

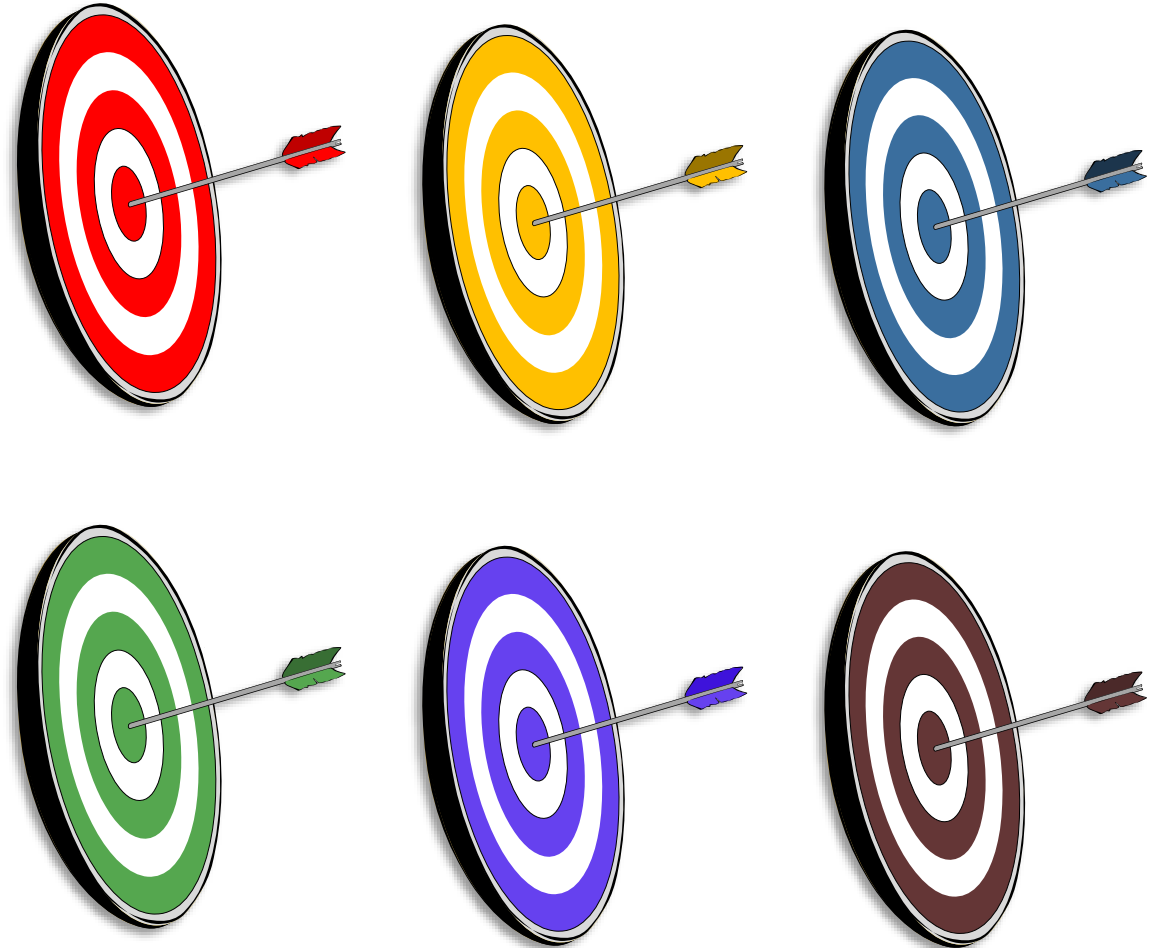
Multi-objective Optimization Problems

SINGLE-OBJECTIVE



VS.

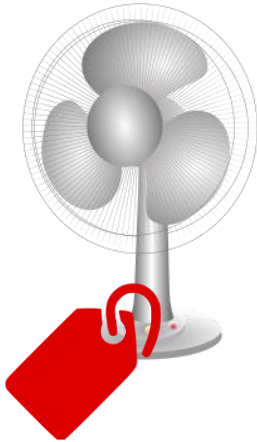
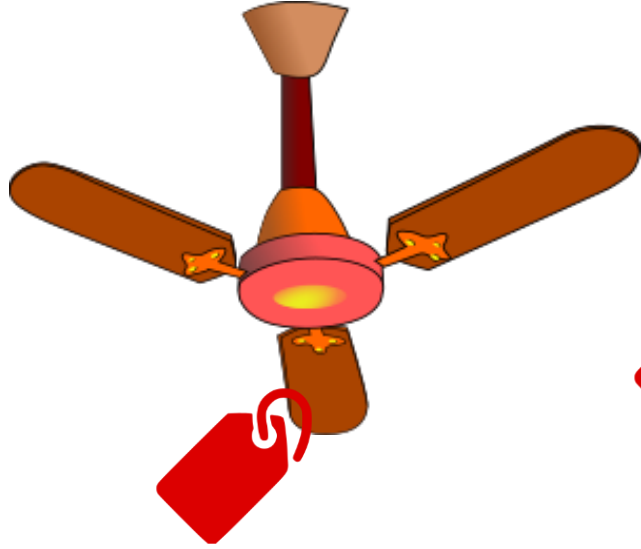
MULTI-OBJECTIVE



