

NAME:  
 EMAIL:  
 SIGNATURE:  
 CIRCLE SECTION: MW 9-11 MW 11-1 MW 1-3 MW 6-8 TTh 1-3 TTh 6-8

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**Lehman College, CUNY**  
**CMP 230 Exam 1, Version 1, Fall 2012**

1. What is the output of the following:

```
a = 6
b = a//4
c = a%4
d = a/4
print(a,b,c,d)
a,b = b,c
d = b**c
print(a,b,c,d)
```

2. Write Python code that prompts the user for the number of dollars and prints out the equivalent amount in euros.

Useful formula: 1 US dollar = 0.7781 euros.

3. Write the following formulas in Python:

(a)  $x^2 + 2xy + y^2$

(c)  $r = \sqrt{\frac{\text{surfaceArea}}{4\pi}}$

(b)  $\sin(\frac{\pi}{2} - u)$

(d)  $\text{effectiveRate} = (1 + \frac{r}{n})^n - 1$

4. (a) What is the output of the following:

```
for count in range(5):
    print(count, count+1)
```

(b) What is the output of the following:

```
for k in [0,-2,2,-4,4]:
    print(k, ":", abs(k))
```

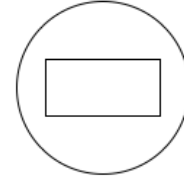
5. Draw what would be displayed in the graphics window when the following program is executed:

```
from graphics import *
def main():
    win = GraphWin("What's displayed?")
    p1 = Point(10,100)
    p2 = Point(100,10)
    p3 = Point(190,100)
    p4 = Point(100,190)
    c1 = Circle(p1,5)
    c2 = Circle(p2,5)
    l1 = Line(p1, p2)
    l2 = Line(p3, p4)
    c1.draw(win)
    c2.draw(win)
    l1.draw(win)
    l2.draw(win)
    win.getMouse()
    win.close()
```

6. Write Python code that will:

- (a) Add the even numbers from 1000 to 2000 inclusive.      (b) Print the multiples of 7 from 700 to 7000 inclusive.

7. Write a program that will produce this shape in a graphics window:



8. (a) What is the output of the following:      (b) What is the output of the following:

```
i = 1
j = 3
for num in range(5,10):
    i = i + (num * 2)
    print(i)
i, j = j, i
```

```
balance = 10
for i in range(1,8,2):
    balance = balance + (3 * i)
    print(balance)
```

9. Write a **complete** graphics-based program that requires the user to click on six points in its window. The program then draws a line hexagon (6-sided polygon) with the six points for its corners.
10. Write a **complete** program that asks the user the number of items they ordered at a restaurant. Your program should then use a loop that asks for the price of cost of each item ordered and print out a running total of the cost of the meal (that is, after asking for each price, print out the amount spent so far).

**Graphics Reference:** (from p 108-111 of the textbook)

GraphWin Objects
GraphWin(title, width, height)
plot(x,y,color)
plotPixel(x,y,color)
setBackground(color)
close()
getMouse()
checkMouse()
setCoords(x11,y11,xur,yur)

Graphics Objects
setFill(color)
setOutline(color)
setWidth(pixels)
draw(aGraphWin)
undraw()
move(dx,dy)
clone()

Text Methods
Text(anchorPoint, string)
setText(string)
getText()
getAnchor()
setFace(family)
setSize(point)
setStyle(style)
setTextColor(color)

Point Methods
Point(x,y)
getX()
getY()

Line Methods
Line(point1, point2)
setArrow(string)
getCenter()
getP1(), getP2()

Circle Methods
Circle(centerPoint, radius)
getCenter()
getRadius()
getP1(), getP2()

Rectangle Methods
Rectangle(point1,point2)
getCenter()
getP1(), getP2()

Oval Methods
Oval(point1, point2)
getCenter()
getP1(), getP2()

Polygon Methods
Polygon(P1, P2, P3,...)
getPoints()

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**Lehman College, CUNY**  
**CMP 230 Exam 1, Version 2, Fall 2012**

1. What is the output of the following:

```
a = 5
b = a//2
c = a%2
d = a/2
print(a,b,c,d)
a,b = b,c
d = abs(b-a)
print(a,b,c,d)
```

2. Write Python code that prompts the user for the number of euros and prints out the equivalent amount in dollars.

Useful formula: 1 euro = 1.2852 US dollars.

