1. Trace and evaluate assignment sequences
   * What will be the output of this code? Answer: 5

int x = 17;  
int y = 5;  
int a = y;  
y = x;  
x = a;  
  
System.out.print(x);

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Identify valid Java identifiers
   * Which of the following are valid Java Identifiers? Choose all that apply.

a) 1NAME   
b) a-bonus   
c) in\_&\_out   
d) My\_vAlUe   
e) sum and difference   
f) Tax   
g) a123b   
h) name1  
i) Test Variable   
j) 00xGOLD

* + Which of the following are valid Java Identifiers? Choose all that apply.

a) My Variable  
b) 2\_Tax  
c) \_hi\_world\_  
d) !age  
e) size!  
f) vairabel  
g) max\_of\_array  
h) x & y  
i) Code123  
j) SpEcIaL\_vAlUe\_1

1. Evaluate Java math expressions
   * Given the following int (integer) variables, a = 11, b = 37, c = 3, d = 5, evaluate the expression: **Answer: 16**

a + b % c \* d

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970884)

1. Evaluate Java logical expressions
   * Evaluate this logical expression:

false || false

a) True   
b) False

1. Evaluate Java relational expressions
   * Evaluate this expression: 3 == 1

a) True   
b) False

1. Evaluate Java compound expressions
   * Evaluate this expression: 6 + 1 >= 10 || 20 - 10 < 7

a) True   
b) False

1. Identify Java primitive types by name
   * Which of the following are Java primitive data types? Choose all that apply.

a) boolean   
b) double   
c) String   
d) Math   
e) class   
f) int   
g) float   
h) Array   
i) Random   
j) char

1. Identify Java primitive types by literal value
   * Which of the following Java literals have the data type float? Choose all that apply.

a) 5.25   
b) 5.25f   
c) 5.0   
d) '\n'   
e) 5f   
f) '5'   
g) false   
h) "true"   
i) true   
j) 123 s  
k) -5   
l) "5.0"

* + Which of the following Java literals have the data type char? Choose all that apply.

a) 5.25   
b) 5.25f   
c) 5.0   
d) '\n'   
e) 5f   
f) '5'   
g) false   
h) "true"   
i) true   
j) 123   
k) -5   
l) "5.0"

1. Identify Java primitive types by expression
   * When the following expression is evaluated, the result will be what Java data type?

3f + 5

a) double   
b) char   
c) none of these   
d) String   
e) int   
f) float   
g) boolean

1. Choose the best Java data type
   * Which of the following would be the best data type for a variable to store a person's height in meters?

a) int   
b) float   
c) boolean   
d) char   
e) byte  
f) String

1. Declare a variable of a specified primitive type
   * Which of the following correctly declares a variable of type boolean in Java? Choose all that apply.

a) a = boolean(true);   
b) boolean[] a = new boolean[3];   
c) boolean a;   
d) none of these   
e) boolean a = new boolean();   
f) boolean[] a = 0;   
g) boolean a = false;

* + Write a line of Java code that will declare a double variable named **x** that is initialized to the value 90.24.

Double x = 90.24;

1. Using string class methods (charAt)
   * Given the following declaration: String s = "Go\_Sun\_Devils";

Evaluate the expression: s.charAt(3)

1) 'Go\_Su'   
2) 'Go\_S'   
3) 'Go\_'   
4) 'Go'   
5) 'n'   
6) 'u'   
7) 'S'   
8) '\_'   
9) 'o'   
10) 'G'   
11) none of these

Your answer should be the number (1 - 11) next to the correct value.

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/pages/practice-string-charat)

1. Using string class methods (compareTo)
   * Given the following declarations:

String s1 = "a banana";  
String s2 = "banana";

Evaluate the expression: s1.compareTo(s2) < 0

a) false   
b) none of these   
c) true

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/pages/practice-string-compareto)

1. Using string class methods (equals)
   * Given the following declarations:

String s1 = "carrot";  
String s2 = "carrot";

Evaluate the expression: s2.equals(s1)

a) false   
b) none of these   
c) true

1. Using string class methods (indexOf)
   * Given the following declaration: String s = "Red and Blue are my favorite colors.";   
     Evaluate the expression: s.indexOf("a")

a) 3   
b) 12   
c) 8   
d) 4   
e) 13   
f) -1   
g) 5   
h) none of these   
i) 0

* + Given the following declaration: "Bananas and apples are yummy.";  
    Evaluate the expression: s.indexOf("A")

a) 0   
b) 1  
c) 2   
d) 3   
e) 13   
f) -1   
g) 5   
h) none of these   
i) 0

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/pages/practice-string-indexof)

1. Using string class methods (length)
   * Given the following declaration: String s = "7 birds and 12 cats";

Evaluate the expression: s.length()

**Answer: 19**

1. Using string class methods (substring)
   * Given the following declaration: String s = "Apples and bananas are yummy.";

Evaluate the expression: s.substring(1, 3)

1) "ple"   
2) "pl"   
3) "p"   
4) "pple"   
5) "ppl"   
6) "pp"   
7) "Apple"   
8) "Appl"   
9) "App"   
10) none of these

Your answer should be the number (1 - 10) next to the correct value.

