

1. List the following in order from smallest data type to largest data type based on the kind of numbers that can be stored.

byte, double, float, int, long, short

byte, short, int, float, double and long

2. Which of the following data types require the same amount of memory?

byte, double, float, int, long, short

double and long

3. Show the result for each of the following:

a. $17 / 9$ **1**

b. $17 \% 9$ **8**

c. $56 \% 6$ **2**

d. $-34 / 5$ **-6**

e. $-34 \% 5$ **-4**

f. $-34 / -5$ **6**

g. $-34 \% -5$ **4**

4. If today is Tuesday, what will be the day in 100 days?

Thursday

5. What is the result of $25 / 4$? How would you rewrite the expression if you wished the result to be a floating-point number?

$$6.25 - 25.0 / 4.0$$

6. Write a statement to display the result of $5^{19.5}$.

```
double num = 5e19.5;  
System.out.println(num);
```

7. Which of the following are correct literals for floating-point numbers?

12.3
12.3E+2
~~25.4e-2~~
~~33.1~~
20.5

8. Which of the following are the same as 52.534?

5.2534E+1
0.52534e+2
525.34e-1
~~5.2534E-0~~

9. What are overflow and underflow errors? When do they occur?

Overflow is when a variable is assigned a value that is too large (in size) to be stored
Underflow is when a floating point number is too small (too close to zero) to be stored