

primefacts

FOR PROFITABLE, ADAPTIVE AND SUSTAINABLE PRIMARY INDUSTRIES

SEPTEMBER 2009

PRIMEFACT 928 (REPLACES PRIMEFACT 494)

Estimating a horse's condition and weight

Brian Cumming

Livestock Officer (Beef Cattle), Albury

Introduction

Being able to accurately estimate the body weight and condition of your horses can help in the way you manage and feed them. The amount of feed horses need depends on their weight, their activity, their growth or stage of pregnancy or lactation, and the body condition they are in. Body condition score is closely related to the amount of fat they carry.

Knowing your horse's body weight will allow you to:

- finetune how much to feed the horse to match their workload or breeding status
- more accurately give medications whose dose is based on body weight.

The weight of the horse is influenced by his height, length and girth, reproductive stage, gut and water fill and the body condition score.

Condition scoring

A horse's body condition score is an estimation of the amount and distribution of fat on the horse. The score given to describe this fat is independent of the animal's breed, weight, size and amount of muscle.

The horse's condition score can help you decide if the horse needs a bit less or a bit more feed for its level of activity. It will help monitor if lactating mares or horses on high exercise levels are getting enough of the right feed. It can be used to monitor a horse's response to a change in feed.

Condition score is related to fertility in brood mares, and can indicate the general health of the horse. Generally mares in lower condition show lower levels of fertility, while over-fat mares may have problems during pregnancy.

Minimum condition score should also be understood and observed to ensure the horse's welfare is maintained.

The Australian system of condition scoring uses six different scores to describe the amount of fat on the horse. The system goes from Score 0, describing horses in very poor condition, to Score 5, describing very fat horses. It is a simple, repeatable system that can be used accurately with a bit of practice.

Horses are accurately condition scored by combining visual assessment with feeling the horse for fat cover.

The horse is visually assessed in areas that fat is laid down. The neck (the size at the base and the amount of crest), the withers and shoulders, the top line along the whole body from behind the shoulders through to the tail head, and the ribs should all be used.

As the horse fattens each of these areas fills out and becomes smoother.

Fat is laid down over the ribs and along the backbone. Feeling for softness over the ribs with the palm of the hand, gives a good guide to the horse's condition as any softness here is not confused with muscle tissue.

Figure 1 shows the areas on the horse which are assessed for fat cover.

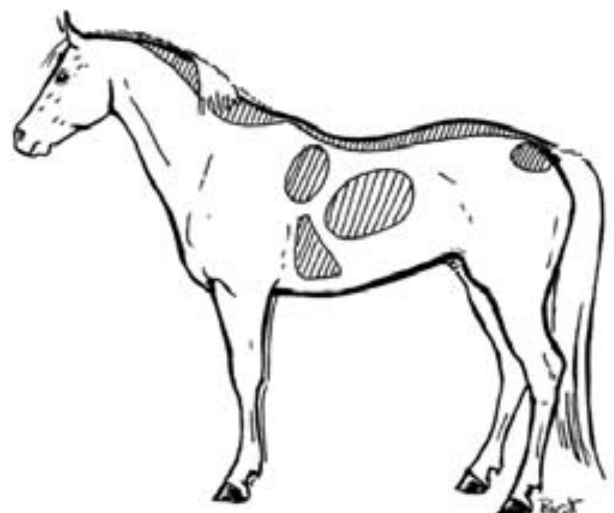


Figure 1. The areas assessed visually or by feel for fat cover on the horse

It is good to develop a system to help assess the horse's condition. Start by looking at the side and rear of the horses to gain an overall impression of a likely condition score. It is easy to see the bones of the skeleton on poorer horses such as condition scores 0 and 1. As condition increases into score 3 the horses shape becomes smooth. Fatter horses of condition score 4 and 5 will have a rounded appearance to their shape.

Refine the score by looking at the individual parts of the horse where fat is laid down.

Backline. Thin horses have a ridge down their back from the withers right through to the tail. As they fatten, tissue is laid down either side of the backbone to produce a smoother appearance. Fat horses develop a 'gutter' along the backbone. This indicates the horse is a least a score 4.

