Farmer Morris Needs a New Farmhouse!

❍ This is a problem solving task for students to complete *after* LEARNING and MASTERING the concept of area, perimeter, addition, subtraction, and multiplication. It's a great way to bring home the concept or review the concept at the end of the year. You will be amazed with what your students come up with!

❍ The purpose of the task is to let students envision and create according to what is in their own heads – not according to what an example looks like. I did add an example, but that's mostly for the teacher's benefit, not the students'. I taught this task much more effectively after I'd done one myself, gone through the pain of having to start again and again because my farmhouse was too big! You should try it. It's fun.

❍ I would really stress the planning page. If they just start cold on the blueprint, disaster and frustration inevitably follow. Have them decide beforehand how many pens they'll need and how much space those pens will take up. This will make it easier to plan for aisles and an entryway. You have to be pretty explicit, as is usually the case.

❍ **TIP:** Enlarge their blueprint paper onto 11 x 17 paper so they are better able to count their areas and perimeters!

Extensions

❍ Have your quick-finishers figure out how much the new place is going to cost using the following prices:

Animals
- o Pigs = $120 each
- o Chickens = $85 each
- o Sheep = $165

Materials
- o One pig pen = $235
- o One chicken pen = $210
- o One sheep pen = $260
- o Farmhouse walls and roof = $1,250
- o Concrete for floor = $355
- o Farmhouse door = $115

❍ Another idea might be to have students take the blueprint and draw an actual picture of what the space will look like.

Students Still Learning

❍ Some students might feel overwhelmed by this task. It's pretty involved and time-consuming. For those who need a lighter load, have them create a farmhouse with just one of each kind of pen.
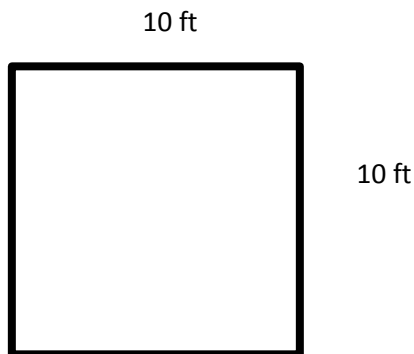
Farmer Morris's New Farmhouse

Farmer Morris wants more animals but he doesn't have the space in his old farmhouse. He will have to build a new place for them to live. He only has enough space for a small farmhouse with an area less than 1000 ft². He wants sheep, pigs, and chickens. He has figured out the following:
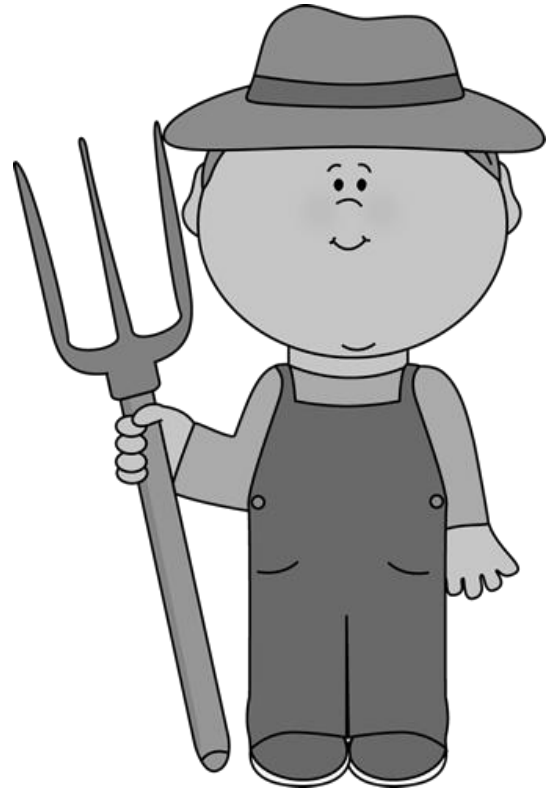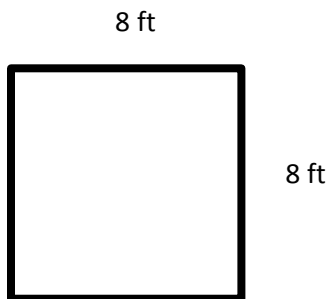
- One pen for 5 chickens will have an area of 9 ft. by 9 ft.

