

Livestock Weights from Measurements

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Because few farmers have livestock scales, there are times on many farms when it is desirable to have some other method of determining the weight of animals. When animals are sold by the head, for instance, guessing the weights is not sufficiently accurate, and another method is necessary. Similarly, by knowing the approximate weight of his animals, the 4-H Club member can judge the progress he is making and thus guide his feeding operations to advantage.

An answer to this problem has been provided in a simple method for determining the approximate weights by measurements, as devised by the University of Minnesota, Division of Animal and Poultry Husbandry.* This method can be used for cattle, sheep, and goats, and, with some modifications, for horses and hogs.

* D. W. Johnson first reported on this method.

Weight of Cattle

The formula used in determining the weight of cattle is as follows. (Take measurements in inches.)

$$\text{Heart girth} \times \text{heart girth} \times \text{length} \div 300 = \text{weight} \\ \text{in pounds}$$

For example, to determine the weight of an animal having a heart girth of 80 inches and a length of 70 inches, use these figures in the formula as follows:

$$80 \times 80 \times 70 \div 300 = \text{weight in pounds}$$

$$80 \times 80 = 6,400$$

$$6,400 \times 70 = 448,000$$

$$448,000 \div 300 = 1,493.3, \text{ weight in pounds}$$

The division may be simplified by dividing only 4,480 by 3, instead of 448,000 by 300.

When the measurements are in fractions of an inch, the calculations become somewhat lengthy unless certain suggestions are followed. For illustration, a heart girth of 80.75 inches and a length of 70.75 inches may be used. When 80.75 is multiplied by itself, the figure 6,520.5625 is obtained ($80.75 \times 80.75 = 6,520.5625$). Only 6,520 need be multiplied by 70.75, the length, resulting in 461,290.00. Dividing only 4,612 by 3, the weight of the animal becomes 1,537.3 pounds.

As shown in figure 1, the heart girth is taken directly behind the shoulders and the length is taken from the pin bone to the prominence on the shoulder, located on mature cattle and horses about one inch back of what is commonly called the point of the