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/pages/practice-string-substring)

1. Trace and evaluate code with multiple methods
   * What will this small program output?

class Main {  
    private static void foo() {  
        int x = 11;  
    }  
  
    private static int x = 5;  
  
    public static void main(String[] args) {  
        foo();  
        System.out.println(x);  
    }  
}

5

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
   fop(8);  
   baz(4);  
  }  
  
 static void fop(int a) {  
    System.out.print(a);  
   baz(a + 1);  
  }  
  
 static void baz(int a) {  
    System.out.print(a);  
  }  
}  
   
894

* + What is the output of this Java program? Answer:

class Driver {  
  public static void main(String[] args) {  
   int a = fop(3);  
   int b = baz(3);  
  }  
  
 static int fop(int a) {  
   a = baz(a + 4);  
    System.out.print(a);  
    return a;  
  }  
  
 static int baz(int a) {  
    System.out.print(a);  
    return a - 0;  
  }  
}  
   
773

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970893)

1. Trace and evaluate code with decision logic (single, multiple, and nested)
   * What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 40;  
    int b = 8;  
  
    if (a > 73 && b < 8) {  
      System.out.print(a);  
    }  
  
    System.out.print(b);  
  }  
}  
   
8

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 7;  
    int b = 3;  
    int c = 5;  
    int x = 1;  
  
    if (a < 3) {  
      x = x + 700;  
    }  
    if (b < 7) {  
        x = x + 30;  
    }  
    if (c < 2) {  
        x = x + 5;  
    }  
  
    System.out.print(x);  
  }  
}  
   
31

* + What will be the output of this code?

int a = 5;  
int b = 17;  
int c = 6;  
int x = 17;  
   
if (c >= b - a) {  
    x = 1;  
} else {  
    x = 3;  
}  
   
System.out.print(x);  
   
3

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 82;  
    int b = 44;  
  
    if (a < 23 || b > 56)  
      System.out.print(b);  
    else  
      System.out.print(a);  
  }  
}  
   
82

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 40;  
    int b = 40;  
  
    if (a > 26)  
      if (b < 31)  
        System.out.print(a);  
      else  
        System.out.print(b);  
    else  
      System.out.print(a + b);  
  }  
}  
   
40

* + What will this small program output?

int a = 3;  
int b = 1;  
int c = 7;  
int x = 10;  
   
if (a <= b) {  
    x = 15;  
} else if (a <= c) {  
    x = 13;  
} else if (b <= c) {  
    x = 17;  
} else {  
    x = 12;  
}  
   
System.out.print(x);  
   
13

1. Trace and evaluate code with loops (single and nested)
   * What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 15;  
    int b = a + 12;  
  
    while (a < b) {  
      a = a + 2;  
      b = b - 1;  
    }  
  
    System.out.print(a + b);  
  }  
}  
   
46

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970890)

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 90;  
  
    for (int i = 6; i > 1; i--) {  
      a = a - i;  
    }  
  
    System.out.print(a);  
  }  
}  
   
70

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970882)

* + What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int a = 15;  
    int b = 0;  
  
    for (int c = 6; c > 3; c--) {  
      b = 0;  
      while (b < c) {  
        b = b + 1;  
        a = a + b;  
      }  
      b = b + a;  
    }  
    System.out.print(b);  
  }  
}  
   
65

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970891)

1. Array declarations and instantiations (1D and 2D)
   * Which of the following would correctly declare and instantiate an array of 5 floats?  Choose all that apply.

a) float[4] values = new float[4];   
b) float[] values = new float[6];   
c) float[] values = float[5];   
d) float[6] values = new float[];   
e) float[] values = new float[5];   
f) float[5] values = new float[];   
g) float[6] values = new float[6];   
h) none of these   
i) float[] values = float[6];   
j) float[] values = new float[4];   
k) float[5] values = new float[5];   
l) float[] values = float[4];   
m) float[4] values = new float[];

* + Which of the following would correctly declare and instantiate a 2D array with a total of 48 floats? Choose all that apply.

a) none of these   
b) float[,] values = float[4,8];   
c) float[,] values = float[2,24];   
d) float[][] values = new float[8][6];   
e) float[][] values = new float[6][8];   
f) float[6] values = new float[8];   
g) float[12] values = new float[4]   
h) float[][] values = new float[4][12];   
i) float[] values = float[48];   
j) float[][] values = new float[12][4];   
k) float[48] values = new float[48];   
l) float[3] values = new float[16];   
m) float[][] values = new float[48];

