

**Balancing Ca and P, and Using Dilutions to Include Vitamin & TM Premix**

**REMEMBER TO SHOW ALL YOUR CALCULATIONS!**

Using Pearson Square, balance a diet for a lactating mare (first 3 months lactation) on the basis of CP, using the following requirements. Calculate the DE, Ca and P in the diet. Use a mixture of 80% oats and 20% barley for the feed grains, and alfalfa hay as the forage. Use dicalcium phosphate and limestone as the calcium and phosphorus sources, to balance for Ca and P requirements. Include salt at 0.75%, Vitamin premix at 1.0%, and TM premix at 0.75% of the total. Allow a 3.5% dilution factor for the vitamin and mineral ingredients. Use the requirements and feed compositions given below.

**Animal Requirements**

DE, Mcal/kg	CP, %	Ca, %	P, %
2.40	14.0	0.50	0.35

  

Feedstuff Composition	DE, Mcal/kg	CP, %	Ca, %	P, %
Oats	3.30	13.3	0.09	0.30
Barley	3.68	13.0	0.05	0.25
Alfalfa hay	1.98	16.7	0.50	0.10
Dicalcium phosphate	---	---	22.0	18.5
Limestone	---	---	39.0	---

Using simultaneous equations, formulate a daily ration for a 450 kg two-year-old heifer nursing a calf (first 3-4 months postpartum). Balance for CP and ME. Use dical and limestone to balance for Ca and P. Use the following requirements and feedstuff composition. Include salt at 50 g/day, vitamin premix at 50 g/day and TM premix at 25 g/day and assume these meet the vitamin and trace mineral requirements. How much corn, alfalfa hay, dical, limestone, salt, vitamin premix, and TM premix must be fed daily on a DM basis?

## Animal requirements:

Daily feed intake, kg	ME, Mcal/day	CP, g/day	Ca, g/day	P, g/day
9.4	21.1	963	29	22
Feedstuff composition	ME, Mcal/kg	CP, %	Ca, %	P, %
Corn	3.55	10.1	0.02	0.33
Alfalfa hay	2.00	16.7	0.50	0.10
Dicalcium phosphate	---	---	22.0	18.5
Limestone	---	---	39.0	---