Ribs. The ribs can be seen in horse up to score 2. In horses of good to fat condition the ribs are covered with fat.

Tail head. As horses fatten the fat is laid down either side of the tail head. The tail head is prominent in poorer horses of score 0 and 1. It becomes smooth with the body for score 2 horses and then produces a rounded shape as the horse continues to lay down fat. In very fat horses the tail head appears to sit deep in the rump and lumps of fat can be seen in the rump to the side of the tail.

Withers. Thin horses are prominent in the withers. Fatter horses will appear smoother and very fat horses may have bulges of fat either side of the withers. The shape at the withers varies between breeds so it is important to consider how a horse in good condition of a particular breed normally looks. For this reason the withers may be used to fine tune your assessment so far.

Neck. The neck will be narrow and thin on horses of scores 0 and 1. As the horse fattens the neck becomes smoother and seems to blend into the body. Fat horses will develop a crest of fat over the top of the neck.

Shoulders. Poorer condition horses have prominent shoulders. In condition score 3, fat starts to be deposited behind the shoulder. In fatter horses bulging fat can be seen and felt behind the top of the shoulder and lower down behind the elbow joint.

Finally the horse's condition score can be fine-tuned by feeling the horse. Feel over the ribs for softness covering the bones. As the horse fattens the ribs feel softer. At score 3 the ribs can still felt but at score 4 firm pressure is needed to feel them. The ribs of a horse in score 5 can no longer be felt.

Remember, the general distribution of fat over the parts of the body may vary from one horse to another. As the horse loses condition, fat may be used from some sites more than others. This needs to be considered when condition scoring, especially on older horses, or grazing horses that put on and lose fat as the pasture changes. The condition scoring system assesses the different parts of the body then combines them to give an overall score.

Table 1 describes the six different scores and how each area on the horse changes as it continues to lay down fat.

Figure 2 shows diagrams of each of the six condition scores, viewed from the side and from behind the horse.

The ideal condition score varies depending on the class of horse. For most horses a target condition score of 1.5 to 4 is accepted. With practice half scores

Table 1. Horse body condition scores (adapted from Huntington, 1991)

Score	Neck	Withers and shoulders	Back and ribs	Tail head and pelvis
0 Very poor	Obvious 'ewe' neck which is narrow and slack at the base	Bone structure easily visible	Individual ribs and vertebrae visible and easily felt – tissue either side of backbone sunken	Rump is sunken – angular pelvis and tight skin – deep cavity under tail
1 Poor	'Ewe' neck still narrow and slack	Well defined	Ribs and vertebrae still visible	Rump sunken but skin supple – no fat around tail – hip bones visible – deep depression under tail
2 Moderate	Narrow and firm, blending smoothly into the body	Withers rounded over the top	Ribs just visible – backbone well covered – vertebrae still felt	Fat around tail head – rump flat either side of backbone – slight cavity under tail
3 Good	Firm neck with some fat deposits – no crest	Some fat behind the shoulder	Ribs covered but still felt – no 'gutter' along the back	Fat round the tail – rump round shape – no 'gutter' along backbone
4 Fat	Wide firm neck with a slight crest	Along withers and behind shoulder filled with fat	Need firm pressure to feel ribs – 'gutter' along the back to the tail	Pelvis only felt with firm pressure – 'gutter' along backbone to the tail head
5 Very fat	Very wide and firm – obvious crest	Bulging fat	Cannot feel the ribs – deep 'gutter' along the back	Cannot feel the pelvis – deep 'gutter' along backbone

can be estimated. Table 2 shows some target condition scores for different classes of horse.

Figures 3a to 3f show photographs of horses of varying condition scores, viewed from the side and rear.

Table 2. Target condition scores for different classes of horse (adapted from Kohnke, 1998)

Growing horses	1.5 to 2.5
Breeding horses	1.5 to 3
Equestrian horses	1.5 to 3
Leisure / pleasure horses	2 to 3
Racing horses	1.5 to 3

Estimating body weight

Measuring a horse's weight using a set of electronic scales is very accurate. While horse vets and larger horse studs and training stables use this equipment the average horse owner does not.

