NIKE FACTORY SCENARIO

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SCENARIO

- A Nike factory in Hanover, MD, makes soccer balls and basketballs. A soccer ball takes 1.5 hours of machine time and 3 hours of a worker's time in its making while a basketball takes 3 hours of machine time and 1 hour of a worker's time. In a day, the factory can produce no more than 42 hours of machine time and 24 hours of worker's time. The profit on a soccer ball is $20 and the profit on a basketball is $10. The manager wants to maximize the daily profit.

LINEAR PROG. MODEL

	s	b
Variables:	4	12

Objective (Max):	s	b	total:
Daily Profit:	$20	$10	$200

Constraints:	s	b	LHS	SIGN	RHS
machine time:	1.5	3	42	<=	42
worker time:	3	1	24	<=	24

Where, s is the number of soccer balls made in a day and b is the number of basketballs made in a day.

Together, the s and b are the decision variables in this linear programming problem.

QUESTIONS

- What are the decision variables in this scenario?
- **Answer:** Number of soccer balls produced per day and number of basketballs produced per day.

- Let s represent the number of soccer balls produced in one day and let b represent the number of basketballs produced in one day. Find the objective function for this scenario.
- **Answer:** $20s + 10b$

QUESTIONS CONT'D.

- Let s represent the number of soccer balls produced in one day and let b represent the number of basketballs produced in one day. Identify the constraints for this problem.

- **Answer:** $1.5s + 3b \leq 42$ and $3s + b \leq 24$

- How can the factory maximize its profit?

- **Answer:** Produce 4 soccer balls and 12 basketballs per day to get a maximum profit of $200.

THANK YOU