$$2x + 3(x - 7) = \frac{x}{2}$$

distribute the 3: $2x + 3x - 3 \cdot 7 = \frac{x}{2}$

-3 · 7=-21: $2x + 3x - 21 = \frac{x}{2}$

2x+3x=5x: $5x - 21 = \frac{x}{2}$

multiply both sides by 2: $2(5x - 21) = \frac{x}{2} \cdot 2$

on the left, distribute 2: $2 \cdot 5x - 2 \cdot 21 = \frac{x}{\cancel{2}} \cdot \cancel{2}$ ← cancel off 2 on right

multiply out on left: $10x - 42 = x$
subtract x from both sides: $10x - x - 42 = x - x$
on left $10x - x = 9x \rightarrow 9x - 42 = 0 \leftarrow x - x = 0$ on right

add 42 to both sides $9x - 42 + 42 = 0 + 42$

$$9x = 42$$

divide by 9 : $x = \dfrac{42}{9}$

reduce 42/9: $x = \dfrac{14 \cancel{3}}{3 \cancel{3}}$

cancel off 3: $x = \dfrac{14}{3}$ ← answer