In most cases estimates are made of the horse's weight. There are a few ways of estimating the weight, and different methods vary in their accuracy. If an accurate weight is needed, the horse should be weighed using electronic scales.

The weight of the horse can be estimated by:

- using a weigh tape around the horse's girth
- measuring the girth and length of the horse and using the formula designed to calculate live weight.
- measuring the height at the withers and relating this to a standard condition score
- measuring height and estimating condition score and using a nomogram to estimate the weight
- measuring the girth and length and using a nomogram to estimate the weight.

Using a weigh tape

Weigh tapes can be bought from produce stores and saddleries. The tape has measurements in kilograms.

The tape is put around the horse's girth just behind the wither. The weight is read directly off the tape as the horse breathes out.

The tape is not as accurate in heavily pregnant mares or fit racehorses carrying little fat.

Figure 4 shows the correct use of a weigh tape.

Measuring girth and length and using a weight formula

Girth and length measurements can be taken with a tape and the following formula used to calculate weight:

Body weight = [(girth x girth (square cm)) x length (cm)] divided by 11,880

The girth is measured as above, and the length is measured from the point of the shoulder to the rear of the buttock to the side and below the tail (Figure 5). This equation is the most accurate for horses in condition score 2 to 3.

Using this formula, a horse with a girth of 190 cm and a length of 175 cm would be estimated to weigh 532 kilograms.

Measuring height and condition score

As mature horses put on weight, it is usually fat tissue that is being laid down. At the same height, horses that are fatter will be heavier. As fat is measured using condition score, it follows that horses in greater condition score will be heavier.

The height of the horse can be measured using a tape from the ground up to the horse's withers. Alternatively a height measuring stick as shown in Figure 7 can be used. These are commercially available at horse supply stores. In each case the horse should be standing up square and the measurement taken on level ground.

Table 3 shows the relationship between the height of the horse and its condition score. In this table, height is measured both in hands and in centimetres. 'Hands' is the traditional way of measuring a horse's height. One hand equals four inches (or about ten centimetres) in height.

Table 3. Weight (kilograms) estimated from height and condition score

Height		Condition score				
Hands	cm	1	2	3	4	5
12	120	190	210	250	300	360
13	130	240	285	345	375	455
14	140	310	330	400	460	540
15	150	380	420	465	535	600
16	160	420	470	520	575	650

Measuring height and estimating condition score and reading the weight from a nomogram

When height and condition score are known, the horse's weight can be read directly from a nomogram. A nomogram has three scales. Two scales represent known values while the third scale is where the result is read. The two nomograms in this publication were developed by Huntington (1991).

Figure 8 is the nomogram for estimating weight using height and condition score. A straight line is run from the relevant condition score across to the height. The

