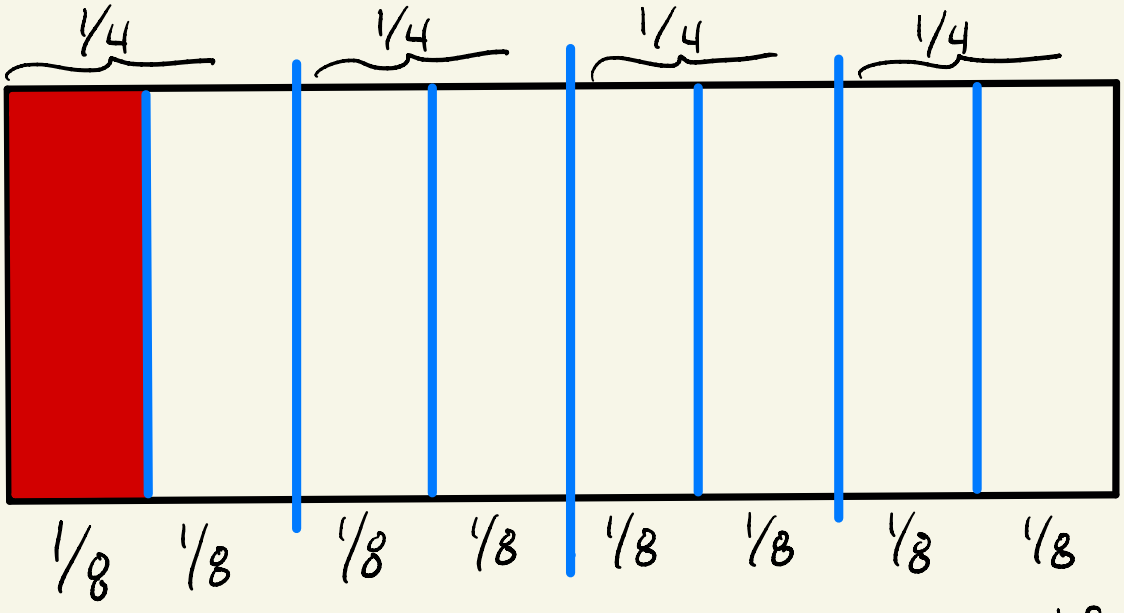
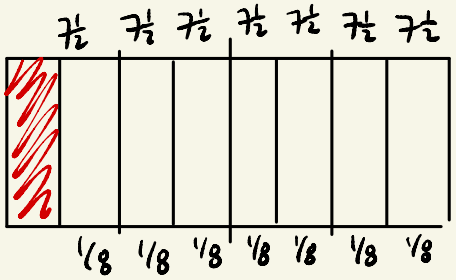
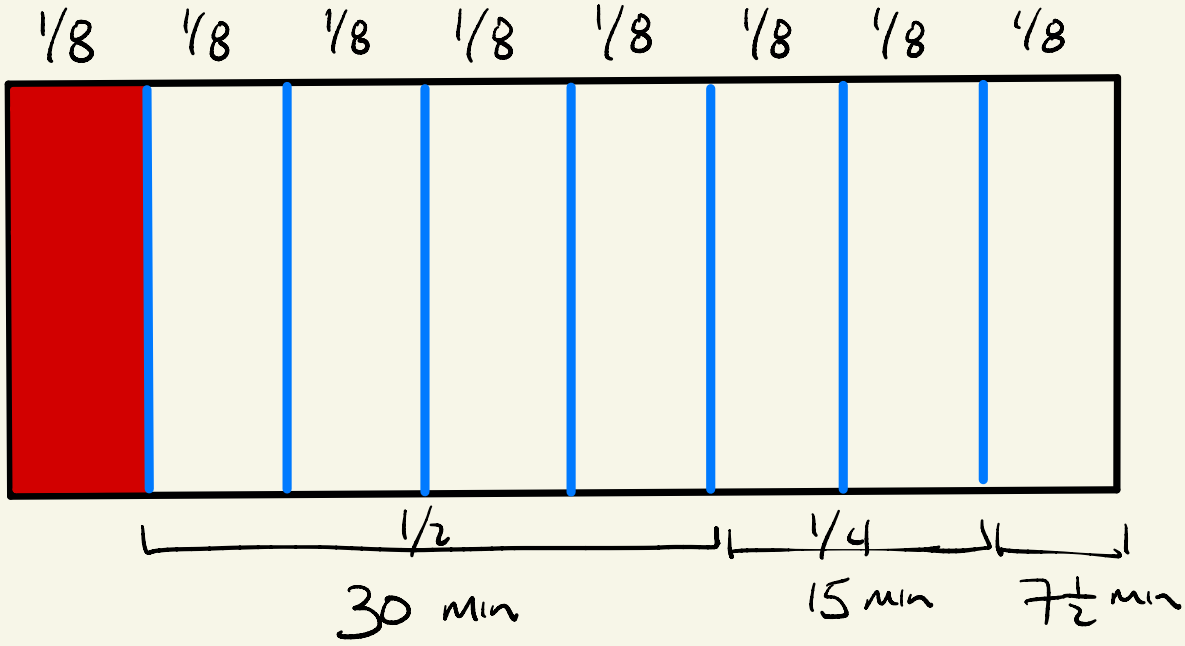


It looks like we have 1/8 of the battery left.
Need to figure out how long it takes to charge 7/8.

