DON'T WRITE ON THIS COPY – USE YOUR OWN PAPER

Free-Body Diagrams

Physical Science and Technology

Use your own paper to draw a free-body diagram for **Annette Force** in problems 1-5 below. Remember the rules for drawing free-body diagrams:

1) Draw all the forces that are specifically described in the problem.
2) Draw a pulling force for gravity (unless the problem says there is no gravity).
3) If the object is on a surface, and that surface is either slowing the object down or preventing the object from sliding along the surface, draw a pushing force for friction (opposite the direction of motion).
4) If the object is on a surface, and that surface is preventing the object from falling straight down, draw a pushing force for the surface force that is perpendicular (90 degree angle) to the surface.

Also remember that

a) Free-body diagrams only show ONE object at a time (so in these problems, you should only draw Annette Force).
b) Pushing forces can be shown by arrows pointing towards the object and pulling forces can be shown by arrows pointing away from the object.
c) All arrows should be clearly labeled.
d) Only show forces that are acting ON the object (not forces that the object is exerting on other things).

1. An elephant is sitting on Annette Force.

2. Annette is in outer space, where there is no gravity, and a Martian is pushing her.

3. Annette is being squished in a vise (a vise is the things that hold materials so you can work on them on some of the tables out in the Materials Lab).

4. Annette is being pulled in one direction by Ty Delwave and in the opposite direction by Collin D. Hogs. Collin is pulling twice as hard as Ty, so Annette is sliding (and accelerating) along the floor towards Collin.

5. Annette is floating in outer space, where there is no gravity, and she is pushing on a rocket.

6. In Problems #4 Ty Delwave is pushing on Annette. Newton's 3rd law says that if Ty is pushing on Annette, then Annette must be pushing on Ty. Does this make sense? Draw a free-body diagram of Ty Delwave next to the free-body diagram of Annette in #4. After drawing all of the forces acting on Ty, circle "the equal-and-opposite" force from Annette that results *because* Ty is pushing on Annette. (REMEMBER – YOU ARE DRAWING A FREE-BODY DIAGRAM OF TY!!)