Worksheet Exercise 4.6.A.B Name _____

Demonstrating Invalidity Class _____ Date _____

Part A. Show that these arguments are invalid. In each case give an appropriate domain and state description. Use the indicated symbolic letters, as well as additional name letters as needed. Your answers should look similar to the answer for #1. *

1. Nothings is a red pig. So, somethings are not red. (R, P)

   D = { a, b } Ra Pa Rb Pb
   T F T F

   For this domain and description:
   Are the premisses = T ? yes
   Is the conclusion = F ? yes

2. George is smart. So, George is a smart person. (g, S, P)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

3. George is funny. So, some people are funny. (g, F, P)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

4. There are no funny people. So, George is not funny. (F, P, g)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

5. Some cats sing. Some cats dance. So, some cats sing and dance. (C, S, D)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

6. Some people are not singers. So, some singers are not people. (P, S)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

7. All cats have tails. So, all non-cats do not have tails. (C, T)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

8. All cats have tails. George has a tail. So, George is a cat. (C, T, g)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

9. All cats are smart. Some smarties are funny. So, some cats are funny. (C, S, F)

   D = { } _____

   Are the premisses = T ? _____
   Is the conclusion = F ? _____

10. All things are smart. All funny cats are smart. So, all cats are funny. (S, F, C)

    D = { } _____

    Are the premisses = T ? _____
    Is the conclusion = F ? _____

* Throughout, many different answers are possible.

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Part B. Show that the following arguments are invalid. In each case give an appropriate domain and state description. Your answers should look similar to the answer for #1.

(Don't use the domain individuals "a" and "b" here. Use the individuals "d" and "e" instead. Otherwise, things may get too confusing.)

11. $(\exists x)Ax \;\&\; (\exists x)Bx \;\; /\therefore \;\; (\exists x)(Ax \;\&\; Bx)$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

12. $(\forall x)(Ax \vee Bx) \;\; /\therefore \;\; (\forall x)Ax \vee (\forall x)Bx$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

13. $(\exists x)\sim(Ax \;\&\; Bx) \;\; /\therefore \;\; (\exists x)\sim Ax \;\&\; (\exists x)\sim Bx$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

14. $(\forall x)Ax \supset (\exists x)Bx \;\; /\therefore \;\; (\exists x)Ax \supset (\forall x)Bx$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

15. $(\forall x)Ax \supset (\forall x)Bx \;\; /\therefore \;\; (\exists x)Ax \supset (\exists x)Bx$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

16. $(\forall x)(Ax \supset Bx) \;\; /\therefore \;\; (\forall x)[(Ax \vee Cx) \supset Bx)$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

17. $(\forall x)(Ax \vee Bx)\,,\;\; (\forall x)(Bx \vee Cx) \;\; /\therefore \;\; (\forall x)(Ax \vee Cx)$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____

18. $(\forall x)(Ax \vee Cx)\,,\;\; (\exists x)(Ax \;\&\; Bx) \;\; /\therefore \;\; (\exists x)(Ax \;\&\; Cx)$

D = { } _____ Are the premisses = T ? _____
Is the conclusion = F ? _____