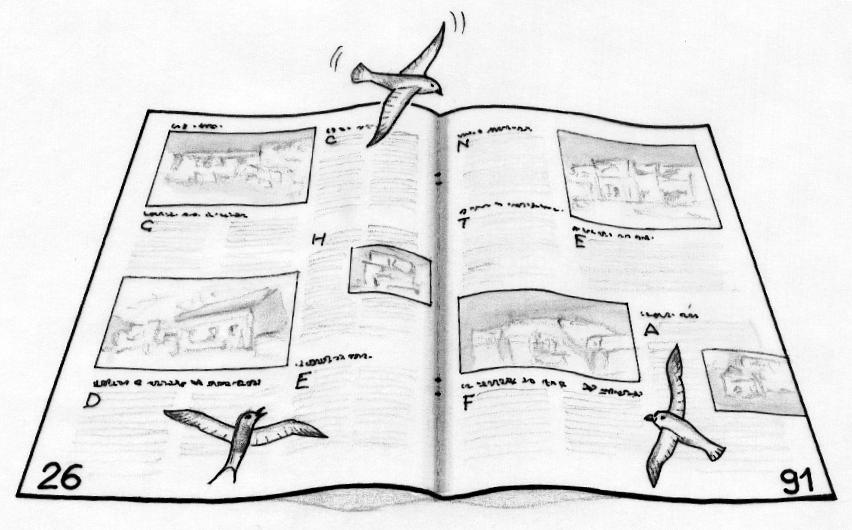
Casket B:  “The portrait is here.”

Casket C:  “The portrait is not inside casket B.”

***Only one of these three sentences is true. Find out which casket contains the portrait. Justify your answer.***



#### S1A011516 Le pagine volantiEx 1 Feuilles volantes



The sheets of pages of a magazine were badly stapled together and have now come apart.

Here is one complete sheet. You can see the page numbers 26 and 91 at the bottom of each page on the sheet. On every sheet of the magazine there are 4 pages.

The cover page and the back page of the magazine are numbered as the first page and the last page.

***How many sheets are there between pages 26 and 91 ?***

***Work out the total number of pages in the magazine. Explain your answer using a minimum of 30 words.***

#### S1A011617 Indoviniamo

Giorgio challenges his friend Marco that he can guess any number thought by him. Marco does not believe Giorgio’s guessing skills and accepts the challenge.

Giorgio tells him:

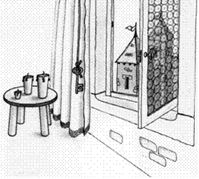
“Think of a number.

* Add 3 to this number.
* Multiply the result by 2.
* Finally, subtract 5 from the number obtained.

Which number did you get?”

Marco replies “9” and Giorgio immediately says to the astonished friend: “So, the number that you thought originally was 4”. ***Explain how Giorgio could provide the exact answer, without any hesitation.***

#### S1A011718 Cronometro a stoppino

The porter of a castle has to open the main gates in exactly 6 hours time. To measure the time passing he has 3 candles: the big one burns itself out in 4 hours, the middle-sized one in 3 hours and the small one in 1 hour. It is not possible to know precisely when a candle would be half-used or one third used, or a quarter ….

***How will he be able to do it?***

#### S1A011819 Chi vede chi?

Three clowns, Anatole, Michel and Thomas, keep three red hats and two green hats in their dressing-room.

Before going on stage they each need to put on a hat.

****The clowns cannot find the light switch and the dressing-room is in darkness. Each clown picks a hat at random and puts it on his head. They leave the dressing-room and go on stage.

Each clown is asked if he can work out the colour of his hat.

Anatole looks at the two others and says “No”.

Then Michel looks at the two others and says “No”.

Finally Thomas, who is actually blind, replies “Yes”.

***Explain how this blind clown was able to work out the colour of his hat. What is it?***

#### S1A011920 Bike and Run

Chloe and Lucille want to take part in their first “Bike and Run” event that covers a route of 27 km. This is a sports event in which one person runs while the other rides a bicycle. Both contestants use the same bicycle, taking turns as needed.