Amount of battery	Time to charge
1/2	30 min
1/4	15 min
1/8	$7\frac{1}{2}$ min

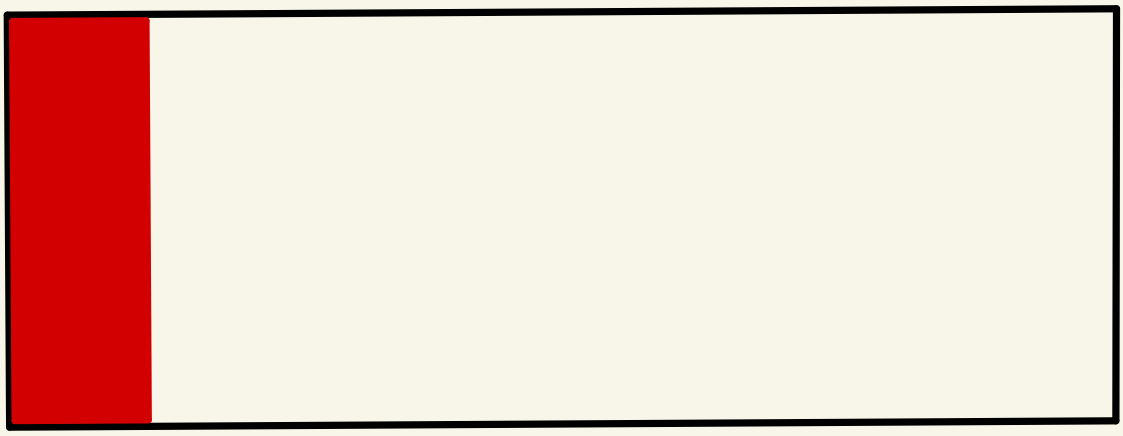
So 7/8 takes $7 \times 7\frac{1}{2} = 52\frac{1}{2}$ min





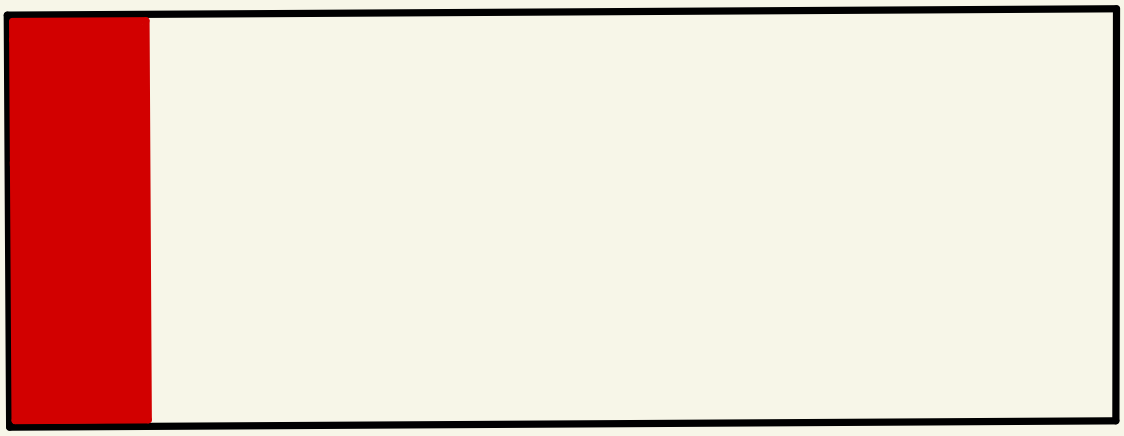
$30 + 15 + 7.5 = 52.5$ min

Amount of battery	Time to charge
1/2	30 min
1/4	15 min
1/8	7½ min



We have 12% of battery left. That's close to 10%.
So we need to figure out how long it takes to charge 90%.
50% takes 30 mn, so 10% takes $\frac{30}{5} = 6$ minutes.

So the battery will take about $6 \times 9 =$ **54 minutes** to charge because $10\% \cdot 9 = 90\%$.



We have 12% of the battery charged so 88% of the battery left. That's about 90%.

50% takes 30 min. So after 30 min, we have 40% left.

How long to charge 40%?

$40\% = 50\% - 10\%$

(50% takes 30 min; 10% takes ? minutes)

$50\% \rightsquigarrow 30$ min

So $\frac{50\%}{5} \rightsquigarrow \frac{30}{5}$ min

$10\% \rightsquigarrow 6$ min

So $40\% \rightsquigarrow 30 - 6 = 24$ min

$90\% = 50\% + 40\% \rightsquigarrow 30 + 24 = \boxed{54 \text{ min}}$