Exam 2 Review Problem Answers

1. `HELLO MOM`
2. `HellothereMom`
                    (no spaces or new lines)

3a . `C` first two tests are false 5<3, 5>10, falls through to else
  b. `B` first true part is 12 > 10. Never get to else
  c. `A` stop at first test -2 < 3
  d. `C` both tests false as in part a.

step by step – does not show the spaces and newlines, not a complete substitute for the final answer!

line comment	line comment	line comment	line comment
1 5 <3 false	1 12 <3 false	1 -2 <3 true	1 10 <3 false
3 5 > 10 false	3 12 > 10 true	2 print A	3 10 > 10 false
5 print C	4 print B		5 print C

4a. `C` b. `AC`   c. `BC` d. `A`
Note the last if statement is completely separate from the part above, so the last test is always done. The middle test is only true if both comparisons are true. The last test is true if either comparison is true.

step by step – does not show the spaces and newlines, not a complete substitute for the final answer!

line comment
    part a
1   5 == 3 false
3   5 <5 and 3>2: false and true: false
5   5>2 or 3>4: true or false: true
6   print C

    part b
1   5 == 5 true
2   print A
5   5>2 or 5>4: true or true: true
6   print C

    part c
1   1 == 5 false
3   1 <5 and 5>2: true and true: true
4   print B
5   1>2 or 5>4: false or true: true
6   print C

    part d
1   1 == 1 true
2   print A
5   1>2 or 1>4: false or false: false

5. `1 3`
x is printed before being increased, so the first value is printed. The last value of x is 5, but x becomes that after the last time it is printed.

step by step – does not show the spaces and newlines, not a complete substitute for the final answer!

line	x	comment
1	1	
2		1<5 true: loop
3		print 1
4	3	
2		3<5 true: loop
3		print 3
4	5	
2		5<5 false: skip loop

6.   31 32 33
       41 42 43
step by step – does not show the spaces and newlines, not a complete substitute for the final answer!

line	x	y	comment
1	30		first in outer list
2		1	first in inner list
3			30+1 = 31; print 31 (stay on line)
2		2	next in inner list
3			30+2 = 32; print 32 (stay on line)
2		3	last in inner list
3			30+3 = 33; print 33 (stay on line)
2		-	no more in list - done with inner loop
4			print (advance to new line)
1	40		next in outer list
2		1	start again with first inner list element
3			40+1 = 41; print 41 (stay on line)
2		2	next in inner list
3			40+2 = 42; print 42 (stay on line)
2		3	last in inner list
3			40+3 = 43; print 43 (stay on line)
2		-	no more in list - done with inner loop
4			print (advance to new line)
1	-		done with outer loop

7. a b aaa bbb
step by step – does not show the spaces and newlines, not a complete substitute for the final answer!

line	n	s	comment
1	1		first in outer list
2		a	first in inner list
3			print a (stay on line)
2		c	second in inner list
3			print c (stay on line)
2.............-..			no more in list - end inner loop
1	3		second in outer list
2		a	start again - first in inner list
3			print aaa (stay on line)
2		c	second in inner list
3			print ccc (stay on line)
2.............-..			no more in list - end inner loop
1			no more in list -- done with outer loop

8. [0, 2, 4, 6]
Remember square brackets and commas. Note range(4) is [0, 1, 2, 3].

line	nums	i	comment
1	[]		
2	[]	0	first in list
3	[0]	0	append 2*0 = 0
2	[0]	1	next in list
3	[0,2]	1	append 2*1 = 2
2	[0,2]	2	next in list
3	[0,2,4]	2	append 2*2 = 4
2	[0,2,4]	3	last in list
3	[0,2,4,6]	3	append 2*3 = 6
2	[0,2,4,6]	3	done with list
4	[0,2,4,6]	3	print [0, 2, 4, 6]

9.
```
# Creating a float is safer: Not clear if the number must be an int.
x = float(input("Enter a number: "))
if x > 100:
  print("High")
elif x < 50:
  print("Low")
else:
  print("In between")
```

10.
```
c = Circle(Point(40, 50), 10)
  c.draw(win)
```

11.
```
for num in numlist:
     print(2*num)
```

12.
```
for num in numlist:
    print("Twice {} is {}.".format(num,2*num)) #print final period; no space before
```

13.
```
for word in wordlist:
    print(word, end= ' ')
```

14.
```
lowVal <= num <= highVal
# lowVal <= num and num <= highVal   #alternate
```

15.
```
for num in numList:
    if lowVal <= num <= highVal:
        print(num, end = ' ')
```

16.
```
chosen = []
for num in numList:
    if lowVal <= num <= highVal:
        chosen.append(num)
return chosen
```

17. `1 3 7 15`

line	x	comment
1	0	
2	0	0 < 10 is True; loop'
3	1	2*0+1 = 1
4	1	print 1 (stay on same line)
2	1	1 < 10 is True; loop'
3	3	2*1+1 = 3
4	3	print 3 (stay on same line)
2	3	3 < 10 is True; loop'
3	7	2*3+1 = 7
4	7	print 7 (stay on same line)
2	7	7 < 10 is True; loop'
3	15	2*7+1 = 15
4	15	print 15 (stay on same line)
2	15	15 < 10 is False; skip loop

18. `YY`
`YYYY`

line	s	comment
1	Y	
2	Y	1 < 3 is True; loop'
3	YY	2*'Y' is 'YY'
4	YY	print YY
2	YY	2 < 3 is True; loop'
3	YYYY	2*'YY' is 'YYYY'
4	YYYY	print YYYY
2	YYYY	4 < 3 is False; skip loop

19.
```
[2, 3, 4]   # start with 2, end before 5
[2, 6, 10]  # start with 2, end before 14, jumps of 4
```
They are list objects, hence the square brackets and commas when printed.

20.
```
3   # First prints the length of the list (3 elements, each a string)
1   # Next loop through each word, and print the length of each word:
5   #Length for a string is measured by the number of characters.
4
```

21.
```
import random
def roll():
    return random.randrange(1,7)
```

returns a random integer from 1 up to, but not including 7, could separate into 2 steps