

1. a) List four legal identifier names

Legal identifiers are constants or variables that must begin with a letter and include numbers letters and a few certain special characters but it can not include a space

4 Legal identifiers:

randnum

firstname

secondproject

total\_num

- b) List four illegal identifier names and explain why each is illegal

Rand num -illegal because spaces should not be allowed

23firstname -should begin with a number

Ran}total -curly bases should not be allowed because it is a special character that is not allowed to be in an identifier

Total num -spaces are not allowed

2. a) In two statements, declare a variable named numBeads and assign its value 5

```
int numBeads;  
numBeads=5;
```

- b) In one statement, declare a variable named numBeads and assign it with the value 5

```
int numBeads=5;
```

3. a) What is the final value of yourNumber after the last statement executes?

```
int myNumber = 5;  
int yourNumber = 4;  
myNumber = yourNumber * 2;  
yourNumber = myNumber + 5;
```

The final value after the last statement executes is yourNumber = 13

This is because when **myNumber= yourNumber\*2**, yourNumber is assigned with the value 4 so  $2*4=8$

then **myNumber is newly assigned to the number 8**.

To find the value of **yourNumber that would be  $8+5=13$**

b) What is the final value of yourNumber after the last statement executes?

```
int myNumber;  
int yourNumber = 4;  
myNumber = yourNumber + 7;  
yourNumber = myNumber;
```

The final value after the last statement executes is yourNumber = 11

This is because myNumber is not originally assigned with the value so to get assigned a value from the line **myNumber = yourNumber+7** so that ends up being  $4+7=11$

After myNumber is assigned with a value of 11 it is put into the line **yourNumber = myNumber** and that becomes **11**

4. Determine the appropriate data type for each of the following values:

a) The number of basketballs in a department store

The data type for this is integer

b) The price of a basketball

The data type is double

c) The average age of the players on a basketball team

The data type is double

e) whether a basketball player has received a jersey or not

The data type is boolean

f) the first initial of a basketball player's first name

The data type is char

5. What is the difference between a primitive data type and an abstract data type?

**Primitive data types** hold one simple piece of information, like a number, character, or true/false value.

**Abstract data types** group many pieces of information together and let you work with them in different ways, like with lists, stacks, or queues.

11. Using the following declarations, rewrite the statements to include the appropriate type casting, rounding where necessary. If type casting is not necessary, explain why:

```
Int j = 5;  
Double k = 1.6;  
Int y;  
Double z;
```

a)  $y = j * k$ ;

Rewritten version:  $y = (int)(j * k)$ ;

b)  $z = j * k$ ;

Casting is not needed because j is an int and k is a double and in java and when there is an int and a double the int gets automatically promoted to double

c)  $z = k * k$ ;

Casting is not needed because every single value in this line is a double

d)  $j = k$ ;

Rewritten version:  $j = (int) k$ ;

e)  $k = j$ ;

Casting is not needed because k is a double and j is an int so j would be automatically promoted to a double

f)  $y = j + 3$ ;

Casting is not needed because y and j are both ints so it would not be necessary to type cast anything

Chatgpt reference for everything in this chapter :

CRT: <https://chatgpt.com/share/68d30a70-52a8-8007-8904-b705987a06f8>

Digits application: <https://chatgpt.com/share/68d30ae5-b6a8-8007-89a5-4959034ba01e>

Coin counter: <https://chatgpt.com/share/68d30b1c-fa54-8007-88d5-e19d94a5969e>