A HOT SUMMER



MINIMIZE THE PRICE



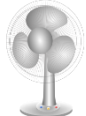

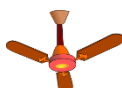
MINIMIZE THE PRICE



LIST	
	\$10
	\$30
	\$50
	\$100
	\$500

MINIMIZE THE PRICE

A clipboard with a red border and a white sheet of paper. The paper contains a list of fan prices and icons. The word "LIST" is written in green at the top. Below it, a green checkmark is next to the first item. The list consists of five rows, each with a fan icon on the left and a price in red text on the right, separated by a horizontal line.

	LIST
	\$10 ✓
	\$30
	\$50
	\$100
	\$500

BEST FAN WHEN MINIMIZING PRICE



\$10

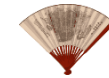


MAXIMIZE COMFORT



LIST

0%



30%



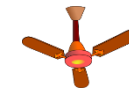
70%



70%



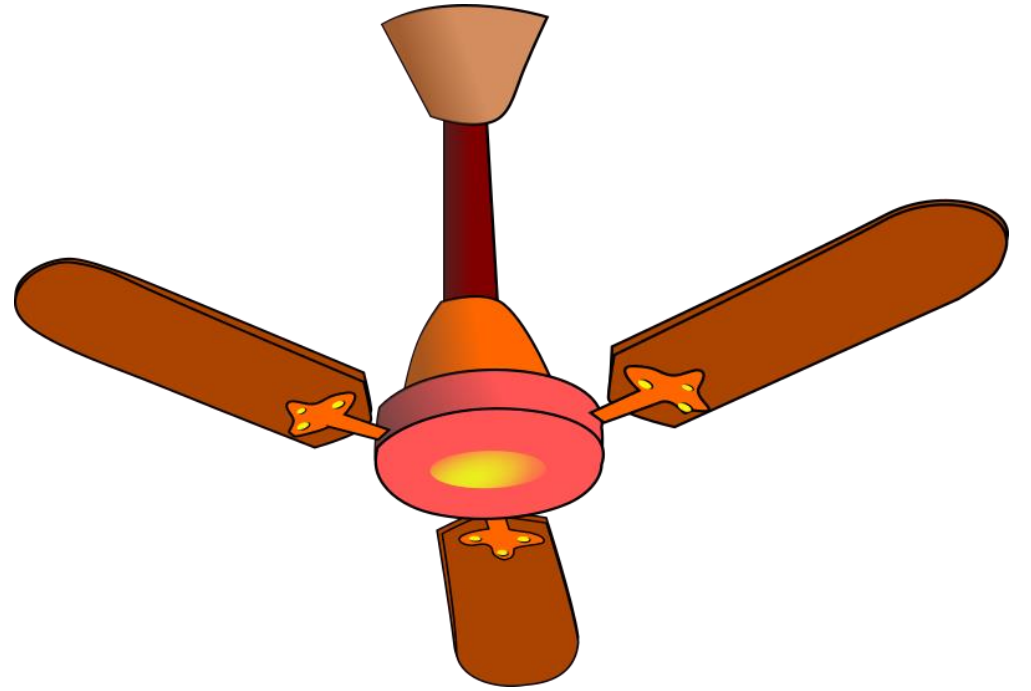
100%



MAXIMIZE COMFORT



BEST FAN WHEN MAXIMIZING THE COMFORT



