Solve and plot $2x + \frac{1}{2} > \frac{1}{4}$

1) Find the least common multiple of 2 and 4:
multiples of 2: 2,4,6,8,...
multiples of 4: 4,8,12,...
Look at the lists. 4 is common, so it's the least common multiple.

2) Multiply both sides by 4 to clear away the fraction.

1a) Setup the multiplication by 4: $4\left(2x + \frac{1}{2}\right) > 4 \cdot \frac{1}{4}$

1b) Distribute the 4 into the parenthesis: $4 \cdot 2x + 4 \cdot \frac{1}{2} > 4 \cdot \frac{1}{4}$

1c) Simplify: $8x + 2 > 1$

3) Subtract 2 from both sides:

2a) Setup the subtraction $8x + 2 - 2 > 1 - 2$

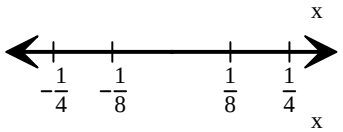
2b) Complete the subtraction: $8x > -1$

4) Divide both sides by 8:

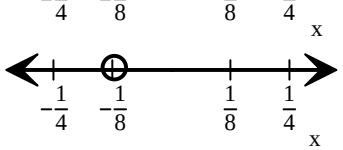
3a) Setup the division: $\frac{8x}{8} > \frac{-1}{8}$

3b) Simplify the left side: $x > \frac{-1}{8}$

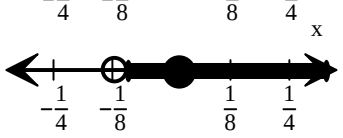
5) Draw a number line and mark it in eights:



6) Mark $\frac{-1}{8}$ with an open point:



7) Shade to the right of $\frac{-1}{8}$:



8) Use x=0 to check: $2(0) + \frac{1}{2} > \frac{1}{4}$

$\frac{1}{2} > \frac{1}{4}$ true