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Activity 4: Combined Operators Questions using Javascript

Instruction: Kindly read each number and show your code and output per questions.

1. **Calculating Total Cost:**

   - If the itemPrice is 50 and quantity is 3, what is the value of totalCost after calculating itemPrice * quantity? Show your calculation.

   Code

   number1.js

```
var itemPrice = 50;
var quantity = 3;

totalCost = itemPrice*quantity;

//totalCost = 50*3
//totalCost = 150

console.log(totalCost);
```

   Output

```
[Running] node "c:\Users\chrys\Documents\3RD
150

[Done] exited with code=0 in 0.148 seconds
```

2. **Score Adjustment:**

   - Starting with a score of 85, if you receive a bonus of 15 points and then lose 5 points, what is the final value of finalScore? How did you arrive at this number?

   Code

   number1.js | number2.js

```
var score = 85;
var bonus = 15;

finalScore = score + bonus - 5;
//finalScore = 85 + 15 - 5
//finalScore = 100 - 5
//finalScore = 95

console.log("Initial Score:   "+ score + "pts");
console.log("Bonus Score:   "+ bonus + "pts");
console.log("Final Score:   "+ finalScore + "pts");
```

Output

```
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1S
Initial Score:   85pts
Bonus Score:   15pts
Final Score:   95pts
```

3. **Temperature Conversion:**

   - Given that the temperature is 30 degrees Celsius, what is the equivalent temperature in Fahrenheit using the formula (Celsius * 9/5) + 32? Calculate and provide the result.

Code

number1.js | number2.js | number3.js

```
1
2   var c = 30;
3   f = (c * 9 /5) + 32;
4   // f = (30 * 9 /5) +32
5   // f = 54 +32
6   // f = 86
7
8   console.log("Degree in Celsius:    " + c + "°C");
9   console.log("Degree in Farenheit:   " + f + "°F");
```

Output

```
[Running] node "c:\Users\chrys\Documents\3
Degree in Celsius:    30°C
Degree in Farenheit:   86°F
```

4. **Inventory Management:**

   - If you start with itemsInStock = 50, sell 15 items, and then restock with 20 items, what will your final itemsInStock be? Show your calculations step-by-step.

Code

number1.js | number2.js | number3.js | number4.js

```
1
2   var itemsInStock = 50;
3   var sold = 15;
4   var restock = 20;
5   var updateStock = itemsInStock - sold + restock;
6   //updateStock = 50 - 15 + 20
7   //updateStock = 35 + 20
8   //updateStock = 55
9
10  console.log("Items in Stock:    " + itemsInStock + " items");
11  console.log("Items Sold:    " + sold + " items");
12  console.log("Items Restock:    " + restock + " items\n");
13
14  console.log("Current Items in Stock:    " + updateStock + " items");
```

Output

```
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1
Items in Stock:    50 items
Items Sold:    15 items
Items Restock:    20 items

Current Items in Stock:    55 items
```

5. **Age Comparison:**

   - If your age is 17, what message will be logged when checking if you are at least 18 years old? Explain why that message is logged.

Code

number1.js | number2.js | number3.js | number4.js | number5.js

number5.js > ...

```
1
2   var minAge = 18
3   let userAge = 17
4
5   console.log("User Age:  " + userAge + " yrs. old")
6
7   if (userAge >= 18){
8       console.log("You are in legal age");
9   }
10  else{
11      console.log("Oops! You are not in of legal age");
12      //The user's age did not meet the minimum age requirement
13      //in the first condition so this will be the output.
14  }
```

Output

```
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1
User Age:  17 yrs. old
Oops! You are not in of legal age

[Done] exited with code=0 in 0.18 seconds
```

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6. **Investment Growth with Monthly Contributions:**

   - You start with an investment of $5000. Each month, you contribute an additional $300. If your investment grows at an annual interest rate of 6%, compounded monthly, what will your total balance be after 5 years? Provide the calculations for the interest accrued and total contributions.

