CH. 2

47.

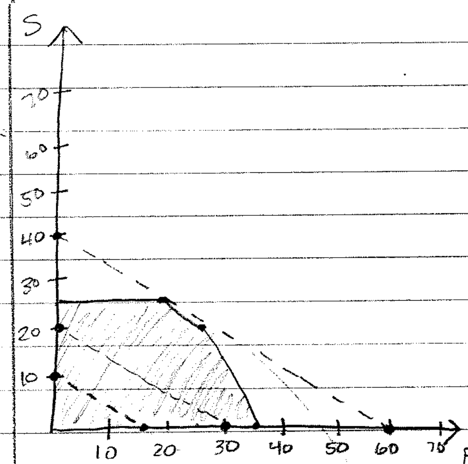
a Extreme points

$(0,0), (35,0), (0,25), (25,20), (18\frac{3}{4},25)$

$S=25$ $\frac{2}{5}F+\frac{1}{2}(25)=20$ $\frac{2}{5}F+12.5=20$ $\frac{2}{5}F=7.5$ $F=18.75$

b. Yes, it does, because the slope of the line changes, so as it moves positively outward it moves toward a different optimal point.

graph →



$40F+60S=600$

$F=0$ $S=10$ $F=15$ $S=0$

$40F+60S=1200$

$F=0$ $S=20$ $F=30$ $S=0$

$40F+60S=2400$

$F=0$ $S=40$ $F=60$ $S=0$

The new optimal point is $(18\frac{3}{4},25)$.

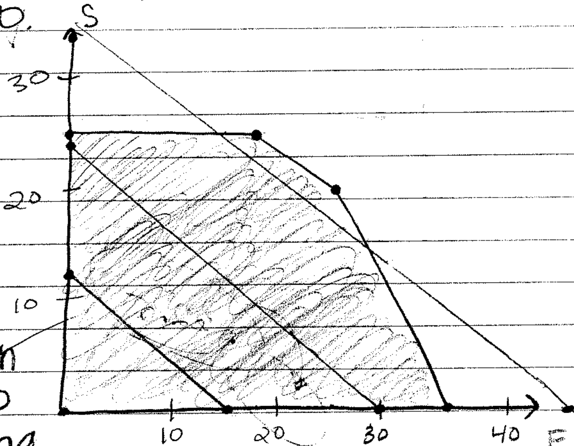
The new total is 2,250.

c. $40F+50S=600$ (0,12) (15,0)

$=1200$ (0,24) (30,0)

$=1800$ (0,36) (45,0)

$=2000$



There are now many optimal solutions. Any point that lays on the line $\frac{2}{5}F+\frac{1}{2}S=20$ between and including the points $(18\frac{3}{4},25)$ and $(25,20)$ that will give you a maximum value of 2000.

good

Since the profit line and the line $\frac{2}{5}F+\frac{1}{2}S=20$ they must have the same slope. So $\frac{2}{5}\cdot 100=40$, $\frac{1}{2}\cdot 100=50$ so then you know this maximum profit will be $20\cdot 100=2{,}000$.