

**Problem statement** A picture has width  $x$  inches and height  $y$  inches. The picture is mounted in a frame that is 1 inch wide. Suppose  $A$  is the area of the picture and  $F$  is the area of the frame.

a) Find formulas for  $A$  and  $F$  in terms of  $x$  and  $y$ .

b) Suppose the height of the picture is  $3/2$  times its width. Find formulas for  $A$  and  $F$  as functions of  $x$  alone.

c) Under the hypothesis of b), if the area of the picture equals the area of the frame, find the dimensions of the picture.