

EQUINE NUTRITION

WORKSHEET

Name ten rules of good feeding.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

1. What are the six types of essential nutrients (components of foodstuffs necessary for good nutrition)?

- W _____
- C _____
- V _____
- P _____
- M _____
- F _____

2. Water composes _____% of a horse's body weight?

12-25% 35-45% 50-65% 65-70%

3. If you removed all the water from a 1000 pound horses body he would approximately weigh? (circle) 700 lbs 900 lbs 650 lbs 350 lbs

4. Answer True or False for the next statements.

- 5% of the horse's water is found **in** the blood vessels (*intravascular space*)__
- 15% of the horse's water **surrounds** the blood vessels and all the cells of the horse's body (*extracellular space*). _____
- 50% of the horse's water is found **inside** all of the cells in the horse's body (*intracellular space*).__
- 30% of the horse's water is found in the gut (the large intestine and caecum).__

5. Name 1 use for water in each of the following systems:

- Digestion _____
- Blood _____
- Lymph _____
- Urine _____
- Feces _____
- Skin _____
- Eyes and nostrils _____
- Milk _____
- Joints _____

6. A horse's stomach holds 3-4 gallons of fluid. How many gallons can a horse drink at one sitting? _____

7. A stabled horse requires 5-10 gallons of water a day. *Circle the correct answer.* Does a lactating mare require more or less? Does an event horse require more or less? If the weather is hot does, a horse require more or less?

8. 15% loss of water which is not replaced is called _____.

9. Name 5 possible causes of _____ (answer to #8).

- _____
- _____
- _____
- _____
- _____

10. What is the pinch test? _____ How fast should the skin return to normal? _____ How would you perform the pinch test? _____ What does it mean when it takes longer than normal for the skin to return to its normal position? _____

11. What is thumps (synchronous diaphragmatic flutter)?

12. Nutrients that are made up of sugars, starches and cellulose are called _____ s?
13. These 3 components of #12 provide the major source of **energy** and are found in? *Circle all that apply:* corn, oats, barley, grass, oat hay, alfalfa, timothy hay, corn oil, safflower oil.
14. Which are higher in carbohydrates? (circle) concentrates or roughage.
15. If you wanted to increase the energy in a hard working horses diet, would you increase his grain or his hay (roughage) proportion of his diet? _____
16. What would a horse look like and how would you expect him to act if he were deficient in carbohydrates? _____
17. Rank the following feeds from highest to lowest in carbohydrates: oats, barley, corn, alfalfa hay, grass hay, flax seed, beet pulp.
18. P _____s are the building blocks of life and make up 22% of horses weight.
19. They are made up from many different combinations of 22 _____.
20. 10 are essential _____ because the horse must get them in his food and cannot synthesize (make them) himself. (For the HA candidates: lysine, histidine, isoleucine, methionine, phenylalanine, threonine, tryptophan, leucine, arginine, valine)
21. 12 are called _____-essential because the horse can make them from other amino acids.
22. Proteins are found in all of the following *except:* (circle) hair, hooves, tears, cell walls, hormones, nervous system, fat, enzymes, blood, skin, milk, muscle.

23. Rank the following feeds from highest to lowest in protein: grass hay, oats, alfalfa, pasture grass, rice bran, wheat bran.

24. What is the general percentage of protein in grade 1 oats? _____

25. What percentage protein is recommended for weanlings? _____ Mature horses in light work? _____ Pregnant mares? _____ Mature horses in no work? _____ Lactating mares? _____ Two year olds? _____

26. What is the general percentage of protein in midbloom alfalfa? _____

27. How much does a bale of alfalfa cost? _____

28. What might you expect a horse to look like if he is deficient in protein? _____

29. What problems can excessive protein lead to? _____

30. Fats ("lipids") are present in the normal horses ration in approximately _____

10-12% 8-10% 2-3% 20-40%

31. Fats contain _____x's the energy found in equal amounts of carbohydrates or proteins. 10 x's 50x's 2 1/2 x's 5 x's

32. Fats are contained in all feedstuffs for horses but in varying amounts. List the following feeds from highest fat content to lowest: Alfalfa, Rice Bran, Corn Oil, Oats, Flax Seed, Corn

33. Arachidonic acid, linoleic acid, and linolenic acid are called _____ fatty acids because they must be contained in the diet and the horse cannot make them.