Code and Output

number6.js | number7.js | number8.js | number9.js | number10.js

number6.js > ...

```
1
2   let initialInvestment = 5000; // Initial investment
3   let monthlyContribution = 300; // Monthly contribution
4   let annualIR = 0.06; // Annual interest rate (6%)
5   let months = 60; // Total months (5 years)
6
7   // Start with the initial investment
8   let totalBalance = initialInvestment;
9   // Total contributions including initial investment
10  let totalContributions = initialInvestment;
11
12  // Monthly interest rate
13  let monthlyInterestRate = annualIR / 12;
14
15  // Loop to calculate the total balance with added monthly contribution
16  for (let i = 1; i <= months; i++) {
17      // Add monthly contribution to the balance
18      totalBalance += monthlyContribution;
19      // Add the contribution to the total contributions
20      totalContributions += monthlyContribution;
21      // Calculate and add interest
22      totalBalance += totalBalance * monthlyInterestRate;
23  }
24
25  // Calculate the interest earned
26  let interestEarned = totalBalance - totalContributions;
27
28
29  console.log("Total Contributions: $" + totalContributions.toFixed(2));
30  console.log("Total Balance: $" + totalBalance.toFixed(2));
31  console.log("Interest Accrued: $" + interestEarned.toFixed(2));
32
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1ST SEM\WEB DEVELOPMENT\Act 4
Total Contributions: $23000.00
Total Balance: $27779.91
Interest Accrued: $4779.91

[Done] exited with code=0 in 0.064 seconds
```

7. **Distance Traveled with Varying Speeds:**

   - A cyclist travels at a speed of 20 km/h for the first 2 hours, then increases their speed to 25 km/h for the next 1.5 hours. After that, they take a 30-minute break. Finally, they ride at a speed of 15 km/h for the remaining distance of 10 km. Calculate the total distance traveled and total time spent on the journey.

Code

number6.js | number7.js

number7.js > ...

```
1
2   var travelSpeed = 20;
3   var firsthr = 2;
4   firstDistance = travelSpeed * firsthr;
5   //firstDistance = 20 * 2
6   //firstDistance = 40 km
7
8   var increaseSpeed = 25;
9   var secondhr = 1.5;
10  secondDistance = increaseSpeed * secondhr;
11  //secondDistance = 25 * 1.5
12  //secondDistance = 37.5
13
14  var breakTime = 0.5; //30 mins
15
16  var lastSpeed = 15;
17  var thirdDistance = 10;
18  thirdhr = 10 / 15;
19  //thirdhr = 0.6666666666666666
20
21  //Calculation of Total Distance and Time Travelled
22  totalDistance = firstDistance + secondDistance + thirdDistance;
23  //totalDistance = 40 + 37.5 + 10
24  //totalDistance = 87.5
25
26  totalTime = firsthr + secondhr + breakTime + thirdhr;
27  //totalTime = 2 + 1.5 +  0.5 + 0.6666666666666666
28  //totalTime = 4.666666666666667
29
30  totalTime = totalTime.toFixed(2)
31  //totalTime = 4.67
32
33  console.log("Speed 1:    " + travelSpeed + " km/h");
34  console.log("Time:    " + firsthr + " hrs\n");
35
36  console.log("Speed 2:    " + increaseSpeed + " km/h");
37  console.log("Time:    " + secondhr + " hrs\n");
38
39  console.log("Speed 3:    " + lastSpeed + " km/h");
40  console.log("Time:    " + thirdhr + " hrs\n");
41
42  console.log("Distance Travelled:    " + totalDistance + " km");
43  console.log("Time Travelled:    " + totalTime + " km/h");
44
```

Output

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1ST SEM\WEB DEVELOPMENT\Ac
Speed 1:   20 km/h
Time:   2 hrs

Speed 2:   25 km/h
Time:   1.5 hrs

Speed 3:   15 km/h
Time:   0.6666666666666666 hrs

Distance Travelled:   87.5 km
Time Travelled:   4.67 km/h

[Done] exited with code=0 in 0.086 seconds
```

8. **Enhanced Game Scoring System:**

   - You begin with a score of 800. For every level completed (7 levels total), you gain 150 points and lose 30 points for penalties. Additionally, if you reach a score of 1200, you receive a bonus of 100 points. What will your final score be after all levels are completed?

Code and Output

number6.js | number7.js | number8.js | number9.js | number10.js

number8.js > ...