9 ft

9 ft
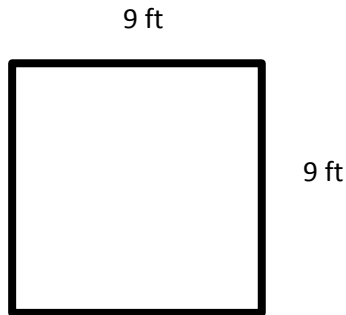
- One pen for 2 sheep will have an area of 10 ft. by 10 ft.

10 ft

10 ft

- One pen for 2 pigs will have an area of 8 ft. by 8 ft.

8 ft

8 ft

Farmer Morris would like to have a bunch of each kind of animal. Draw a blueprint for Farmer Morris's new farmhouse and answer the following:

1. How many of each animal can Farmer Morris have?
2. How many square feet will the farmhouse be? (Remember, it must be 1000 ft² or less.)
   Don't forget to leave space for an entryway and aisles so Farmer Morris can get to his animals!
3. Farmer Morris would like a fence around the new farmhouse. What will the perimeter of Farmer Morris's new farmhouse be?

Farmer Morris's New Farmhouse

Answer the following questions about the new farmhouse you created for Farmer Morris:

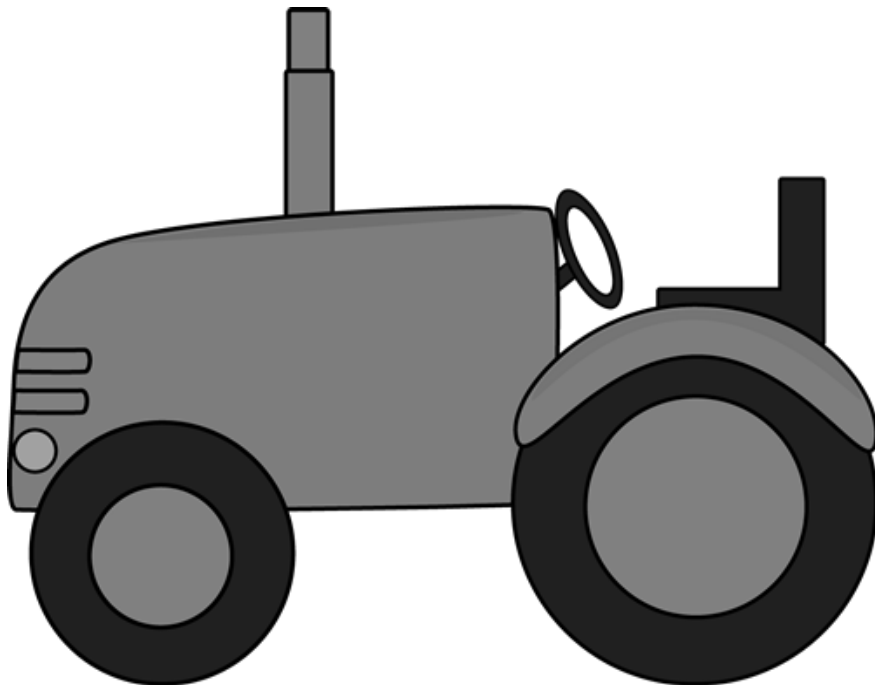1. How much area does the farmhouse cover in square feet?

