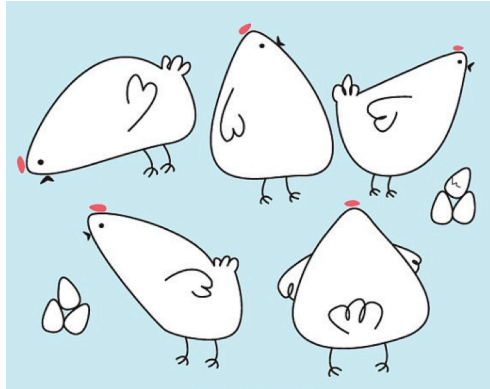# How Many Chickens?

Farmer Frank raises chickens and pigs.
His animals have a total of 120 heads and 300 feet.

1. **How many chickens does Farmer Frank have?**
2. **Write a ratio that compares the number of chickens to the number of total animals.**
3. **What percent of the 300 feet belong to pigs?**

Remember to:
- PERSEVERE!
- Show PRECISE work!
- VERIFY your answer by showing at least 2 different methods of solution.
- Be prepared to share your work with your classmates and answer their questions.
- Be prepared to critique the work of others.

For the Teacher

1. One possible solution path is to set up a system of equations:

Let **c = # of chickens** and **p = # of pigs**

Since chickens and pigs each only have one head, then we can assume that 120 also simply represents the total number of animals and, thus, **c + p = 120.** This equation can then be rewritten as **c = 120 – p**.

Using the fact that we're given that there are a total of 300 feet, and that we know that chickens have 2 feet each, and pigs have 4, we can write the equation **2c + 4p = 300.**
Using substitution, this equation can be rewritten as follows: **2(120 – p) + 4p = 300**
Applying the distributive property results in the following: **240 – 2p + 4p = 300**
$$ -240 \qquad\qquad -240$$

Then, solving the equation for p by using inverse operations: -2p + 4p = 60
$$\frac{2p}{2} = \frac{60}{2}$$

$$\text{Thus:} \quad p = 30$$

If there are 30 pigs, then there must be **90 chickens** in order for the total number of animals to be 120, which we were given.

2. The fraction that represents the portion of animals that are chickens is $\dfrac{90}{120}$

which simplifies to **$\dfrac{3}{4}$**

Of course, the ratio could also be written as 3:4 or 3 to 4

3. Since we now know that there are 30 pigs, and since each pig has 4 feet, we also know that there are 30(4) or 120 feet that belong to pigs.
The fractional representation of the pigs feet to total feet is $\dfrac{120}{300}$ or $\dfrac{2}{5}$

$\dfrac{2}{5}$ = 0.4 and 0.4 = 40%, so **40% of the feet belong to pigs**.