Figure 2. Body condition scores

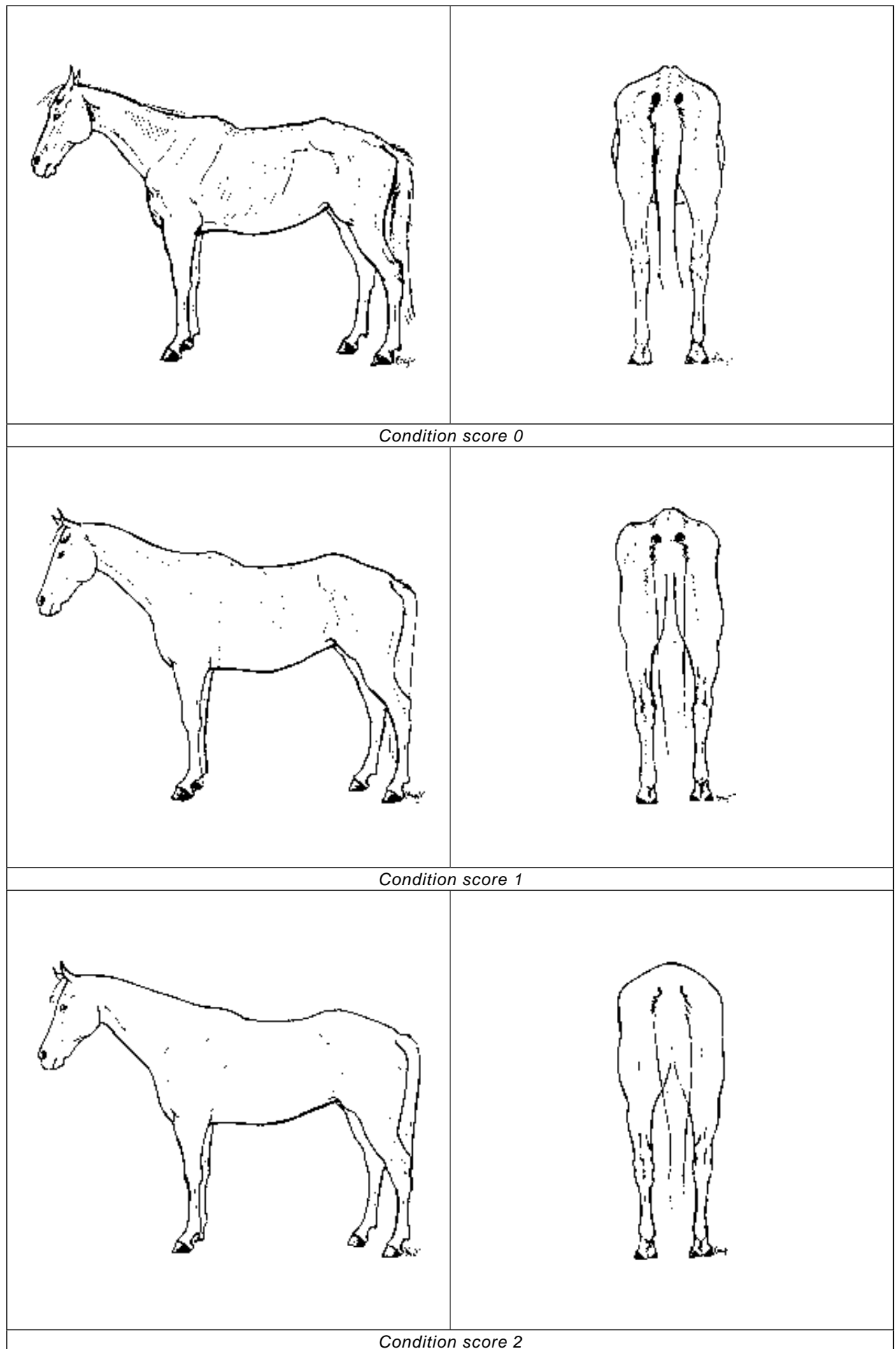


Figure 2. Body condition scores (continued)