   Don't forget to include the entryway and aisles! _____

2. How many of each animal were you able to fit into the farmhouse?

Sheep _____   Pigs _____   Chickens _____

3. How many animals will Farmer Morris be able to have? _____

4. What will the perimeter of the farmhouse be? _____
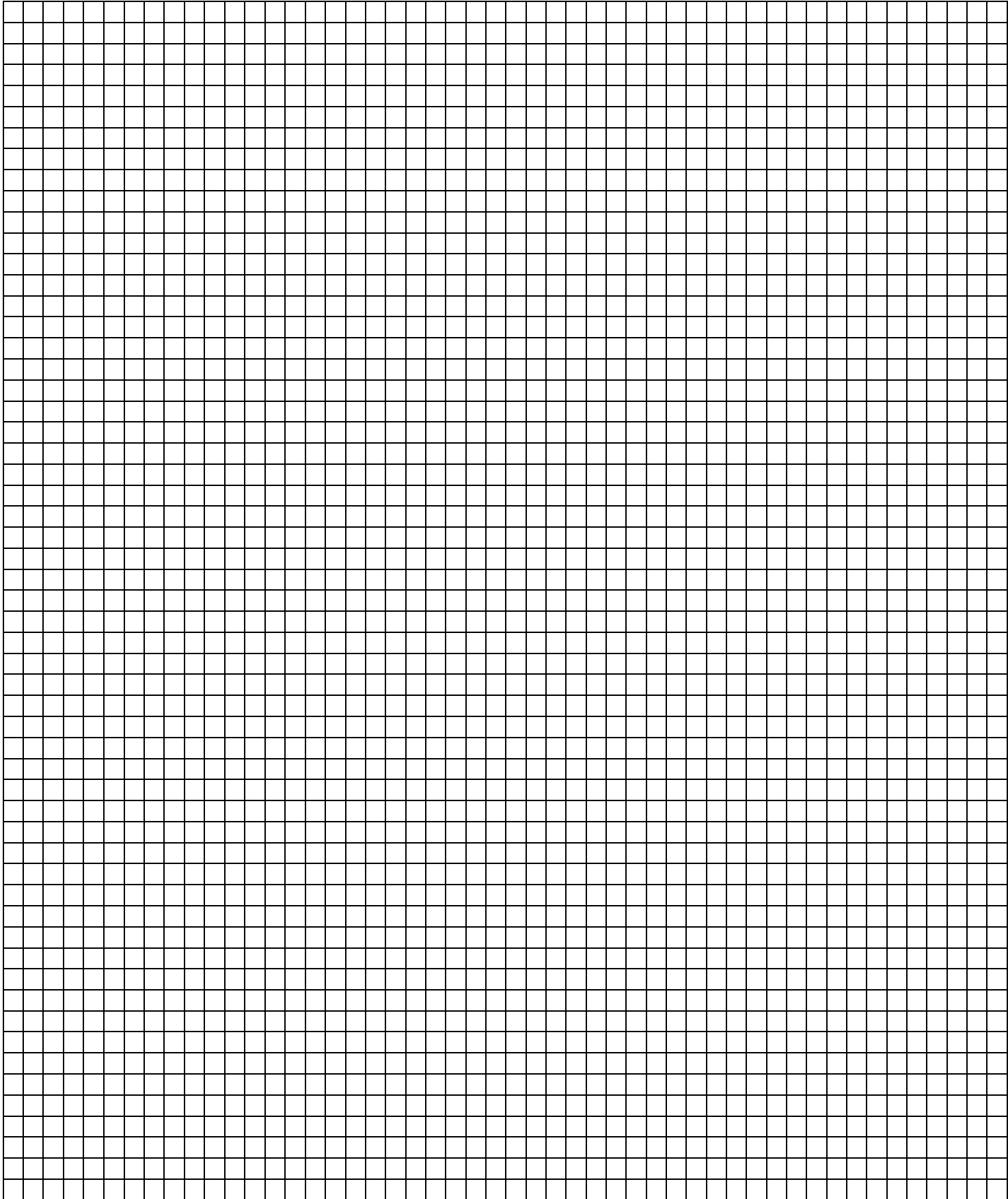
Farmer Morris's New Farmhouse

Planning Page: Use the space at the bottom of the page for planning. Do the math to figure out how many of each kind of animal pen you are going to put in Farmer Morris's farmhouse BEFORE starting on the blueprint. Remember, you must leave room for walkways between pens and doorway(s) into the farmhouse.

