

AMAZINGMATHS

Materials:

- Video of the puzzle
- Pen and paper

Puzzle

- Cat or Dog -

The Puzzle

Albert, Ben, and Cindy go to the pet store with their parents. Upon their arrival, the children fall in love with 3 dogs and 2 cats.

Their parents decide to surprise the children and get each of them one of the five pets.

Albert and Ben are very curious and want to find out if they will get a cat or a dog. To satisfy their curiosity a little, their parents tell them each what pet the two other children will get.

So, Albert tells Ben and Cindy that he knows whether they are getting a cat or a dog. But, even with this information, he doesn't know which animal he will get.

A little later, Ben tells Albert and Cindy that he also knows which animal they are getting. But, again, even with this information, he cannot figure out which animal he will get.

Cindy thinks about it, and thanks to the information her friends have shared, she is able to know whether her parents will get her a cat or a dog.



Which animal will Cindy get, and how can she be sure?

Source : Inspiré de LHULLIER, Sylvain, *La boîte à énigmes mathématiques*, « L'aveugle et les chapeaux », Marabout, p.64.



Puzzle Solution



The answer:

As her surprise gift, Cindy will receive a dog.







Possible solution:

The first statement is Albert's:

- ❖ **Albert announces to Ben and Cindy that he knows whether they are getting a cat or a dog. But, even with this information, he is unable to know what type of animal he will get.**

Since there are only 3 dogs and 2 cats, the only way Albert would be able to find out which animal he would get is if each of his friends would receive a cat. However, since he is unable to guess which animal he will receive, it is surely because **Ben and Cindy will not receive one cat each**. Therefore, we are certain that **at least one person between Ben and Cindy will receive a dog**.

From this conclusion, there are three possibilities:

	Possibilities of Animals Ben and Cindy can Receive	
	Ben	Cindy
Possibility no.1		
Possibility no.2		
Possibility no.3		

Now, let's remember Ben's statement:

- ❖ **Ben announces to Albert and Cindy that he also knows what kind of animal each of them will receive, but again, even with this information, he is still unable to find out which animal he will get.**

The table allows us to see that, if Cindy receives a cat, then Ben is sure to get a dog (possibility no. 1). However, if Cindy receives a dog, Ben cannot be sure whether he would get a cat or a dog (possibility no. 2 or possibility no.3).

As previously mentioned, because Ben is unsure of what type of animal he is receiving, we know that Cindy can't be getting a cat and therefore must be getting a dog (possibility no. 2 or possibility no. 3).

Thus, with the information received from her two friend, Cindy is certain to receive a dog!