Name _____

Primitive and `String` Variables

Write the following variable declarations.

1) An integer called **num**
2) An integer call **sum**
3) A real number called **product**
4) A real number called **amount**
5) An integer called **temp**
6) An integer called **count**
7) A string called **name**
8) A string called **title**

Write the following assignment statements for the given variables.

```
int number, temp;
double money;
String message;
```

9) Assign **6** to `number`
10) Assign **100** to `temp`
11) Add `temp` to `number` and store the value back in `number`
12) Assign **2** times `number` plus **18.6** to `money`
13) Assign the value **"Isn't this fun"** to `message`

Indicate which of the following are valid assignment statements. For those that are invalid, give the reason. Use the following variable declarations.

```
int age, iQ;
double income;
```

14) `age = 18;`
15) `income = 22000;`
16) `iQ = age + 100;`
17) `income = 100 * (age +iQ);`
18) `iQ = 120.5;`
19) `age = iQ / 3;`
20) `age + iQ = 150;`
21) `iQ = 3 * age;`
22) `age = 30.2;`
23) `income = income + 2000;`

For exercises 24 - 27, suppose `num1`, `num2`, and `temp` are declared as `int` variables. Indicate the contents of `num1`, `num2`, and `temp` at the end of each sequence of statements.

24.
```
num1 = 5;
num2 =  -2;
num1 = num1 + num2;
num2 = num2 - num1;
```

25.
```
num1 = 31;
num2 = 26;
temp = num1;
num1 = num2;
num2 = temp;
```

26.
```
num1 = 0;
num2 = 7;
num1 = num1 + num2 * (-3);
num2 = num2 + 4 * num1;
```

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Variables Worksheet 0

DIRECTIONS : Fill in each blank with the correct answer/output. Assume each statement happens in order and that one statement may affect the next statement.

```
char charOne = 'H';              //16 bit unsigned integer data type     0..65535
byte byteOne = 24;               //8 bit integer data type            -128..127
short notBig = 32767;            //16 bit integer data type         -32768..32767
int intOne = 327670;             //32 bit integer data type
long bigInt = 7;                 //64 bit integer data type

float littleDec = 32.22f;        //32 bit real number data type
double doubleOne = 123.456;      //64 bit real number data type
```

```
int x = 600;                 out.println(x);
x = -80;                     out.println(x);
byte b = 5;                  out.println(b);
short s = 32767;             out.println(s);
double d = 9.9;              out.println(d);
d = 5.2;                     out.println(d);
float f = 9.87f;             out.println(f);
long big = 555845;           out.println(big);
x = s;                       out.println(x);
x = b + 10;                  out.println(x);
int z = 'A'+ 1;              out.println(z);
char c = 'A' + 1;            out.println(c);
```

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9. _____
10. _____
11. _____
12. _____

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Variables Worksheet 1

DIRECTIONS : Fill in each blank with the correct answer/outpout. Assume each statement happens in order and that one statement may affect the next statement.

```
char cVar = 'H';              //16 bit unsigned integer data type     0..65535
byte bVar = 24;               //8 bit integer data type            -128..127
short notBig = 32767;         //16 bit integer data type         -32768..32767
int iVar = 327670;            //32 bit integer data type
long lVar = 7;                //64 bit integer data type

float fVar = 32.22f;          //32 bit real number data type
double dVar = 123.456;        //64 bit real number data type
```

If any statements cause an error, write ***ERROR*** in the blank and treat the line that caused the error as if it did not exist.

```
int x = 128;              out.println(x);   //1
x = -98;                  out.println(x);   //2
byte b = 24;              out.println(b);   //3
char c = 97;              out.println(c);   //4
double d = 9.9;           out.println(d);   //5
d = 5.2;                  out.println(d);   //6
float f = 9.87f;          out.println(f);   //7
short s = 350;            out.println(s);   //8
int z = 'A'+5;            out.println(z);   //9
c = 'A'+5;                out.println(c);   //10
double w = 'a'+5;         out.println(w);   //11
long u = 'A'-48;          out.println(u);   //12
w = f+5;                  out.println(w);   //13
b = (byte)x;              out.println(b);   //14
w = 'A' * 2.0;            out.println(w);   //15
f=w;                      out.println(f);   //16
u=982743L;                out.println(u);   //17
d = 3.2e2;                out.println(d);   //18
s=c;                      out.println(s);   //19
z = w;                    out.println(z);   //20
```

1. _____
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15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

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Variables Worksheet 2

DIRECTIONS : Fill in each blank with the correct answer/output.

```
char          //16 bit unsigned integer data type     0..65535
byte          //8 bit integer data type             -128..127
short         //16 bit integer data type          -32768..32767
int           //32 bit integer data type        -2billion+8. . .+2billion+7
long          //64 bit integer data type

float         //32 bit real number data type
double        //64 bit real number data type
```

DataType compatability RULE – large types can usually store small types
32 is a divisor of 64
EXCEPTION – integer types cannot store decimals without a cast

In the blanks below, write in the data types that could fill the blank that would not require a cast.

1. `char c = < blank >` _____

2. `byte b = < blank >` _____

3. `short s = < blank >` _____

4. `int i = < blank >` _____

5. `long r = < blank >` _____

6. `float f = < blank >` _____

7. `double d = < blank >` _____

8. `int a = (int)56.67;  out.println(a);` _____

9. `long u = (int)56.67; out.println(u);` _____

10. `char p = 'A'+100;  out.println((int)p);` _____

11. `double g = 56.67d;  out.println(g);` _____

12. `float v = (int)56.67;  out.println(v);` _____