Name: _____

CASE

Activity 3.3.3 Scaled Down

Purpose

Drafting accurate and detailed plans are important when designing animal production facilities. Plans should be neat, precise, and drawn to scale in order for the builder to construct a solid and long-lasting building. In *Introduction to Agriculture Food and Natural Resources,* you learned drawing to scale is needed to represent large construction projects on a sheet of paper.

Consider an architect who is designing a barn for a producer. Creating a life size drawing of a barn would not be feasible. The drawing would be too large to fit on any standard size sheet of paper. This is why an architect or drafter use a scale ratio and craft scale drawings. The use of a scale ratio allows the architect to "scale down" the barn so that it fits onto the size of paper used by his or her firm for making plans. Once the drawing for the barn is complete, communicating with the producers becomes much easier. Can you remember the skills you learned in previous courses to help you design to scale?

Materials

Per student:

- Calculator
- Ruler
- Pencil
- *Agriscience Notebook*

Procedure

Complete the problems below as practice for determining and using scale in a drawing. Scale ratios are a useful tool when developing animal facilities. In this activity, you will practice scale measurements in preparation of planning an animal facility.

Part One – What Size in Life?

Before you can start designing or planning, you need to translate space requirements for your animal to an actual size for your facility.

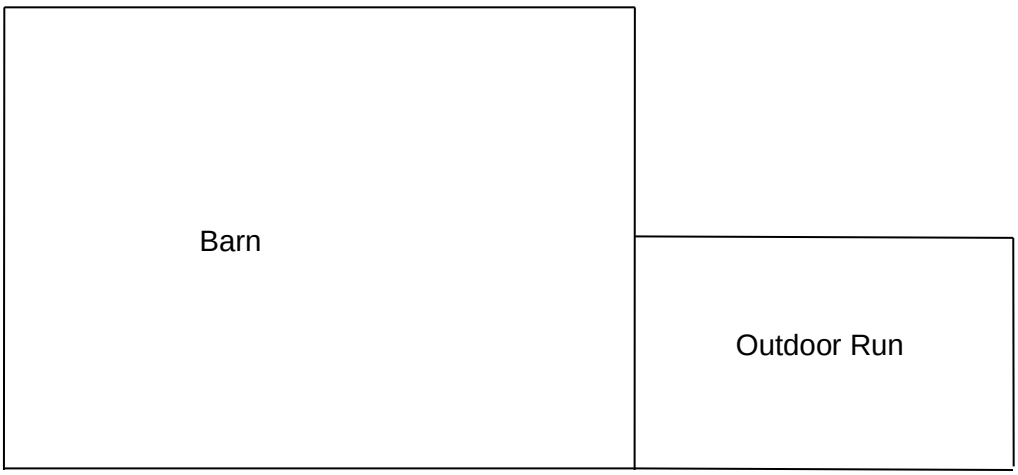
Read the example below and complete the calculations for lambs. You need to calculate the total square footage required, then choose a corresponding dimension to meet that requirement.

1. If a feeder lamb requires 10 square feet of space in confinement housing, what barn dimensions would be appropriate for 25 lambs? Show your work.

Part Two – What Size on Paper?

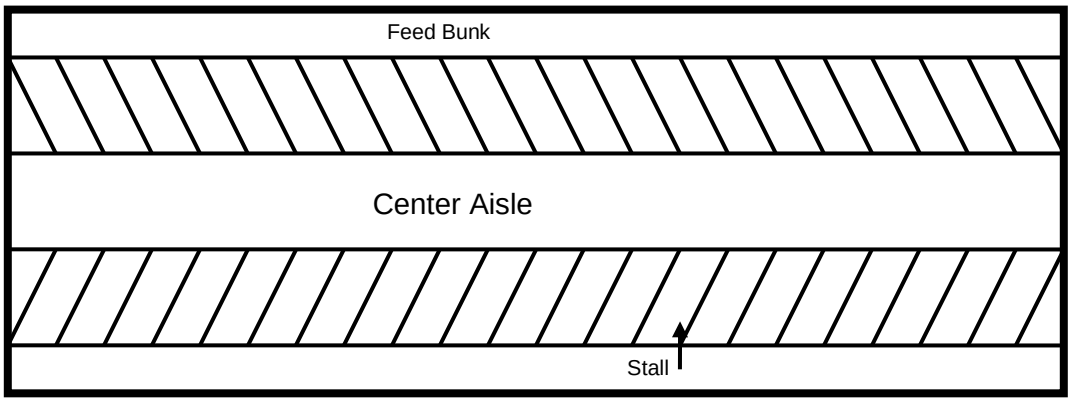
As a designer, you must be able to look at a plan, measure the drawing dimensions, and convert them to actual size using scale ratios. Use your ruler to measure the buildings in the figures that follow. Then use the scale provided to convert into building dimensions.

Determine the dimensions of the barn and outdoor run. The scale is 1” = 16’. Record the measurements and actual size.



Barn: _____ actual size Run: _____actual size

Determine the dimensions of the dairy barn below including the overall dimensions of the barn, the center aisle, the feed bunk, and a stall. The scale is 1” = 20’.



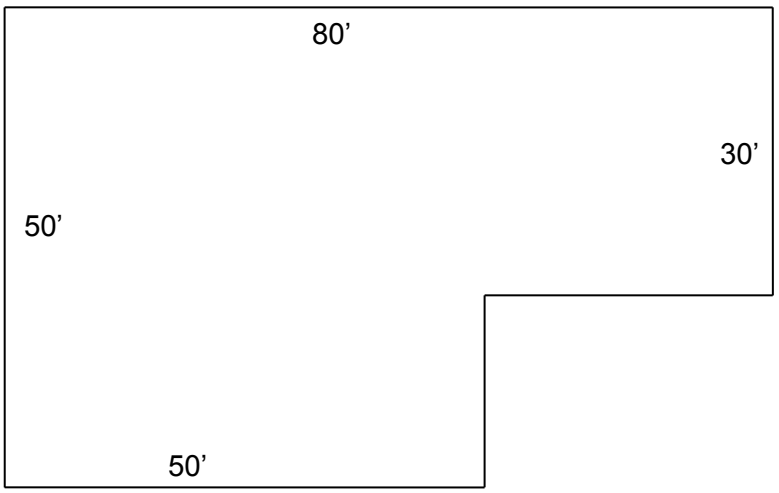
Measurements	Barn	Feed bunk	Center Aisle	Stall
Length				
Width				

Barn	Feed Bunk
Center Aisle	Stall

Part Three – Setting the Scale

When you are the designer, you must determine your own scale ratio, which can be challenging. The plan needs to be big enough for you and your customer to read clearly and it must fit onto a sheet of paper.

1. Determine the biggest dimension of the building.
2. Experiment with several scale ratios until you find the one that works best for fitting the size of paper you are using.
3. Select the best scale for the barn so that it will fit on a paper of size 11”x17”.



A. $\frac{1''}{20'} = \frac{x}{\_\_\_}$	**B.** $\frac{1''}{10'} = \frac{x}{\_\_\_}$	**C.** $\frac{1''}{5'} = \frac{x}{\_\_\_}$	**D.** $\frac{1''}{2'} = \frac{x}{\_\_\_}$

Conclusion

1. Why is the use of scale important in planning and design of livestock facilities?

2. How can a designer ensure that a facility meets space requirements but remains functional for animals and their caretakers?