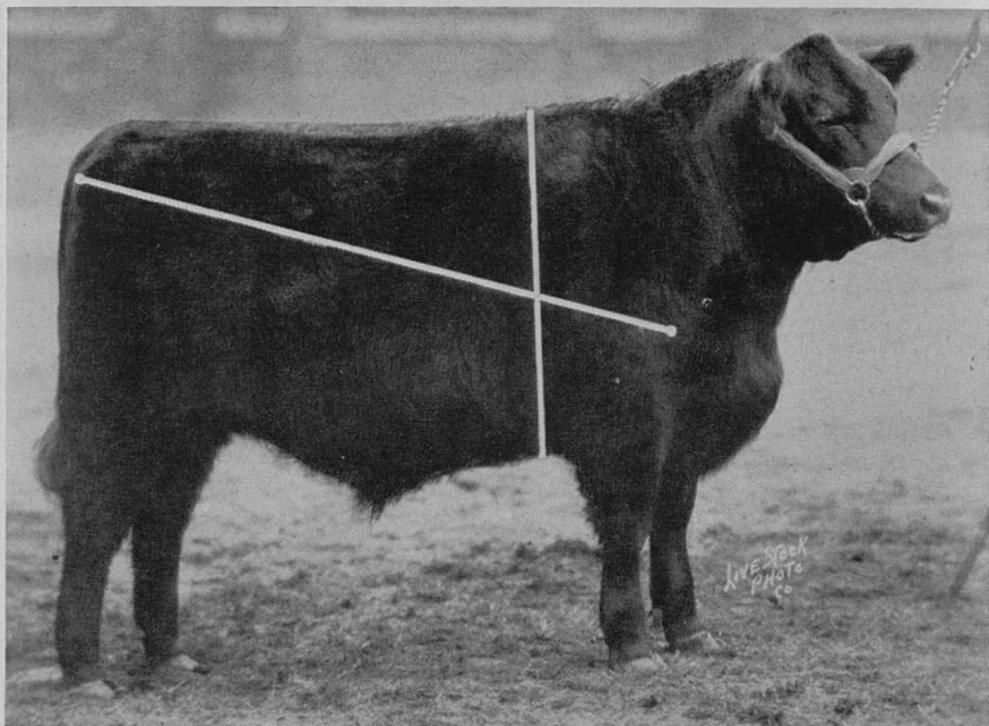


Fig. 1. Places at Which Length and Heart Girth Are Measured

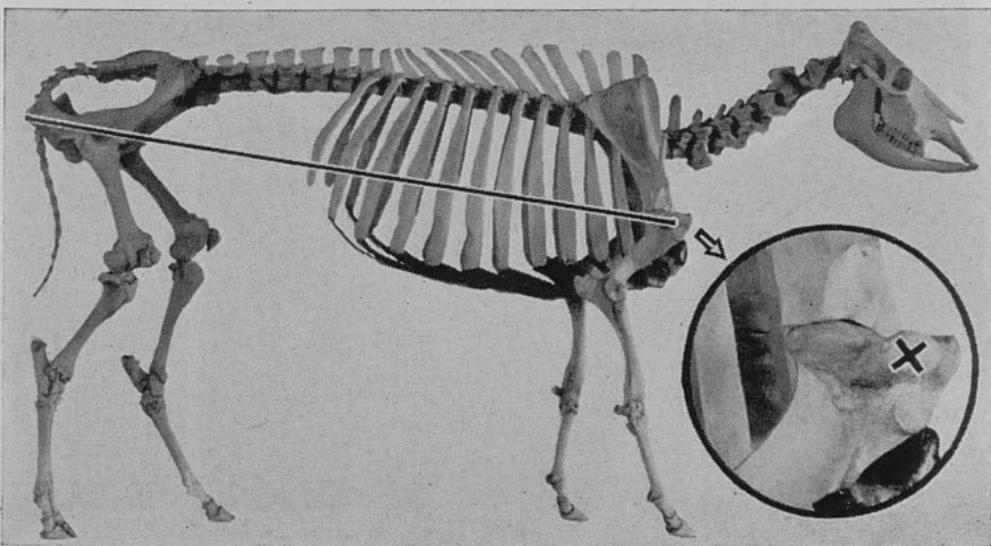


Fig. 2. Cow Skeleton Showing Line for Measuring Length

Enlarged view in circle shows detail of bone structure at shoulder prominence. The cross "X" marks exact spot for taking measure. Locate it on the animal by feeling with the fingers.

shoulder The manner of obtaining the length is more clearly shown in figure 2. In taking the heart girth, the tape should be drawn tightly about the animal. This measurement varies but little with the animal standing in different positions. In taking the length, the animal should be standing squarely on its feet with its head straight forward rather than to the side.

The accuracy of the method has been tested on all of the common breeds of dairy, beef, and dual-purpose cattle, as well as upon grade-feeder and fat cattle. The greatest error on any group was only five per cent and the average error on the entire group of 431 head was but 3.6 per cent.

Weight of Horses

In determining the approximate weight of horses, the heart girth and length are obtained in the same manner as for cattle (see fig. 1). The same formula is used, but the result obtained will ordinarily be about 50 pounds short of the actual weight. Fifty pounds should be added, therefore, after dividing by 300. Measurements should always be taken in inches.

$$\text{Heart girth} \times \text{heart girth} \times \text{length} \div 300 + 50 \\ \text{pounds} = \text{weight in pounds}$$

In tests of the reliability of this formula, the average difference between the actual and estimated weights of the horses on which it was used was approximately three per cent.

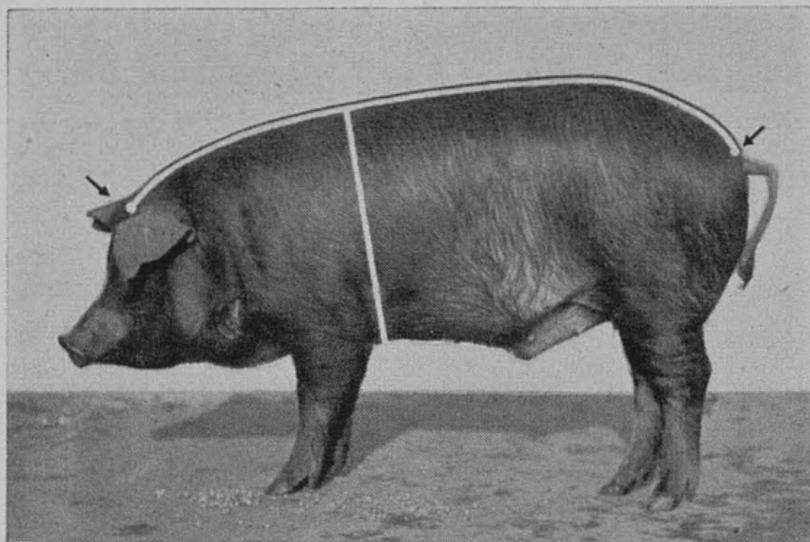


Fig. 3. Places at Which Heart Girth and Length Are Taken

Weights of Sheep and Goats

The weight of a sheep or of a goat may be determined in exactly the same manner as for cattle. It is difficult to estimate the weight of an unshorn sheep, but if care is used in parting the fleece when taking the heart girth, the approximate weight may be determined. With the sheep and goats on which the method was tested, there was a difference between the actual and estimated weights of approximately seven per cent.

Weight of Hogs

In determining the weight of hogs, the length is taken from the base of the tail to a point midway between the ears. The position of the head is particularly important when taking this measurement; it should be held as shown in figure 3.

The formula used is as follows (measuring in inches):

$$\text{Heart girth} \times \text{heart girth} \times \text{length} \div 400 = \text{weight in pounds}$$

The formula is more accurate when used on hogs under 300 pounds than on those that are heavier. Greater accuracy, especially on mature hogs, will usually result if the weights obtained by the formula are adjusted by the amounts shown in the table below for hogs of various weights.

Weight obtained by formula	Adjustment needed
(pounds)	(pounds)
Under 150	Add 7
150-400	No adjustment
401-425	Subtract 10
426-450	Subtract 20
451-475	Subtract 30
476-500	Subtract 40
501-525	Subtract 50
526-550	Subtract 60
551-575	Subtract 70
Over 575	Subtract 80

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