(a) we have

Total cost = Fixed cost + (variable cost) * x

(x: numbers of items)

$\Rightarrow$ 2100 = Fixed cost + 10 * 150

$\Rightarrow$ Fixed cost = 2100 - 1500

$\Rightarrow$ Fixed cost = 600

(b) 50 widgets Sell for 2000

$\Rightarrow$ 1 widget Sell for $\frac{2000}{50} = 40$

(C) Break - even means:

Total cost = Revenue

$\Rightarrow$ 600 + 10x = 40x

$\Rightarrow \quad 600 = 40x - 10x$

$\Rightarrow \quad 600 = 30x$

$\Rightarrow \quad \boxed{x = 20}$

(d) $\quad \text{Profit} = 100,000$

$\Rightarrow \quad \text{Revenue} - \text{Total cost} = 100,000$

$\Rightarrow \quad 40x - (600 + 10x) = 100,000$

$\Rightarrow \quad 30x - 600 = 100,000$

$\Rightarrow \quad 30x = 100,600$

$\Rightarrow \quad x = \frac{100,600}{30} = 3353.33 \simeq 3354$

Need to sell 3354 widgets to make $100,000 profit.