# Old McDonald Had a....

   This activity is designed to help children develop number sense. When you begin, you may only have 2 different kinds of animals and only a few of each kind. As you continue, you will be able to add more categories and variables.

Example 1 – Beginners

Old McDonald had a _____(kids reply farm). And on this farm he had some _____(kids will choose 2 different kinds of animals). Let's say that the responses were cows and pigs. The teacher makes the beginning sound for cow and asks what would be a good letter to write to stand for cow? Do the same for pig. On the board, the teacher will record an amount of C's for the number of cows and P's for the pigs. The teacher will also write the number that matches these amounts because children will soon learn that it will become easier to use the numbers for computation than it would be to count the number of animals. In this case, Farmer McDonald has 3 cows and 2 pigs so the board would look like:

```
C  C  C   3
P  P      2
```
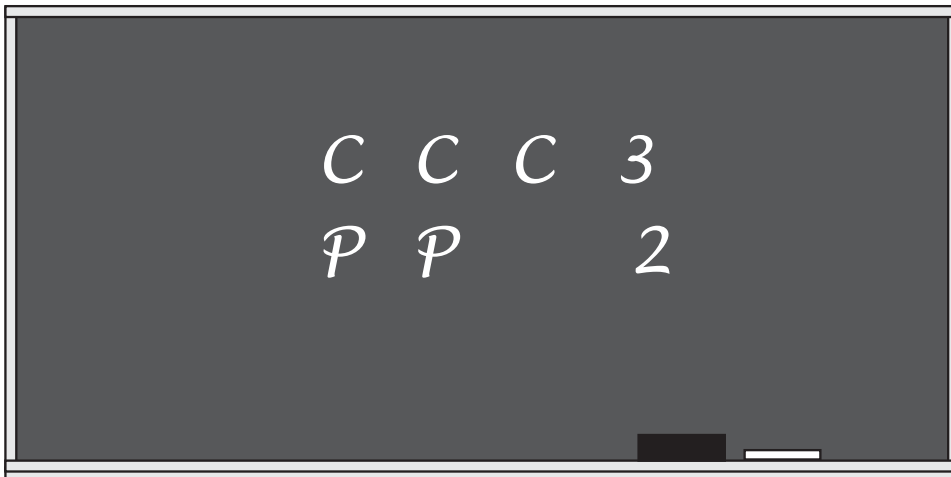
Possible questions include:
- Which animal does he have the most of?
- Which animal does he have the least of?
- How many animals does he have all together?
- Which animal does he have an odd/even number of?
- How many more cows are there than pigs?
- How many pigs would he need to have the same number of cows?
- How many cow tails are there?
- How many pig snouts?
- How many pig feet? (a little advanced but teach it now for the future)

IMPORTANT – A child never just gives a numerical answer without an explanation of how he/she derived that answer. There will be students who didn't know the answer and the oral explanation will model a strategy that can be used the next time. The purpose isn't the correct answer as much as it is the ability to know HOW to get the correct answer.

e.g. The answer to the first question is that he has more cows. This might seem like an obvious and simple question but the explanation that 3 is more than 2 helps develop your students' number sense. Your students will find that problem solving with larger numbers or multiple variables isn't going to be harder for them because it will involve the same principles as these basic problems (see below to understand this progression).

Example 2 – Experienced Farmers!

When it is time to expand, let the children provide additional input into designing the problem. The more input they can provide, the more invested they will be in problem solving. Once an animal is chosen the teacher might say the farmer has an even amount of that animal between 5 and 10. Then children have to use their listening and process of elimination skills to figure out the amount before they even begin the given problems. In this example, let's say that Farmer McDonald has 3 ducks, 4 horses, 6 sheep and 2 lambs. The board would look like:

D	D	D				3
H	H	H	H			4
S	S	S	S	S	S	6
L	L					2

You will ask some of the same types of questions as before but you can increase the difficulty. In this case you want to enrich children by looking for and modeling methods to "make their job easier". For example, when you ask how many all together you can accept the answer 15 with the explanation that they counted all of the letters or added all of the digits together. Then you want someone to point out that since we know our tens facts and

CONTINUED —-Experience Farmers…. Example 2

4+6 is 10 we can just add 5 more and get 15.

When asking a question like how many more sheep than horses, you can show how to match them up until you run out of horses and see how many sheep are left. REMEMBER- A student will not respond with just a numerical answer he/she must be able to explain how they derived that answer. (Your upper grade colleagues will appreciate this work when their students are accountable for extended response problems during their high stakes testing.)

Once you have expanded beyond traditional basic number sentence questions you can have fun thinking outside the box to ask questions like:
• How many pets can fly? How many cannot?
• How many animals have 4 legs?
• How many feet/hooves all together?
• How many tails? (Do ducks have tails?)
• How many eyes? (practice counting by twos)
• How many horse legs? (we could do this easily with our doubles saying the first 2 horses are 8+ the next 2 are 8 and we know 8+8 is 16)
• How many animals have 2 syllables in their names?
• How many animals begin with a consonant/vowel? Have more than 2 vowels in their name?
• Which animals are related to each other? (Do they know that a lamb is a baby sheep?)

Is it mathematical to talk about a baby sheep? Of course not, but every relation you can make will help your children file information away for future reference. Vowels and syllables in math? Your kids will giggle and think you are being silly (especially when the answer is 0) but you've forced them to incorporate their language arts skills into math without them even realizing. **MATH IS ALL ABOUT RELATIONSHIPS!**