**Teaching Monty Hall to 4th Graders**

“Hello class, today we are going to mimic a TV show called ‘Deal or No Deal,’ are you ready?”

Then I would motion to three cups set up and say, “underneath one of these cups is a packet of candy and underneath two of the cups is a sticker, raise your hand if you like candy…”

While motioning to three cups with nothing inside, say:

“Now if you want the piece of candy there is a very strategic way of getting it. But first I am going to ask you to point to one cup that you think the car might be under. Next I will lift up one cup revealing a sticker. Then I am going to give you the choice of whether you want to switch your cup or not.”

“Now raise your hand if you would stick with your original guess.”

“Okay hands down, now raise your hand if you think you should switch your answer.”

“Hmmm let’s find out, I need a volunteer. Raise your hand if you want to volunteer.”

After choosing someone:

“Okay Billy Bob Joe, I want you to stand up here.”

Now I use the real set that has candy and stickers under it:

“Billy, point to a cup you think the candy is under.”

Then I would pick up a cup revealing a sticker.

“Now Billy, you need to make a tough decision. Will you stick with your first guess or switch cups?”

Depending on what he says I will lift up the cup.

* If Billy stays with his first choice and gets the candy I will say, “Billy, you are a very lucky boy and here’s why…”
* If Billy stays with his first choice and gets a sticker I will say, “Billy, you should have switched and here’s why…”
* If he switches and gets the candy I will say, “Billy, you had statistics on your side.”
* If he switches and gets a sticker I will say, “Billy you are the 1/3rd and here’s why…”

I will tell Billy to sit down and then walk up to the board and write: “Monty Hall Problem.”

Turning and facing class, “there was this host on ‘Deal or No Deal’ called Monty Hall who I was pretending to be. There is quite a bit of math behind this game.”

“Let’s say we start out with three cups (draw three cups), what are the chances of picking the candy on first try?”

When someone says 1/3rd, I will say, “you are exactly right, there is a 1/3rd or 33 percent chance you will choose the candy.”

Write ‘1/3rd’ next to the cups. Then lower on the board I would draw three more cups and ex one out.

“Now like what happened to Billy, one cup was revealed and we knew it was a sticker. If you stick with your same cup, then you have the original 1/3rd chance of getting the candy. However, now that one of the sticks has been revealed, things change. If you switch cups, you have a 2/3rds chance of getting the candy (draw 2/3rds next to cups with one crosses out).”

“All in all, in this type of problem, if you stay, you have a 1/3rd chance compared to if you switch you have a 2/3rds chance. Which is bigger, 1/3rd or 2/3rds?”

“Correct, 2/3rds is the answer. So if you switch, you are more likely to get the candy.”

“This is called the Monty Hall Problem. Go home and tell your mom or dad that if they are ever on a game show and given the opportunity to switch, they should switch.”

“I have candy for all of you for being such great listeners.”

After I pass out candy, I say, “Thank you so much, and remember, if you want the candy, you should switch cups.”