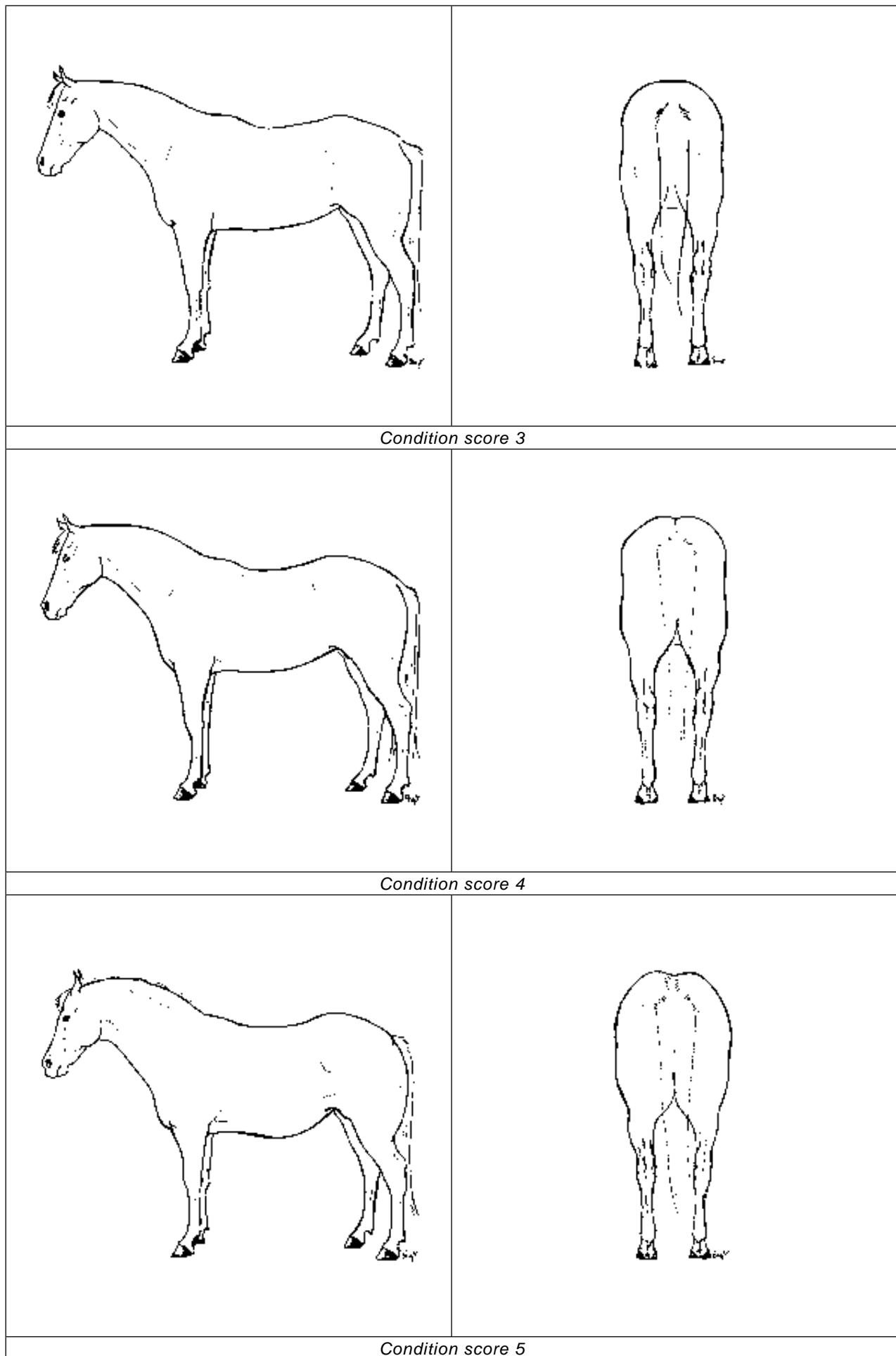




Figure 3a. Horse in very poor condition (score 0). The neck is narrow. Bone structure of the shoulders and wither is obvious. The tissue either side of the backbone and rump is sunken.



Figure 3b. Horse in poor condition (score 1). It shows a 'ewe' neck, well defined withers, shoulders, back and ribs. The rump is sunken and there is no fat around the tail.



Figure 3c. Horse in moderate condition (score 2). The neck is narrow but blends in with the body. The ribs are just visible and the rump is flat either side of the backbone, with just a small amount of fat around the tail.



Figure 3d. Horse in good condition (score 3). The neck is firm and the shoulders and ribs have a small even fat cover. The rump is round with even fat either side of the tail.



Figure 3e. Horse in fat condition (score 4). The neck is wide at the base and there is fat along the withers and behind the shoulder. The ribs are well covered with fat, and the fat on either side of the rump has created a 'gutter'.



Figure 3f. Older horse on winter pasture (score 4). The horse was a score 5 in spring but has lost some fat from the ribs. It still shows fat deposits in the neck, shoulders and rump. A true fat score 5 would show a larger crest in the neck, and more of a 'gutter' along the backbone in the rump.

