Pizza Palace sells medium pizzas (with as many toppings as you want!) for $8.75. Thomas can join the Deep Dish Discount Club for a fee of $10.00, and as a member of the club, his medium pizzas (unlimited toppings!) will cost $8.00. At least how many medium pizzas will Thomas have to purchase before his club membership will cost less than buying the pizzas without the membership?

How many pizzas is Thomas buying?

That's what we don't know. Let's make it a variable.

P → # of medium pizzas purchased by Thomas

How much do pizzas cost **without** a club membership?

The only cost to consider is price of the pizzas themselves. At $8.75 each…

$$8.75P$$

How much do pizzas cost **with** a club membership?

There are two costs to consider – joining the club ($10.00) and the price of the pizzas ($8.00 each).

$$10.00 + 8.00P$$

Let's start to set up the inequality.

$$8.75P \quad \square \quad 10.00 + 8.00P$$

Without club membership

With club membership

What symbol (>, ≥, <, or ≤) should go in the box if we want to know when the club membership will cost less?

The inequality symbol <u>always points at the lesser value</u>, so we need our symbol to point to the club membership.

$$8.75P \quad > \quad 10.00 + 8.00P$$

Let's solve for P!

$$\begin{aligned} 8.75P &> 10.00 + 8.00P \\ 0.75P &> 10.00 \\ P &> 13.\overline{333} \end{aligned}$$

Thomas isn't going to buy $0.\overline{333}$ of a pizza, so the membership will cost less on the **14th** pizza.

At least 14 pizzas