3. Write the following formulas in Python:

(a)  $a^2 + 2ab + b^2$

(c)  $v = \frac{4}{3}\pi r^3$

(b)  $\sqrt{\cos(2u) + \sin(2u)}$

(d)  $bondValue = \frac{F}{(1+r)^t}$

4. (a) What is the output of the following:

```
for count in range(5):
    print(count-1, count)
```

(b) What is the output of the following:

```
for k in [-2,0,2,-1,1]:
    print(k, ":", k*2)
```

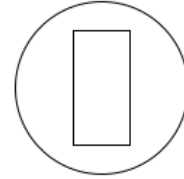
5. Draw what would be displayed in the graphics window when the following program is executed:

```
from graphics import *
def main():
    win = GraphWin("What's displayed?")
    p1 = Point(10,10)
    p2 = Point(10,190)
    p3 = Point(190,10)
    p4 = Point(190,190)
    c1 = Circle(p1, 5)
    c2 = Circle(p2, 5)
    l1 = Line(p1, p4)
    l2 = Line(p2, p3)
    c1.draw(win)
    c2.draw(win)
    l1.draw(win)
    l2.draw(win)
    win.getMouse()
    win.close()
```

6. Write Python code that will:

- (a) Add the odd numbers from 999 to 9999 inclusive.      (b) Print the multiples of 8 from 888 to 8000 inclusive.

7. Write a program that will produce this shape in a graphics window:



8. (a) What is the output of the following:      (b) What is the output of the following:

```
i = 4
j = 6
for num in range(1,6):
    i = i + (num * 2)
    print(i)
i, j = j, i
```

```
balance = 100
for i in range(2,12,3):
    balance = balance + (3 * i)
    print(balance)
```

9. Write a **complete** graphics-based program that requires the user to click on four points in its window. Your program should connect all the points with lines (to form a 4-sided polygon). Your program should also draw circles (of radius 5) at all points clicked.
10. Write a **complete** program that asks the user the number of games they would like to purchase. Your program should then ask the price of each game and print out a running total of the amount spent (that is, after asking for each price, print out the amount spent so far).

**Graphics Reference:** (from p 108-111 of the textbook)

GraphWin Objects
GraphWin(title, width, height)
plot(x,y,color)
plotPixel(x,y,color)
setBackground(color)
close()
getMouse()
checkMouse()
setCoords(x1l,y1l,xur,yur)

Graphics Objects
setFill(color)
setOutline(color)
setWidth(pixels)
draw(aGraphWin)
undraw()
move(dx,dy)
clone()

Text Methods
Text(anchorPoint, string)
setText(string)
getText()
getAnchor()
setFace(family)
setSize(point)
setStyle(style)
setTextColor(color)

Point Methods
Point(x,y)
getX()
getY()

Line Methods
Line(point1, point2)
setArrow(string)
getCenter()
getP1(), getP2()

Circle Methods
Circle(centerPoint, radius)
getCenter()
getRadius()
getP1(), getP2()

Rectangle Methods
Rectangle(point1,point2)
getCenter()
getP1(), getP2()

Oval Methods
Oval(point1, point2)
getCenter()
getP1(), getP2()

Polygon Methods
Polygon(P1, P2, P3,...)
getPoints()

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**Lehman College, CUNY**  
**CMP 230 Exam 1, Version 3, Fall 2012**

1. What is the output of the following:

```
a = 5
b = a//4
c = a%4
d = a/4
print(a,b,c,d)
a,b = b,c
d = b**c
print(a,b,c,d)
```

2. Write Python code that prompts the user for the number of dollars and prints out the equivalent amount in pesos.

Useful formula: 1 US dollar = 12.8630 Mexican pesos.

3. Write the following formulas in Python:

(a)  $x^2 - 4xy + y^2$

(c)  $r = \sqrt{\frac{area}{\pi}}$

(b)  $\sin(\frac{\pi}{2} - u)$

(d)  $compound = P(1 + \frac{r}{n})^{n \cdot t}$

4. (a) What is the output of the following:

```
for count in range(5):
    print(2*count)
```

(b) What is the output of the following:

```
for k in [0,-2,2,-4,4]:
    print(k, ":", abs(k))
```

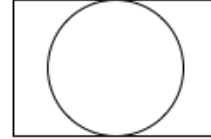
5. Draw what would be displayed in the graphics window when the following program is executed:

```
from graphics import *
def main():
    win = GraphWin("What's displayed?")
    p1 = Point(10,10)
    p2 = Point(100,190)
    p3 = Point(100,10)
    p4 = Point(190,190)
    r1 = Rectangle(p1, p2)
    r2 = Rectangle(p3, p4)
    l1 = Line(p1, p2)
    l2 = Line(p3, p4)
    r1.draw(win)
    r2.draw(win)
    l1.draw(win)
    l2.draw(win)
    win.getMouse()
    win.close()
```

6. Write Python code that will:

- (a) Add the odd numbers from 2013 to 10001 inclusive.      (b) Print the multiples of 6 from 66 to 600 inclusive.

7. Write a program that will produce this shape in a graphics window:



8. (a) What is the output of the following:      (b) What is the output of the following:

```
i = 2
j = 5
for num in range(6,11):
    i = i + (num * 2)
    print(i)
i, j = j, i
```

```
balance = 150
for i in range(5,9,1):
    balance = balance + (3 * i)
    print(balance)
```

9. Write a **complete** graphics-based program that requires the user to click on six points in its window. The program then draws a line hexagon (6-sided polygon) with the six points for its corners.
10. Write a **complete** program that asks the user the number of shoes they will be purchasing at the shoe store. Your program should then use a loop that asks for the cost of each shoe and print out a running total of the amount spent (that is, after asking for each price, print out the amount spent so far).