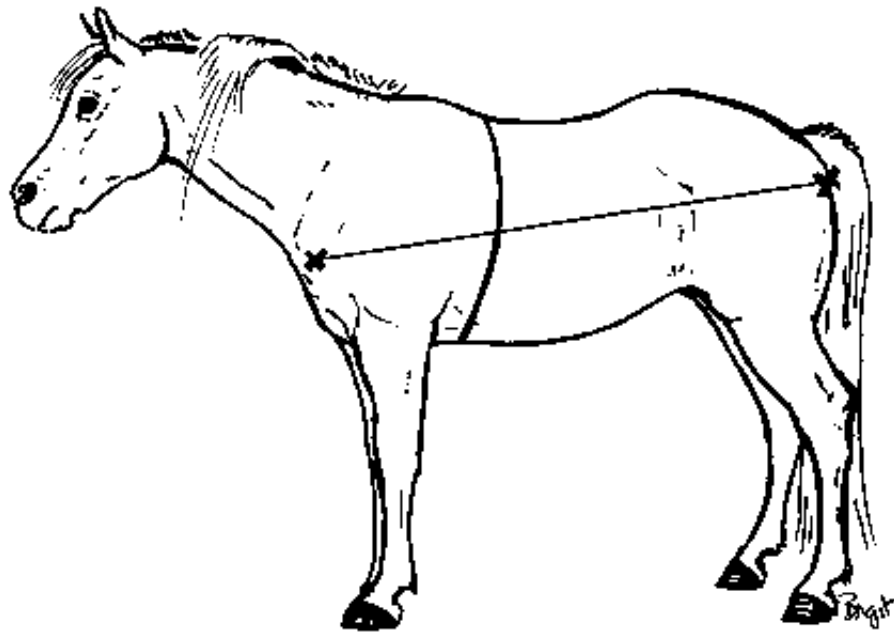


Figure 5. Points of measurement for girth and length



Figure 7. Measuring the height of the horse

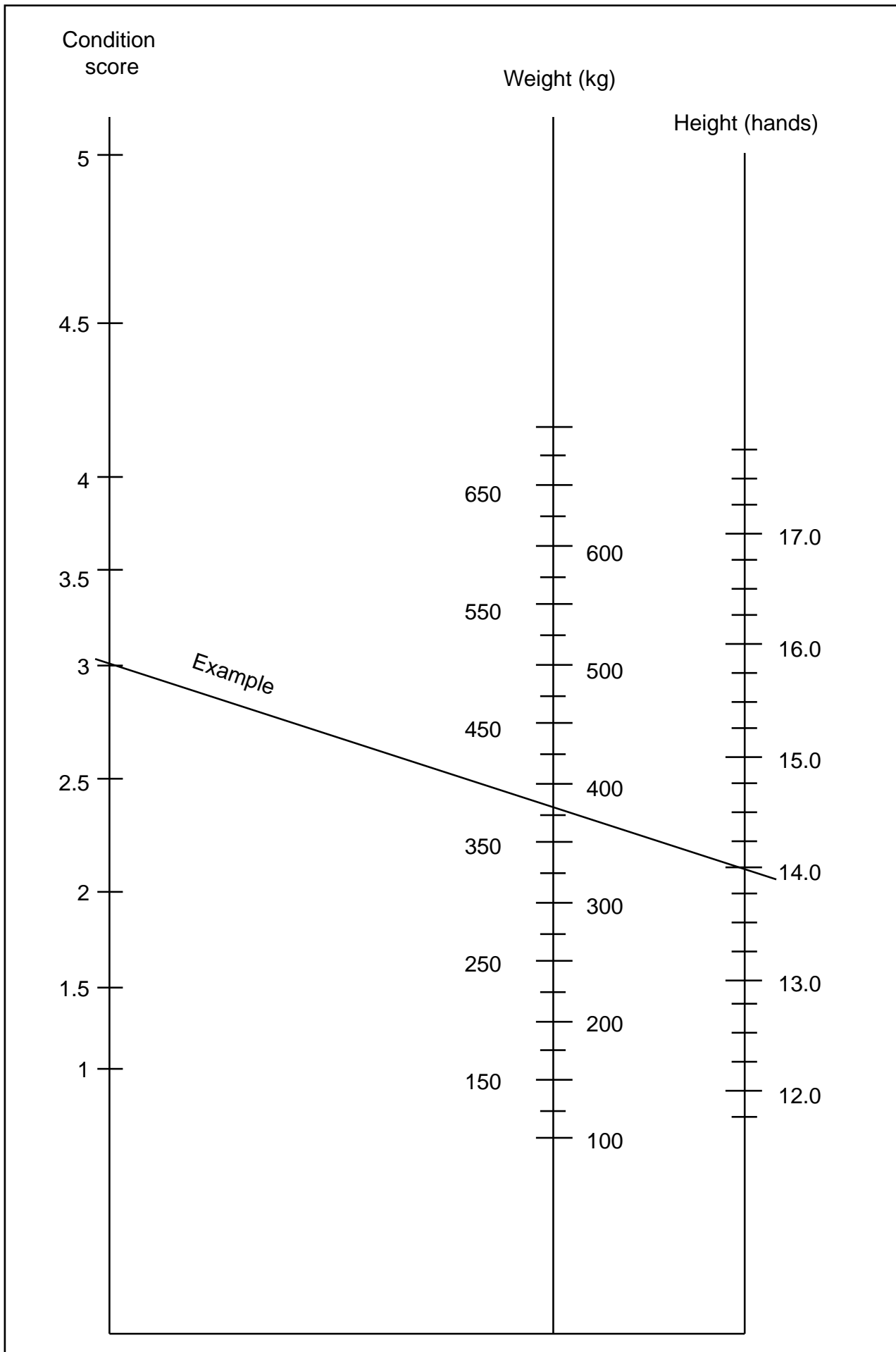


Figure 8. Nomogram for estimating the horse's weight from condition score and height measurement



