Direct and Combined Variation NAME:

1a. We know that y varies directly as x and that when $x = 8$, $y = 35$. Find the variation constant (k) and then use it to write the general formula that relates x and y. Do *not* round.

1b. Use the formula you derived above to find y when x is 13. Do *not* round.

2a. The force exerted by wind on a plane's surface varies directly with the area of the surface and the *square* of the wind's velocity. Let F = force, A = surface's area, and V = wind velocity. Form a preliminary equation that relates these three variables and the (as of yet unknown) variation constant (k).

2b. The force exerted on a surface (with an area of 20 square feet) is 11 pounds when the wind's velocity is 22 miles per hour. Use this knowledge to find k. Round to *six* decimal places.

2c. Write the equation that relates these three variables with your value for the variation constant (k) in place. Use it to find the force exerted by a wind with a velocity of 44 miles per hour on the same area of 20 square feet. Round to the nearest tenth. Include units (which is pounds).