Each time one of the girls dismounts, she leaves the bicycle at the side of the road and continues on foot. When her teammate arrives on foot, she mounts the bike and continues cycling.

Chloe runs at a speed of 8 km/h and cycles at 20 km/h, while Lucille runs at 10 km/h and cycles at 16 km/h.

***How can the girls plan so that they cross the finish line at the same time? How long does it take them to complete their route?***

#### S1C011314 La fantasia della collana

Enrica is an artist in composing jewels with recycled materials that she accumulates in drawers, grouping them in small drawers. Wanting to make  a necklace with recurring sequences, she puts on the table the content of the first small drawer, which contains four items respectively green, (tiger) streaked, black and white. 

The objects turn out to be placed as follows:

* the first object is a lozenge
* the green object is before the white
* the ball of the eye of the tiger is the second
* the button comes before the onyx object (black)
* the pendant is not white.

***If Enrica chains the objects in this order, how does the resulting sequence look like?***

***For each component, specify the type and colour.***

**S1C011415**  **Tappi preziosi**

Soft drinks companies can easily re-cycle and re-use their plastic bottle caps.

In order to pay for a wheel chair for a retirement home, Madame Carmela tells the whole school on the first day of session:

*“We will need 1 000 000 plastic corks!!!*

*Can you bring in at last 60 per month.”*

***If the school is a big one, do you think she will reach this target by the end of the school year?***

***After you have explained your answer, indicate the time needed to achieve the target***

**S1C011516 La cioccolata calda**

Anatole, Benjamin and Chloe have just come back home after skiing. Their mum asks them:

“Does everyone want hot chocolate?”

Anatole replies first and says: “I don’t know.”

Benjamin answers next and also says: “I don’t know.”

Chloe has been listening to her brothers and she answers: “Yes!”

Their mother gives each of them a mug of hot chocolate.

***Explain the three answers***

**S1C011617 Una festa particolare**

Laura, who is always looking for any opportunities to make a cake, decides to celebrate on October 10th 2016 her 20,500 days since she was born.

**S1A011718 Cronometro a stoppino**

The porter of a castle has to open the main gates in exactly 6 hours time. To measure the time passing he has 3 candles: the big one burns itself out in 4 hours, the middle-sized one in 3 hours and the small one in 1 hour. It is not possible to know precisely when a candle would be half-used or one third used, or a quarter …. How will he be able to do it?

**S1C011617 Una festa particolare**

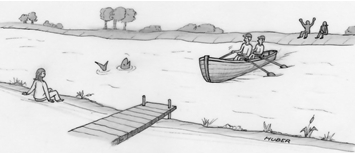
Laura, who is always looking for any opportunities to make a cake, decides to celebrate on October 10th 2016 her 20,500 days since she was born. In fact, on which day should she have celebrated her birthday in 2016 and how old would she be on that day? Explain your reasoning.

**S1C011718 Esperti e maldestri**

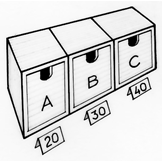
Aline, Hélène, Zoé, Pierre and Jules want to cross a river as quickly as possible. They have a rowing boat available which holds a maximum of three people.

Aline and Pierre are experienced rowers. On their own or with both of them together they can cross in two minutes. Unfortunately the others are so clumsy that with one of them on board the crossing takes eight minutes.

***What is the fastest time that the five friends can take to get to the other side of the river? Explain your answer.***



**S1C011819 Il biglietto vincente**



Three opaque boxes marked A, B and C are placed side by side. It is known that one box contains two €10 notes, a second contains two €20 notes, and the third box contains one €10 note and one €20 note.

A label is placed in front of each box showing how much the box contains. A little rascal shuffles the labels so that they no longer correspond to the amounts in the boxes.

***Explain how, by only taking a single note from a chosen box, you can deduce the amounts in each box.***