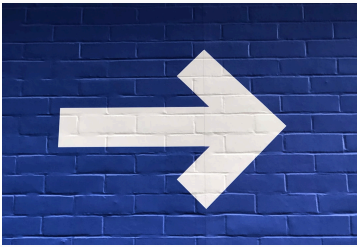


## MATLAB Optimization

1 play · 15 players

 A public kahoot



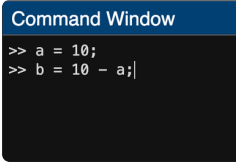
### Questions (21)



1 - Quiz


**What does MATLAB stand for?**

- |                                                                                   |                        |   |
|-----------------------------------------------------------------------------------|------------------------|---|
|   | Mathematics laboratory | ✗ |
|   | Mathematical libraries | ✗ |
|   | Matrix laboratory      | ✓ |
|  | Matrix laboratorium    | ✗ |



2 - Quiz

**What does ; do in MATLAB?**

- |                                                                                    |                            |   |
|------------------------------------------------------------------------------------|----------------------------|---|
|  | Line terminator            | ✗ |
|  | Suppress output            | ✓ |
|  | Suppress output            | ✗ |
|  | End of variable assignment | ✗ |

### 3 - Quiz

Which of the following clears MATLAB's memory?



clear



wipe



clc



clean



Workspace		
Name	Value	Size

### 4 - Quiz

**a = 3 > 2 > 1; What is a?**



True (1)



False (0)



Error



3 > 2 > 1



Command Window	
>> a = 3 > 2;	
>> a	
a =	
<u>logical</u>	
1	

### 5 - Quiz

**Let a=10; b=20. Run a,b = b,a. What are the values of a and b?**



a = 10; b = 10



a = 10; b = 20



a = 20; b = 20



b = 20; a = 10



Command Window	
>> a = 10; b = 20;	
>> a,b = b,a;	

## 6 - Quiz

Which of the following is NOT an optimization problem?



Choosing classes for next quarter



Deciding what to eat tonight



Listing classes from easiest to hardest

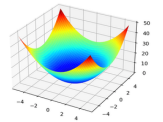


Deciding what to include in your resume



## 7 - Quiz

Which of the following CANNOT be an objective function?



$f(x) = |x|$



$f(x) = \text{floor}(x)$



$f(x) = 0$

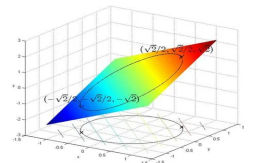


None of the above



## 8 - Quiz

Which of the following is a constrained optimization problem?



Find ideal flour and egg proportions for a cake



Manage grocery cost and dietary needs



Optimize sunlight and water for a plant



Keeping the temperature stable with coolers and heaters.



## 9 - True or false

True or false: An optimization problem is precisely solving a system of equations.

$$2x + 3y = 15$$

$$x - 3y = 3$$

$$3x + 0 = 18$$



True



False



10 - True or false

**True or false: Giving a "guess" increases the accuracy of solve() in MATLAB**



True



False



11 - Quiz

**How do you display the contents of an optimization problem?**

```
Command Window
>> help show
show Display the PCB Component or a shape
Documentation for show
Other uses of show
```



prob.show()



print(prob)



contents(prob)



show(prob)



12 - Quiz

**What is wrong with prob = optimproblem("Math HW")**

```
Command Window
>> prob = optimproblem("Math HW")
```



Error, index exceeds number of array elements.



Nothing



Error, typo in function.



Error, missing ;



13 - Quiz

**What do the dimensions of an optimvar mean?**

```
Command Window
Input Arguments
name - Variable name
character vector | string
n - Variable dimension
positive integer
str - Names for indexing
cell array of character vectors | string vector
```



Number of variables



Number of objectives



Number of problems



Size of optimvar



14 - True or false

**True or false: If you have more constraints than dimensions times input size, your optimproblem has no solution.**



True



False

Task 5

```
prob.Constraints.A = 3*I(2)+3*I(6) >= 7;  
prob.Constraints.B = 3*I(3)+2*I(6) >= 7;  
prob.Constraints.C = 4*I(3)+2*I(5) >= 7;  
prob.Constraints.D = 2*I(4)+I(7) >= 7;
```



15 - Quiz

**What is wrong with `prob.constraints.A_ = I > 5`; Assume all defined.**



The constraint name



Nothing



The constraint equation



Other

Command Window

```
>> prob.Constraints.A_ = I > 5;
```



16 - Quiz

**How many objectives can an optimprob have?**



At most 1



At most the dimensions of the optindvar



1



Any positive integer

Task 3

```
prob.Objective = D;
```



17 - True or false

**True or false: Let `sol = solve(prob)`; `sol` will have the same number of dimensions as the `optivar`.**



True



False

Solving problem using linprog.

Optimal solution found.

`sol` = struct with fields:



18 - Quiz

**What outputs if no solution is found to an optimproblem?**



Error



Solution not found, closest approximate given



Solution found, but ans empty



Solution not found, no additional info.



```
Command Window
>> solve(prob)

Solving problem using linprog.
Optimal solution found.

ans =
```

19 - Quiz

**How many solutions to an optimprob does solve() find?**



All of them



Exactly one



Some of them



No general answer



```
Command Window
>> solve(prob)
```

20 - True or false

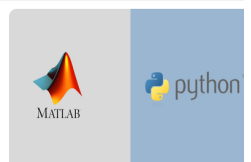
**Running optimprobs in MATLAB is typically faster than Python.**



True



False



21 - Quiz

**Bonus: Have you signed in for this event at [sums.ucsd.edu](https://sums.ucsd.edu)?**



Not yet, but I will



Yes!



Thank you for reminding me



Will do now.



**Resource credits** ^