Figure 4. Using a weigh tape in the correct position to measure weight and girth



Figure 6. Measuring the length of the horse

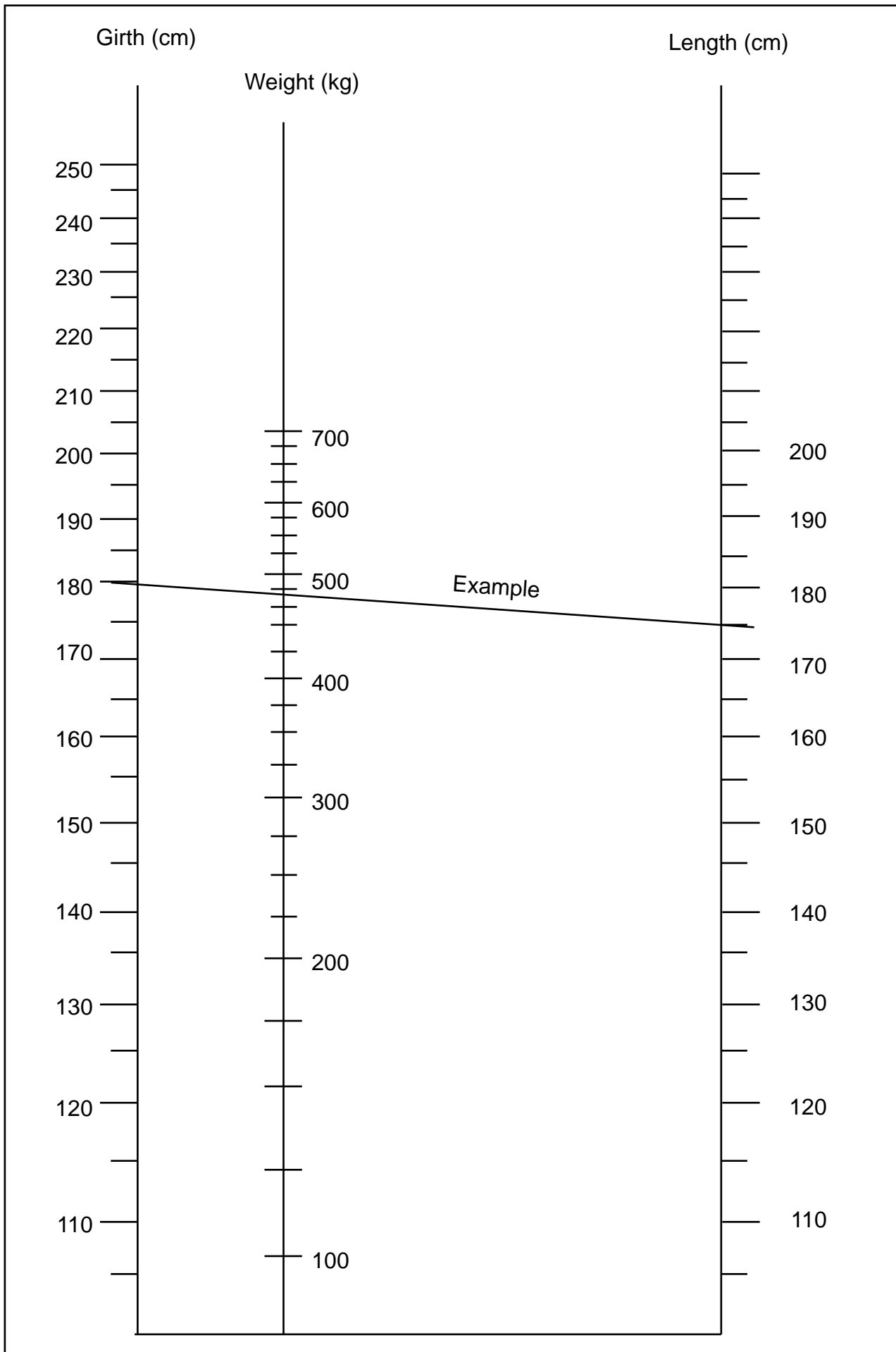


Figure 9. Nomogram for estimating the horse's weight from girth and length measurements

horse's weight is that point where the line intersects the weight scale.

Measuring height rather than guessing it, and accurately estimating the condition score will lift the accuracy of the weight estimate using this nomogram.

Measuring girth and length and reading the weight from a nomogram

A second nomogram has been developed to estimate weight using girth and length measurements (Figure 9).

Generally this is a more accurate weight estimate as both girth and length are objective measurements. Normal variations in hydration, weight of the gastrointestinal tract and the feed type will affect the accuracy of the weight estimate.

Horse welfare

The horse's welfare is paramount, and horse owners and handlers have a duty of care to ensure the horse in their charge is well looked after.

Sometimes during drought, pasture may no longer provide enough energy to meet the horse's needs, even if the horse is not doing any work. To maintain itself, the horse will utilise its body fat and its condition score may fall to the point where its health and welfare are compromised.



Figure 10. Weighing a horse using electronic scales – this is the most accurate way of assessing body weight – safeguards should be taken to ensure the safety of the horse.

