

**Answer on Question#37789, Math, Combinatorics.**

Jason is considering purchasing a new machine to make plastic silverware. The machine produces 1,000 pieces of silverware in two hours. One box contains 50 pieces of silverwares and sells for \$3.00.

If the machine costs \$9,000, and runs for many days, how many days will it take the machine to make enough silverware to pay for itself?

**Solution.**

The machine produces  $1000/2 = 500$  pieces of silverware in an hour. Thus, it produces  $500/50 = 10$  boxes in an hour, or, in money equivalent,  $10 \cdot 3\$ = 30\$$ . So, Jason profit in an hour for one machine is 30\$. The machine to pay for itself needs \$9,000 or  $9000/30 = 300$  hours.

- a) If it runs 24 hours per day it needs  $300/24 = 12.5$  days to pay for itself.
- b) If it runs 12 hours per day it needs  $300/12 = 25$  days to pay for itself.
- c) If it runs 8 hours per day it needs  $300/8 = 37.5$  days to pay for itself.

**Answer.**

**24 hours/day: 12.5 days.**

**12 hours/day: 25 days.**

**8 hours/day: 37.5 days.**