**Graphics Reference:** (from p 108-111 of the textbook)

GraphWin Objects
GraphWin(title, width, height)
plot(x,y,color)
plotPixel(x,y,color)
setBackground(color)
close()
getMouse()
checkMouse()
setCoords(x11,y11,xur,yur)

Graphics Objects
setFill(color)
setOutline(color)
setWidth(pixels)
draw(aGraphWin)
undraw()
move(dx,dy)
clone()

Text Methods
Text(anchorPoint, string)
setText(string)
getText()
getAnchor()
setFace(family)
setSize(point)
setStyle(style)
setTextColor(color)

Point Methods
Point(x,y)
getX()
getY()

Line Methods
Line(point1, point2)
setArrow(string)
getCenter()
getP1(), getP2()

Circle Methods
Circle(centerPoint, radius)
getCenter()
getRadius()
getP1(), getP2()

Rectangle Methods
Rectangle(point1,point2)
getCenter()
getP1(), getP2()

Oval Methods
Oval(point1, point2)
getCenter()
getP1(), getP2()

Polygon Methods
Polygon(P1, P2, P3,...)
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**Lehman College, CUNY**  
**CMP 230 Exam 1, Version 4, Fall 2012**

1. What is the output of the following:

```
a = 7
b = a//2
c = a%2
d = a/2
print(a,b,c,d)
a,b = b,c
d = abs(b-a)
print(a,b,c,d)
```

2. Write Python code that prompts the user for the number of dollars and prints out the equivalent amount in krone.

Useful formula: 1 US dollar = 5.8012 Danish krone.

3. Write the following formulas in Python:

(a)  $y^2 - yz + z^2$

(c)  $side = \sqrt{\frac{surfaceArea}{6}}$

(b)  $\tan(\frac{\pi}{2}) - 1$

(d)  $numPayments = \frac{-\log(1-r\frac{FV}{PMT})}{\log(1+r)}$

4. (a) What is the output of the following:

```
for count in range(5):
    print(count-1, count+1)
```

(b) What is the output of the following:

```
for k in [-2,2,-1,1,0]:
    print(k, " ", k*2)
```

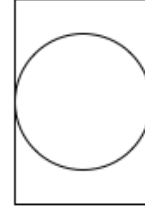
5. Draw what would be displayed in the graphics window when the following program is executed:

```
from graphics import *
def main():
    win = GraphWin("What's displayed?")
    p1 = Point(10,100)
    p2 = Point(100,10)
    p3 = Point(190,100)
    p4 = Point(100,190)
    c1 = Circle(p1,5)
    c2 = Circle(p2,5)
    l1 = Line(p1, p3)
    l2 = Line(p2, p4)
    c1.draw(win)
    c2.draw(win)
    l1.draw(win)
    l2.draw(win)
    win.getMouse()
    win.close()
```

6. Write Python code that will:

- (a) Add the even numbers from 1900 to 2000 inclusive.      (b) Print the multiples of 17 from 17 to 1700 inclusive.

7. Write a program that will produce this shape in a graphics window:



8. (a) What is the output of the following:      (b) What is the output of the following:

```
i = 5
j = 2
for num in range(3,8):
    i = i + (num * 2)
    print(i)
i, j = j, i
```

```
balance = 75
for i in range(1,14,4):
    balance = balance + (3 * i)
    print(balance)
```

9. Write a **complete** graphics-based program that requires the user to click on four points in its window. Your program should connect all the points with lines (to form a 4-sided polygon). Your program should also draw circles (of radius 5) at all points clicked.
10. Write a **complete** program that asks the user the number stations they will be stopping at on their subway ride. Your program should then use a loop that asks for the distance between each station and print out a running total of the distance traveled (that is, after asking for each distance, print out the distance travelled so far).

**Graphics Reference:** (from p 108-111 of the textbook)

GraphWin Objects
GraphWin(title, width, height)
plot(x,y,color)
plotPixel(x,y,color)
setBackground(color)
close()
getMouse()
checkMouse()
setCoords(x1l,y1l,xur,yur)

Graphics Objects
setFill(color)
setOutline(color)
setWidth(pixels)
draw(aGraphWin)
undraw()
move(dx,dy)
clone()

Text Methods
Text(anchorPoint, string)
setText(string)
getText()
getAnchor()
setFace(family)
setSize(point)
setStyle(style)
setTextColor(color)

Point Methods
Point(x,y)
getX()
getY()

Line Methods
Line(point1, point2)
setArrow(string)
getCenter()
getP1(), getP2()

Circle Methods
Circle(centerPoint, radius)
getCenter()
getRadius()
getP1(), getP2()

Rectangle Methods
Rectangle(point1,point2)
getCenter()
getP1(), getP2()

Oval Methods
Oval(point1, point2)
getCenter()
getP1(), getP2()

Polygon Methods
Polygon(P1, P2, P3,...)
getPoints()