Problem of the Week
Problem D
How Many in the House?

The POTW Theatre has four levels of seating: gold, silver, red, and black.

One night, the manager of the theatre was asked how many patrons are in the theatre. The manager replied that $\frac{1}{6}$ of the patrons in the theatre that night are in the gold seating, $\frac{1}{4}$ of the patrons are in either the red seating or the black seating, there are three times as many patrons in the the silver seating as in the red seating, and there are 138 patrons in the black seating.

How many patrons were in the theatre that night?