34. Fats are essential for: (True or False)

- Aid in the absorption of fat soluble vitamins _____
- Provide energy _____
- Store energy in horse's body _____
- Spare protein by being metabolized for energy in place of protein _____
- Found in mare's milk _____
- Increase stamina in a performance horse when added to his diet - especially endurance and event horses _____
- Increase the palatability (tastiness) of manufactured feed supplements _____

35. What are the signs of a horse fed too much fat? _____

36. Vitamins are organic (non-mineral) substances that are required in **small** amounts to regulate certain chemical reactions of metabolism in the body. There are 2 kinds those that dissolve in fat or _____ vitamins and those that dissolve in water or _____ vitamins.

37. Fat soluble vitamins can be stored or accumulate in the body; therefore they can be overfed and cause problems. These vitamins are _____ & _____

38. Water Soluble vitamins are not stored in the body and the horse needs some every day. These vitamins are _____ & _____ complex vitamins.

39. Which Vitamin(s) is/are responsible for:

- Maintains integrity (healthiness) of skin, eyes, mucous membranes and bone development _____
- Promotes proper absorption and metabolism of calcium and phosphate which enables good bone formation _____
- An antioxidant which protects cells from damage, essential for growth and stallion fertility _____
- Involved in normal blood clotting _____
- Needed for normal red blood cells –if insufficient amounts the horse will be anemic _____ & _____
- This group of vitamins is responsible for metabolism of carbohydrates, proteins and fats and is important for normal nervous system function _____

- Important for the formation of collagen (a vital component of cartilage and other body tissues) – this vitamin is made by the horse and does not need to be supplemented

40. Name the 6 macro-minerals (required in larger amounts): _____

41. Name 9 micro-minerals also known as trace elements: _____

42. Micro-minerals are usually found in sufficient quantity in good quality hay and do not need to be supplemented. (circle) True False

43. Name the 2 most common minerals in the horses body – found in bone _____

44. Main electrolyte found in extracellular fluid and plasma _____ & _____ also known as salt.

45. This mineral is a component of hemoglobin which carries oxygen to the cells _____

46. This micro-mineral is necessary for normal thyroid function _____

Points to remember when balancing a ration:

- Horses require from 1.5-3.0% of their body weight in hay and/or grain depending upon the amount of work, and other factors such as age, climate, temperament, etc
- Young horses and pregnant mares in last 3 months require 2.5-3.0% of body weight
- Minimum amount of roughage to be fed for good gut function is 10%.
- Protein requirements approximate: 7.5-8.5% light work and medium work; 8.5-10% for hard work and strenuous work; pregnant mares 8-10% Mares in last 3 months of pregnancy 11-13%; lactating mares 14% gradually decreasing to 12%; Weaned foals 14.5-16%; yearlings 12-14%; 2 year olds 10-12%; 3 year olds 8.5-10%. Do not exceed 10% in the adult horse ration.
- Calcium : Phosphate Ratio must be 3:1 or less – ideal closer to 2:1
- 1 mega calories (Mcal) = 1000 Kilocalories (C)
- If you weighed 100 lbs and require approximately 2400 kilocalories (C) per day and horse weighs 1000 lbs –he will require 10x's your needs or 24,000 C's per day or 24 Mcal.

A guide to feed requirements for Work

Work Category	%Hay	% Concentrate
Maintenance	100	0
Slow light work	85	15
Light Work	80	20
Medium Slow Work	70	30
Medium Work	60	40
Hard Work	40	60
Race Training	30	70

What type of feeding regimen would you suggest for the following horses:

1. Lazy George – 15’3” 9 years old; 1000 lbs; good health, teeth floated; owned by older lady, ridden 3 times a week on the trail for 1.5 hrs at a time.
2. Pirate Lion – 16’2” advanced event horse; 1100 lbs ridden by David Bruceon; ridden 6 days a week – advanced event fit
3. Tevis - Arabian 15’1” 950 lbs, ridden 2-3 hours/day (75-100 miles/week) competing in 50 and 100 milers.

4. Naggy- 20 year old gray mare – 16 ‘ thoroughbred left unattended out at poor pasture for 6 months – 900 lbs – teeth haven’t been floated in 5 years, ribby; coat main and tail thin; attitude dull and listless.

5. Bratty- 13 ‘ Shetland pony-600 lbs- ridden by 8 year old – 3-4 days/week and in pony club.