100%



COMPARING TWO FANS USING ONE OBJECTIVE

Relational operators

<

≤

>

≥

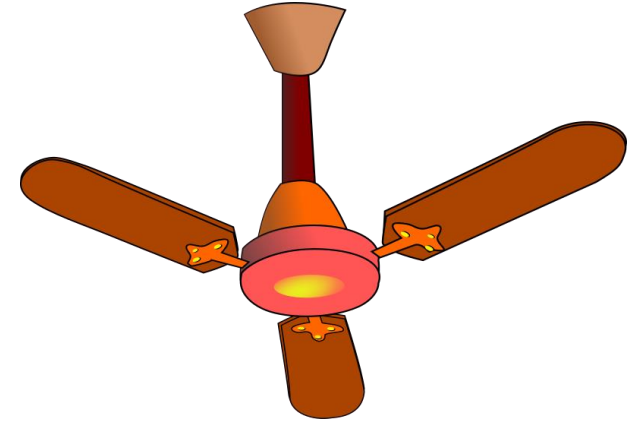
=

≠

COMPARING TWO FANS USING ONE OBJECTIVE



Price: \$100 is better than
 $\$100 < \500



Price: \$500



COMPARING TWO FANS USING ONE OBJECTIVE

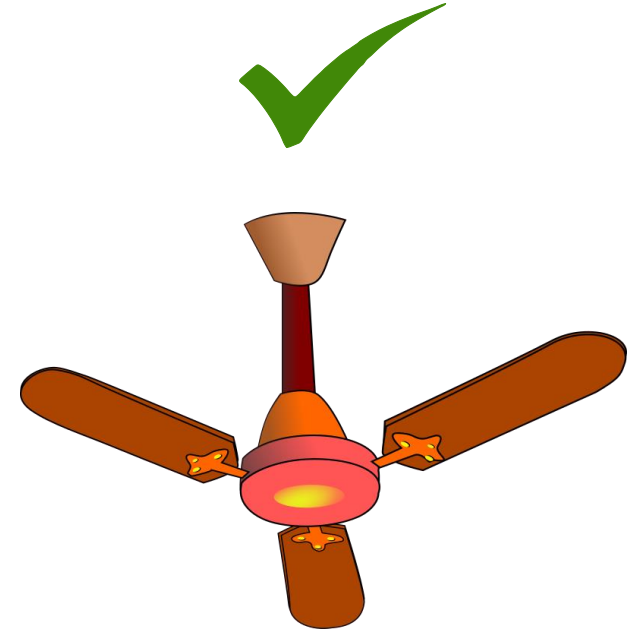


Comfort: 30%

is not better than

Comfort: 100%

$100\% > 30\%$



OTHER OBJECTIVES



Price: \$100



Comfort: 30%



Energy consumption: 80 W



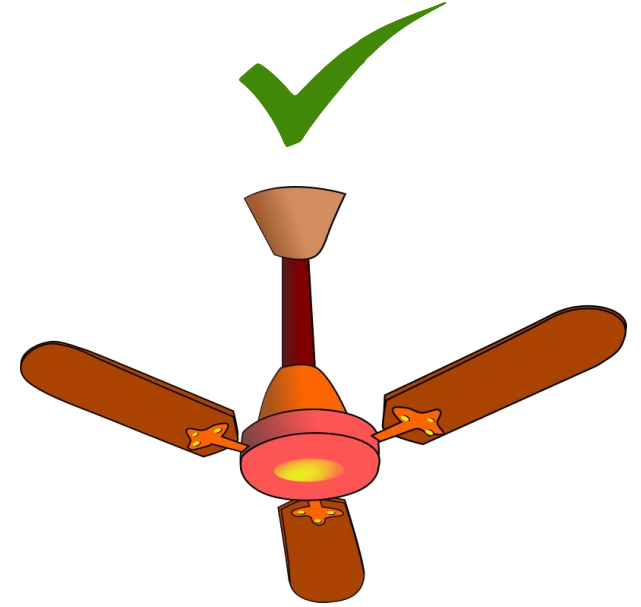
Efficiency: 60%



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MULTI-OBJECTIVE OPTIMIZATION

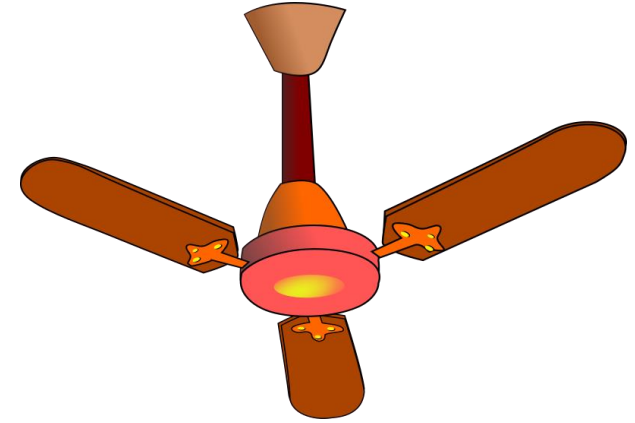


\$100 < \$500



30% < 100%

MULTI-OBJECTIVE OPTIMIZATION

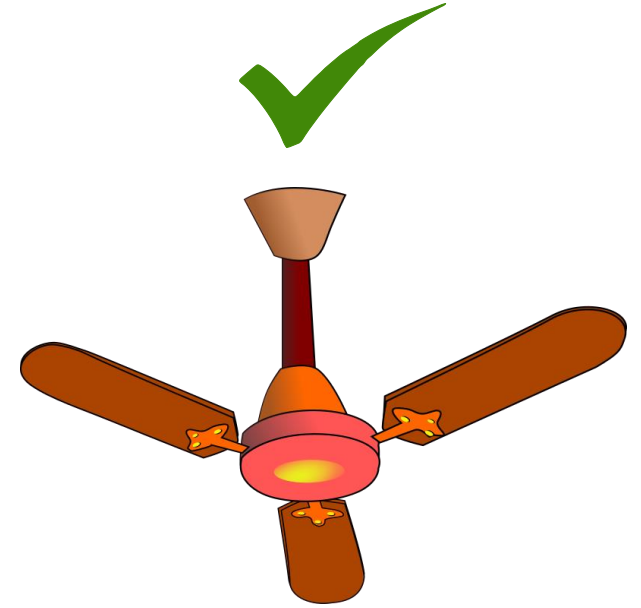


\$10 < \$500



0% < 100%

WHICH SOLUTION IS BETTER IN A MULTI-OBJECTIVE PROBLEM?



\$1000 > \$500



0% < 100%