Horses in condition score 0 and 1 will need to put on some weight and must be given extra feed if there is not enough feed in the paddock. If the condition of lactating mares slips into these scores their foal should be weaned. Both the mare and foal should then be provided with enough feed to meet their needs.

Acknowledgement

This Primefact uses much material from the earlier Primefact 494, *Estimating a horse's weight*, written by Bill McKiernan, Research Leader, Animal Production.

Drawings are by Brigit Pitman.

Editing and production by Bill Smith and Barry Jensen.

References

Henneke D.R., Potter G.D., Kreider J.L. and Yeates B.F., (1983) 'Relationship between condition score, physical measurements and body fat percentages in mares', *Equine Veterinary Journal* 15 (4), 371–372.

Huntington P.J., (1991) 'Field estimation of body condition and weight', *Equine Nutrition – Proceedings 181 Post Graduate Committee in Veterinary Science University of Sydney*, 15–23.

© State of New South Wales through Department of Industry and Investment (Industry & Investment NSW). You may copy, distribute and otherwise freely deal with this publication for any purpose, provided that you attribute Industry & Investment NSW as the owner.

ISSN 1832-6668

Replaces Primefact 494

Check for updates of this Primefact at:
www.dpi.nsw.gov.au/primefacts

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (July 2009). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Industry & Investment NSW or the user's independent adviser.

Job number 9509