01.04 Lab Solution

Instructions:

- Open **01.04-Lab-Solution.html** in your Editor. Check your Lab code against the solution found in the **script** tags.

1. Set the **y** value to produce console output that matches the comment:

```
let x = 10;
let y = 0;

y = -20;
console.log(x + y); // -10

y = 20;
console.log(x - y); // -10

y = .25;
console.log(x * y); // 2.5

y = 4;
console.log(x / y); // 2.5

y = 5;
console.log(x ** y); // 100000

y = 3;
console.log(x % y); // 1
```

2. Calculate the total cost, as shown in the comment:

```
let unitCost = 50;
let numUnits = 12;
let shipping = 25;
let totalCost = unitCost * numUnits + shipping;
console.log(totalCost); // 625
```

3. Calculate the values of z in terms of w, x and y to get the value shown in the comment:

```
let w = 10;
x = 12;
y = 15;
let z;

z = x * y + w;
console.log(z); // 190
```

```
z = w * x - y;
console.log(z); // 105

z = x * y / w;
console.log(z); // 18

z = w + x - y;
console.log(z); // 8

z = w * x / y;
console.log(z); // 7
```

4. Use the Math Object to generate a random integer between 0-19;

```
let r = Math.floor(Math.random() * 20);
console.log(r);
```

5. Use the Math Object to generate a random integer between 26-50;

```
let ran = Math.ceil(Math.random() * 25 + 25);
console.log(ran);
```

6. Use the Math Object to get the maximum value from these numbers: 3, 5, 21, 7, 1, 3, 12, 6

```
let m = Math.max(3, 5, 21, 7, 1, 3, 12, 6);
console.log(m); // 21
```

7. Use the Math Object to get the square root of 81.

```
let sqR = Math.sqrt(81);
console.log(sqR); // 9
```

8. Use a Math Object method that takes 9.99 as its argument and returns 9.

```
let fl = Math.floor(9.99);
console.log(fl); // 9
```

9. Supply values for x, y and expon so that the console.log output matches the comment next to it:

```

```

```
x = 14;
y = 2;
let expon = x ** y;
console.log(expon); // 196
```

10. The area of a circle equals PI times the radius squared: A = π r². Given a circle of radius 4, use the Math Object to find the area of the circle.

```
// area = π r²
let area = Math.PI * Math.pow(4, 2);
console.log(area); // 50.26548245743669

// OR use the ** operator:
area = Math.PI * (4 ** 2);
console.log(area); // 50.26548245743669
```

11. The hypotenuse (c) of a right triangle is obtained by the formula: a²+b²=c², where a and b are the other two sides.

```
// Using the Math Object, find the hypotenuse of a triangle, where a=5
and b=12.

// a²+b²=c²
let a = 5;
let b = 12;
// let c2 represent the square of the hypotenuse
let c2 = (5 ** 2) + (12 ** 2);
let c = Math.sqrt(c2);
console.log(c);
```

12. Generate two random floats, r1 and r2, in the 0-10 range. Round each of them off to 5 decimal places. Add them together.

```
let r1 = Math.random() * 10;
let r2 =Math.random() * 10;

// round to 3 decimal places
r1 = r1.toFixed(3);
r2 = r2.toFixed(3);
console.log(r1); // 9.202
console.log(r2); // 6.845

// HINTS: You cannot do addition with strings.

let sum = r1 + r2; // 9.2026.845 -- Oops! String concatenation!
```

```
// Try again, first converting r1 and r2 back to numbers:
r1 = Number(r1);
r2 = Number(r2);

sum = r1 + r2;
console.log(sum); // 16.047
```

13. Given this baseball player and his statistics:

    Player: Vladimir Guerrero Jr. Team: Toronto Blue Jays Year: 2021

    Stats: PA AB R H 2B 3B HR RBI 698 604 123 188 29 1 48 111

    Calculate Guerrero's Slugging Percentage (SLG), which equals total bases (TB) divided by at bats (AB): SLG = TB / AB. It is customary for SLG to be rounded to 3 decimal places.

    Total bases is the sum of a player's hits (H), plus their doubles (2B), plus twice their triples (3B), plus three times their home runs (HR): TB = H + 2B + (3B * 2) + (HR * 3)

```
// We don't need all the stats, but make vars of the ones we do need:
let AB = 604;
let H = 188;
let _2B = 29;
let _3B = 1;
let HR = 48;

// Calculate Total Bases (TB):
let TB = H + _2B + (_3B * 2) + (HR * 3);
console.log(TB); // 363

// Calculate Slugging Percentage (SLG):
let SLG = TB / AB;
console.log(SLG); // 0.6009933774834437

// Round to 3 decimal places
SLG = SLG.toFixed(3);
console.log(SLG); // 0.601
```

EXAMPLE / HINT (but only if you need it)

A player has 100 hits, including 17 2B, 4 3B and 19 HR, they have 182 TB: 100 + 17 + (4 * 2) + (19 * 3) = 100 + 17 + 8 + 57 = 182

It took the player 350 AB to amass these 182 TB. Therefore, they have a slugging percentage of 0.520: 100 / 350 = 0.52

- **END Lab Solution 01.04**
- **NEXT Lesson 02.01**