Solutions and Example Problems using Quantifiers

There are Hokies who do not like Wahoos.

H: set of all Hokies, P(X)=x does not like Wahoos

 $\exists x | x \in H \land \sim p(x)$

Everybody loves Science Fiction

P: set of all people, P(X)= x loves SF

 $\forall x,x \in P \to p(x)$

Hardly anybody likes tornados.

P: set of all people, p(x)=x likes tornados

 $\exists x \mid x \in P \land p(x)$

Few people play the harp.

P: set of all people, P(X)= x plays the harp

 $\exists x \mid x \in P \land p(x)$

Not everyone wants to go.

P: set of all people, P(X)= x wants to go

 $\exists x \mid x \in P \land \sim p(x)$

There is at least one person who likes math.

P: set of all people, P(X) = x likes math

 $\exists x \mid x \in P \land p(x)$

No one disagrees with me.

P: set of all people, P(X)= x agrees with me $\forall x, x \in P \rightarrow p(x)$

Some people have visited the moon.

P: set of all people, P(X)=x visited the moon

 $\exists x \mid x \in P \land p(x)$

Birthdays happen to us all.

P: set of all people, P(X)= x has a birthday

 $\forall x, x \in P \to p(x)$

Find the Truth Set for each statement below.

Farmer Brown has the following animals on his farm:

15 cows, 5 horses, 8 pigs, 3 goats, 30 sheep, 2 lamas, 3 ducks and

20 chickens.

Determine the truth set or the set of counter examples for each statement below.

1) At least one animal on the farm is a horse.

Truth Set = { 5 horses}

2) There are a few chickens on the farm.

Truth Set ={20 Chickens}

3) Not all the animals are chickens.

Truth Set ={ 15 cows, 5 horses, 8 pigs, 3 goats, 30 sheep, 2 lamas, 3 ducks}

4) Some of the animals are cows.

Truth Set = {15 cows}

5) Each animal on the farm has four feet.

Counter Examples ={ 3 ducks, 20 chicken}