```
1
2
3   var initialScore = 800;
4
5   const ptsPerLevel = 150;
6   const penaltyPerLevel = 30;
7
8   const scoreReach = 1200;
9   const bonusPts = 100;
10
11  let totalLevels = 7;
12
13  //Calculation of scores per level
14  for (let level = 1; level <= totalLevels; level++) {
15      // Add points for completing the level and subtract penalties per level
16      initialScore += ptsPerLevel - penaltyPerLevel;
17
18      //Calculation of added bonus points
19      // Check for bonus after each level
20      if (initialScore == scoreReach) {
21          initialScore += bonusPts;
22          // Apply bonus only once
23          break; // Stop checking for further levels
24      }else{
25          continue;
26      }
27  }
28
29  // Final score
30  console.log("Final Score: " + initialScore);
31
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1ST SEM\WEB DEVELOPMENT\Act 4\number8.js"
Final Score: 1640

[Done] exited with code=0 in 0.082 seconds
```

9. **Comparative Age Analysis:**

   - Given the ages: age1 = 25, age2 = 30, age3 = 22, and age4 = 29, determine which person is the oldest and how much older they are than the others. Use comparison operators to assess the differences and log appropriate messages for each comparison.

Code

number6.js | number7.js | number8.js | number9.js

number9.js > ...

```
let age1 = 25;
let age2 = 30;
let age3 = 22;
let age4 = 29;

//To identify the oldest age
let oldestAge = Math.max(age1, age2, age3, age4);
console.log("The oldest age is:     " + oldestAge + "\n");

//To calculate the difference of oldest age and other ages.
switch (oldestAge) {
    case age1:
        console.log("Person 1 is the oldest. He or she is :");
        console.log("Person 1 is " + (oldestAge - age1) + " years older than Person 1");
        console.log("Person 1 is " + (oldestAge - age2) + " years older than Person 2");
        console.log("Person 1 is " + (oldestAge - age3) + " years older than Person 3");
        break;
    case age2:
        console.log("Person 2 is the oldest. \n");
        console.log("Person 2 is " + (oldestAge - age1) + " years older than Person 1");
        console.log("Person 2 is " + (oldestAge - age3) + " years older than Person 3");
        console.log("Person 2 is " + (oldestAge - age4) + " years older than Person 4");
        break;
    case age3:
        console.log("Person 3 is the oldest. He or she is :");
        console.log("Person 3 is " + (oldestAge - age1) + " years older than Person 1");
        console.log("Person 3 is " + (oldestAge - age2) + " years older than Person 2");
        console.log("Person 3 is " + (oldestAge - age4) + " years older than Person 4");
        break;
    case age4:
        console.log("Person 4 is the oldest. He or she is :");
        console.log("Person 4 is " + (oldestAge - age1) + " years older than Person 1");
        console.log("Person 4 is " + (oldestAge - age2) + " years older than Person 2");
        console.log("Person 4 is " + (oldestAge - age3) + " years older than Person 3");
        break;
    default:
        console.log("Sorry, we can't find the difference");
}
```

Output

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
[Running] node "c:\Users\chrys\Documents\3RD YEAR\1ST SEM\WEB DEVELOPMENT\Act 4\number9.js"
The oldest age is:     30

Person 2 is the oldest.

Person 2 is 5 years older than Person 1
Person 2 is 8 years older than Person 3
Person 2 is 1 years older than Person 4

[Done] exited with code=0 in 0.155 seconds
```

10. **Dynamic Countdown Timer with Complex Conditions:**

- Starting with a count of 50, log the current count and decrement it. If the count is divisible by 5, you double the count before logging it. If the count is odd, subtract 1. How many times will you log a value before reaching 0, and what values will be logged during the countdown?

Code

```
JS number6.js  JS number7.js  JS number8.js  JS number9.js  JS number10.js ×
JS number10.js > ...
1
2   let startCount = 50;
3   let logCount = 0;
4
5   for (; startCount > 0; ) {
6       // If startCount is divisible by 5, double it
7       if (startCount % 5 === 0) {
8           startCount *= 2;
9       }
10      // Log the current startCount
11      console.log("Current count: " + startCount);
12      logCount++;
13
14      // Then, Decrement the startCount
15      startCount--;
16
17      // If count is odd, subtract 1
18      if (startCount % 2 !== 0) {
19          startCount--;
20      }
21  }
22
23  // Total logCount will be infinity since the startCount is doubled
24      //everytime it is divisible by 5 and only subtracts to 1 if its odd
25
26  console.log("Total values logged: " + logCount);
```

Output

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
Current count: Infinity
```