1. Access array elements by index
   * Given the following declaration:

int[] values = {4,60,19,57,80,97,65,9,14,78};

Evaluate the following expression:

values[1]

60

* + Given the following declaration:

int[][] values = {  {4, 71, 26, 63},  
                    {18, 91, 45, 49},  
                    {79, 34, 85, 98}  
                 };

Evaluate the following expression:

values[1][2]

45

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/pages/practice-2d-arrays-by-index)

* + What is the output of the following code?

int[] values = {19,31,2,8,93,88,49,91,44,41};  
int i = 8;  
  
System.out.println(values[ i ] + 8);

52

1. Iterate over an array with a loop
   * Which of the following loops would correctly subtract 1 to each element stored in values? Choose all that apply   
     Group of answer choices

a)

for (int j = values.length; j > 0; j--)  
    values[j]--;

b)

for (int j = 0; j < values.length - 1; j++)  
    values[j]--;

c)

for (int j = values.length - 1; j >= 1; j--)  
    values[j]--;

d)

for (int j = 1; j < values.length; j++)  
    values[j]--;

e)

for (int j = values.length; j >= 0; j--)  
    values[j]--;

f)

for (int j = values.length - 1; j > 0; j--)  
    values[j]--;

g)

for (int j = 1; j < values.length - 1; j++)  
    values[j]--;

h)

for (int j = 0; j < values.length + 1; j++)  
    values[j]--;

i) none of these

1. Trace and evaluate code with arrays and loops
   * What is the output of this Java program?

class Driver {  
  public static void main(String[] args) {  
    int[] x = {4,7,1,8,5};  
    int n = x.length;  
  
    for (int j = n-1; j > 0; j--)  
      x[ j ] = x[ j-1 ];  
  
    for (int j = n-1; j > 1; j--)  
      System.out.print(x[ j ]);  
  }  
}

817

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970881)

1. Declare and instantiate an object of a class
   * Given the following class definition, which statements will instantiate an object of this class? Choose all that apply.

class Pet {  
  private int age;  
  private String species;  
  
  public Pet() {  
    this.age = 0;  
    this.species = species = "no species";  
  }  
  
  public Pet(int initAge, String initSpecies) {  
    this.age = initAge;  
    this.species = initSpecies;  
  }  
}

a) new Pet myPet = Pet();   
b) Pet myPet = new Pet("Cat");   
c) new Pet myPet = Pet();   
d) Pet myPet = new Pet();   
e) Pet yourPet = new Pet("Cat", 5);   
f) String yourPet = new Pet(3, "Dog");   
g) new yourPet = Pet("Dog", 3);   
h) none of these   
i) Pet myPet = new Pet("Dog", 5);   
j) Pet yourPet = new Pet(3, "Cat");

1. Evaluate a binary search
   * Given the following declaration: int[] list = {2,6,13,19,22,26,32,39,44,48,51,57,61,69,73};

Which value in the list will be the third to be compared to the target value in a binary search for the target value 11?

6

You can [practice this type of question here](https://canvas.asu.edu/courses/130469/quizzes/970876)

1. Write a method with flow control and arrays
   * Write a public method named minPlusMax that takes one argument and returns an integer.   
     The argument must be an array of integers.   
     The method must return the sum of the minimum and the maximum of the values in the array.   
     Your method must include at least one loop and at least one decision.

You do not need to write any class, or any other code besides the required method.

*public static int minPlusMax(int[] x){*

*int min = x[0];*

*int max = x[0];*

*for(int i =0; i < x.length; i++){*

*if(x[i] > max){*

*max = x[i];*

*}*

*if(x[i] < min){*

*min = x[i];*

*}*

*}*

*return max + min;*

*}*

1. Write a class
   * Complete the class definition below. You must implement the instance variables, constructor, and method. All instance variables should be private, and all methods should be public.

Your completed class must operate according to the example driver code and result in the correct output.

Example Driver Code:

...  
double height, width, length;  
... // assume height, width, length are assigned valid values  
Box myBox = new Box(height, width, length);  
if (myBox.isTall())  
    System.out.println("Box is taller than it is wide or long");  
else  
    System.out.println("Box is not taller than it is wide and long");  
...

Here is a partial class definition that you can copy and paste to start your answer bellow.

public class Box  
{  
    // declare instance variables  
      
    // define parameterized constructor  
      
    // define required method  
      
}

*public class Box {*

*private double height, width, length;*

*public Box(double height, double width, double length) {*

*this.height = height;*

*this.width = width;*

*this.length = length;*

*}*

*public boolean isTall(){*

*if ((height > width) && (height > length)) {*

*return true;*

*}*

*return false;*

*}*

*}*