Things to Think About:

- How wide should a walkway or entryway be in order for someone to walk comfortably through it? Keep in mind – 12 inches is equal to 1 foot. Think about how wide that really is (or isn't).
- Farmer Morris wants some of each kind of animal – as many as possible of each!
- Don't forget that more than one animal can fit in one pen. Look at the first page again.

Farmer Morris's New Farmhouse

*Each box equals 1 ft²

Farmer Morris's New Farmhouse

2 sheep
100 ft²

2 pigs
64 ft²

5 chickens
81 ft²

2 sheep
100 ft²

2 pigs
64 ft²

5 chickens
81 ft²

2 sheep
100 ft²

2 pigs
64 ft²

5 chickens
81 ft²

*Each box equals 1 ft²

Farmer Morris's New Farmhouse

Example Answer Page

Answer the following questions about the new farmhouse you created for Farmer Morris:

2. How much area does the farmhouse cover in square feet?

   Don't forget to include the front door and aisles!   _963 ft²_

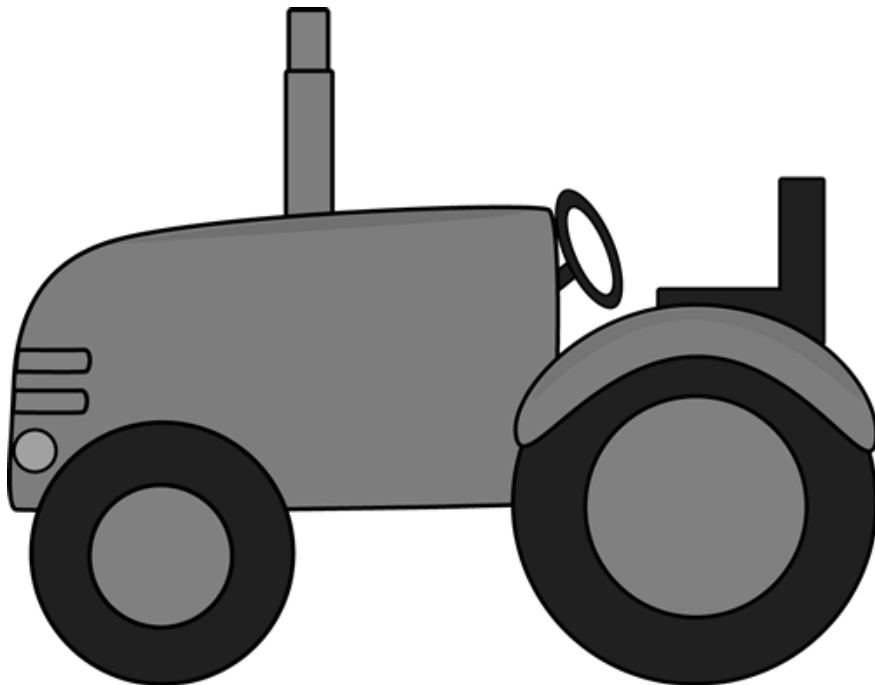2. How many of each animal were you able to fit into the farmhouse?

