

# QPrep Quiz

Started: Feb 19 at 4:07pm

## Quiz Instructions

Attempt the quiz questions by hand to check your understanding of the math and python concepts discussed during the course.

Take care to use the correct number of digits after the decimal point as mentioned in the question.

There are MCQs with single correct answers and numerical questions where you have to enter the correct answer in the box.

"Error" in the MCQ options means that the code will result in an error and not run.

### Question 1

1 pts

Evaluate this expression:

```
y = (5**2-1+9/2)//2
```

What is the value of y?

- ☐ 8.25
- ☐ 14.25
- ☐ 14
- ☐ Error
- ☐ 14.0

### Question 2

1 pts

What will be the result of the following code?

```
a=10  
b=20/a  
b=b-a  
print(b)
```

- ☐ Error

☐ 8.0☐ 8☐ -8.0☐ -8**Question 3****1 pts**

What will be the result of the following code?

```
a=10  
b=20/a  
b=b-a  
print(b**2)
```

☐ 16.0☐ 64.0☐ 16☐ -64☐ -16.0**Question 4****1 pts**

What will be the output?

```
x=10  
for i in range(10,20,2):  
    x=x+i  
print(x//2)
```

**Question 5****1 pts**

What is the output of this code? **Round** your answer to **2 digits** after the decimal point.

```
x=3
for i in range(3):
    y=i/x
    if y < 0.5:
        z=i
    print(x+y+z)
```

### Question 6

1 pts

What is y?

```
y=True+False-True*False
```

### Question 7

1 pts

What is y?

```
l1 = [1,2,3,4]
l2 = [5,6,7,8]
y = l1 + l2
```

☐ [1,2,3,4,5,6,7,8]

☐ [5,12,21,32]

☐ Error

### Question 8

1 pts

For the vector  $v = [1, 3, 5, 7, 9, 12, 24, 2]$ , what is its length? **Round** your answer to **2 digits** after the decimal point.

**Question 9****1 pts**

Given two vectors  $v$  and  $u$ , what is their dot product?

$$v = [1, 2, 3, 4]$$
$$u = [5, 6, 7, 8]$$

**Question 10****1 pts**

What is the dot product of these two vectors?

$$v = [1, 2, 3]$$

$$u = [-3, 6, -3]$$

**Question 11****1 pts**

Consider the vector:

$$u = [1, 2, 2, 1]$$

Now,

$$u_1 = u^T u$$

$$v = u_1 u^T$$

$$v_1 = v/10$$

What is the length of vector  $v_1$  ?

Round to the nearest integer.

### Question 12

1 pts

Consider:

$$m = \begin{bmatrix} 1, 2 \\ 3, 4 \end{bmatrix}$$

What is the sum of all elements of  $m@m$  where  $@$  is matrix multiplication?

### Question 13

1 pts

Consider:

$$m = \begin{bmatrix} 1, 2 \\ 3, 4 \end{bmatrix}$$

What is the sum of all elements of  $m \otimes m$  ?

### Question 14

1 pts

Consider:

$$m = \begin{bmatrix} 1, 2 \\ 3, 4 \end{bmatrix}$$

$$M = m \otimes ((m \otimes m) \otimes m)$$

Now if  $s$  is the sum of all elements of  $M$ , and

$y = s * 25\%3$  (Python expression)

What is  $y$ ?

### Question 15

1 pts

Consider the two matrices:

$$M_1 = \begin{bmatrix} 1, -1 \\ -1, 1 \end{bmatrix}$$

$$M_2 = \begin{bmatrix} 1, 2 \\ 3, 4 \end{bmatrix}$$

If  $x$  is the [2,2] element of  $M_1 M_2$ , what is the second digit of  $y$  where  $y$  is:

`y=-((x**6/8-6*6+6%6)*2)` (Python Expression)

☐ 7

☐ 5

☐ 6

☐ 4

### Question 16

1 pts

Consider the matrix:

$$M = \begin{bmatrix} 1, 2 \\ 3, 4 \end{bmatrix}$$

What is the sum of digits of  $MM^T M$

**Question 17****1 pts**

Consider:

```
l=[1,2,3,4,5]
```

What is the result of

```
l[-1:-4:-1][::-1][-3]**3
```

**Question 18****1 pts**

What will be the output?

```
l=[3,5,1,6,0]  
x=l[2]  
y=l[-2]  
z=len(l)  
print(x+y+z)
```

**Question 19****1 pts**

What is y?

```
l1 = [1,2,3,4]  
l2 = [5,6,7,8]  
y = l1 * l2
```

☐ [5,12,21,32]☐ [1,2,3,4,5,6,7,8]☐ Error

**Question 20****1 pts**

What will be the output?

```
t = (1,2,3)
l= [1,2,3]
l[2] = t[1]
t[1] = l[2]
print(t)
```

☐ (1,2,2)

☐ (1,3,3)

☐ [1,2,2]

☐ Error

☐ [1,2,3]

Quiz saved at 7:38pm

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