PROBLEM 1.3

Paper of size A0 has dimensions 1189 cm x 841 mm. Each subsequent size A(n) is defined as A(n-1) cut in half, parallel to its shorter sides. Thus, a paper of size A1 would have dimensions 841 mm x 594 mm. Write a program to calculate and print the paper sizes A1 to A8.

ALGORITHM:

1. Start
2. Declare float variables h and w.
3. Assign h to 1189 and w to 841.
4. Display "size of A0: h x w"
5. Calculate the size of A1 as: w = 2^(-0.25 - 0.5 * i) * 1000,h = 2^(0.25 - 0.5 * i) * 1000, taking i as 1.
6. Repeat Step 5 for i = 2 to i= 8
7. Display the sizes of A1 to A8.
8. Stop

PSEUDOCODE:

```
DECLARE FLOAT h,w
ASSIGN h to 1189
ASSIGN w to 841
DECLARE INTEGER i
ASSIGN i to 0
DISPLAY "Size of A0: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 1) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 1) * 1000
DISPLAY "Size of A1: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 2) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 2) * 1000
DISPLAY "Size of A2: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 3) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 3) * 1000
DISPLAY "Size of A3: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 4) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 4) * 1000
DISPLAY "Size of A4: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 5) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 5) * 1000
DISPLAY "Size of A5: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 6) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 6) * 1000
DISPLAY "Size of A6: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 7) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 7) * 1000
```

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DISPLAY "Size of A7: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 8) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 8) * 1000
DISPLAY "Size of A8: hxw"
```

FLOWCHART

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flowchart TD
A([Start]) --> B[[Declare h and w]]
B --> C[[Assign h to 1189]]
C --> D[[Assign w to 841]]
D --> E[[Calculate w and h using i = 1 and display the results]]
E --> F[[Calculate w and h using i = 2 and display the results]]
F --> G[[Calculate w and h using i = 3 and display the results]]
G --> H[[Calculate w and h using i = 4 and display the results]]
H --> I[[Calculate w and h using i = 5 and display the results]]
I --> J[[Calculate w and h using i = 6 and display the results]]
J --> K[[Calculate w and h using i = 7 and display the results]]
K --> L[[Calculate w and h using i = 8 and display the results]]
L --> M([Stop])
```