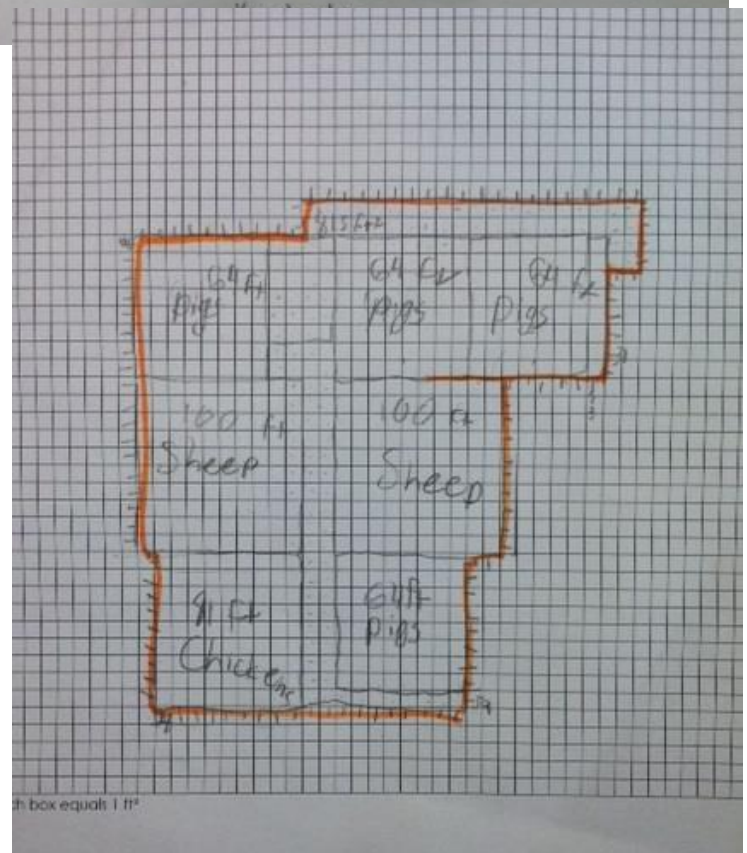Sheep _6_   Pigs _6_   Chickens _15_
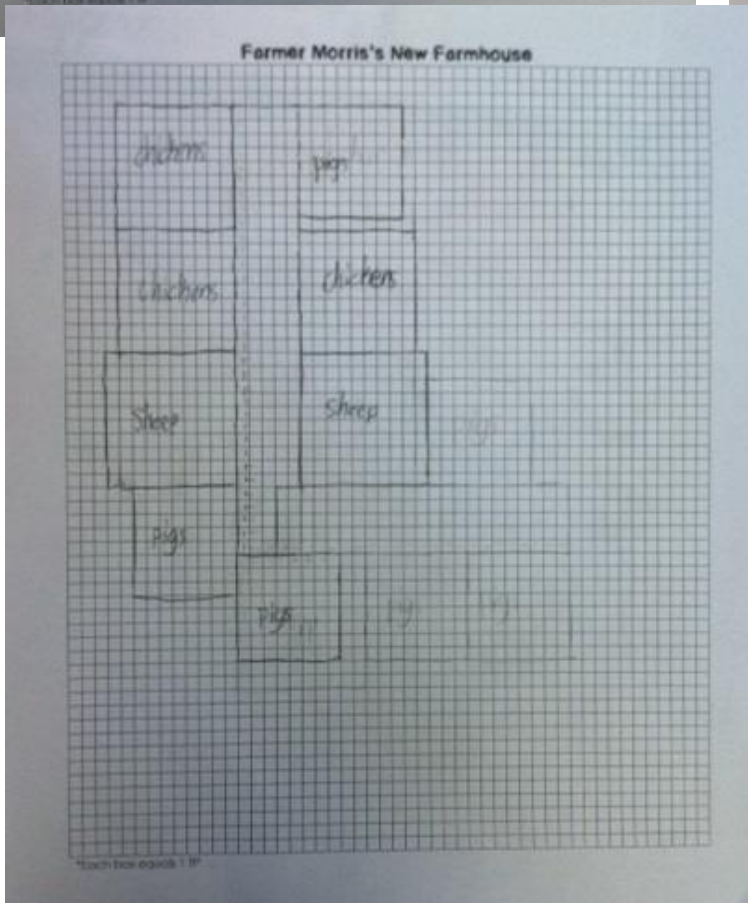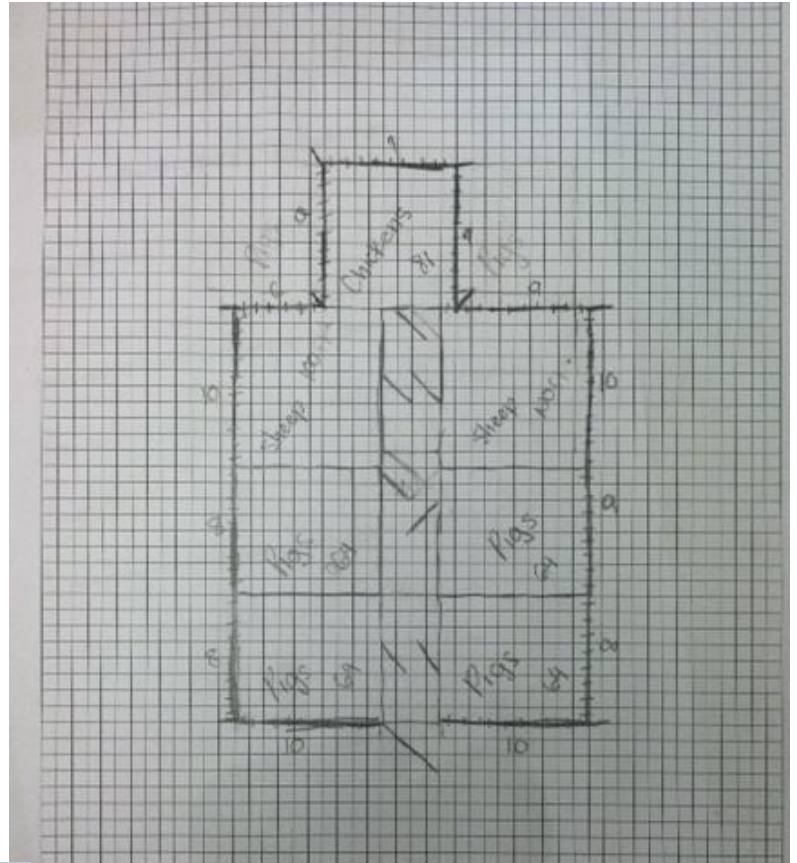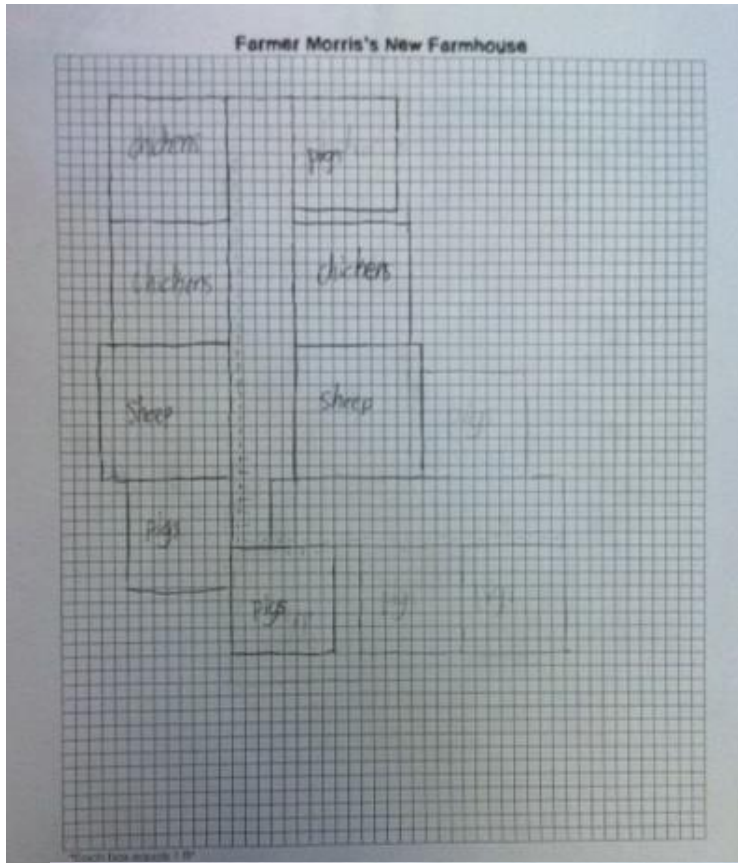
3. How many animals will Farmer Morris be able to have?   _27 animals_

5. What will the perimeter of the farmhouse be?   _126 feet_

Farmer Morris's New Farmhouse

Student Work Examples:

Acknowledgments

Thank you to www.mycutegraphics.com for the clip art!

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http://www.teacherspayteachers.com/Product/font-buffet-free-Collection-of-19-Fonts-Commercial-Use-728673