Question 1:

Set 1:
What is the output of the following program:

```
def counter(a: int, b: int):
    i = j = b
    while i <= a:
        j = 2 * j
        i += j

    return i - a
```

```
print(counter(30,3))
print(counter(100,5))
```

Answer:
15
55

Set 2:
What is the output of the following program:

```
def counter(a: int, b: int):
    i = j = b
    while i <= a:
        j = 2 * j
        i += j

    return a - (i - j)
```

```
print(counter(30,3))
print(counter(100,5))
```

Answer:
9
25

Question 2:

Set 1:
Which of the following options is correct about the output of the given program:

```
class Rect:
    def __init__(self,a: tuple,b: tuple):
        self.p1 = a
        self.p2 = b

    def area(self):
        return abs( (self.p1[0] - self.p2[0]) * (self.p1[1] - self.p2[1]) )

    def __le__(self, other):
        return self.area() <= other.area()


a = Rect( (13,13), (45,45) )
b = Rect( (14,13), (22,33) )

print(a <= b)
print(a >= b)
```

Options:
    (a) False and True (correct answer)
    (b) True and False
    (c) True and Runtime error
    (d) False and Runtime error

Set 2:
Which of the following options is true about the output of the given program:

```
class Rect:
    def __init__(self,a: tuple,b: tuple):
        self.p1 = a
        self.p2 = b

    def area(self):
        return abs( (self.p1[0] - self.p2[0]) * (self.p1[1] - self.p2[1]) )

    def __le__(self, other):
        return (min(self.p1[0],self.p2[0]) <= min(other.p1[0],other.p2[0])) \
                and (min(self.p1[1],self.p2[1]) <= min(other.p1[1],other.p2[1]))


a = Rect( (13,13), (45,45) )
b = Rect( (14,13), (22,33) )
print(a <= b)
print(a >= b)
```

Options:
    (a) False and True
    (b) True and False (correct answer)
    (c) True and runtime error
    (d) False and Runtime error

Question 3:

Set 1:
Which of the following statements is true about the window created by the following program:

```
from tkinter import *

root = Tk()

leftframe = Frame(root,bg="green", padx=10, pady=10)
leftframe.grid(row=0, column=0, sticky=S + N + E + W)

b1 = Button(leftframe, text="left button", padx=10, pady=10)
b1.grid(row=0, column=0, sticky=S + N + E + W)

rightframe = Frame(root,bg="red", padx=10, pady=10)
rightframe.grid(row=0, column=1, sticky=S + N + E + W)

b2 = Button(rightframe, text="right button", padx=10, pady=10)
b2.grid(row=0, column=0)

root.grid_columnconfigure(1, weight=1)

root.mainloop()
```

Options:
- (a) Left frame and right frame resize dynamically with the window.
- (b) Only the right frame resizes dynamically with the window (correct answer)
- (c) Left frame, right frame, and left button resize dynamically with the window.
- (d) None of the above

Set 2:
Which of the following statements is true about the window created by the following program:

```
from tkinter import *

root = Tk()

leftframe = Frame(root,bg="green", padx=10, pady=10)
leftframe.grid(row=0, column=0, sticky=S + N + E + W)

b1 = Button(leftframe, text="left button", padx=10, pady=10)
b1.grid(row=0, column=0, sticky=S + N + E + W)

rightframe = Frame(root,bg="red", padx=10, pady=10)
rightframe.grid(row=0, column=1, sticky=S + N + E + W)

b2 = Button(rightframe, text="right button", padx=10, pady=10)
b2.grid(row=0, column=0)

root.grid_columnconfigure(0, weight=1)

root.mainloop()
```

Options:
  (a) Left frame and right frame resize dynamically with the window.
  (b) Only the left frame resizes dynamically with the window (correct answer)
  (c) Left frame, right frame, and left button resize dynamically with the window.
  (d) None of the above