1 Operators, expressions

1. What is the value of `result` when the following code is executed?

```
1        int result = 29 % 5;
```

Solution: 4

2. What is the value of `result` when the following code is executed?

```
1        int result = 17 / 5;
```

Solution: 3

3. What is the value of `result` when the following code is executed?

```
1        float result = 17 / 5;
```

Solution: 3 (or 3.0)

4. What is the value of `result` when the following code is executed?

```
1        float result = 17 / 5.0;
```

Solution: 3.4

5. What is the value of `result` when the following code is executed?

```
1        boolean result = 5 > 3 && 6 < 4 && 3 == 3;
```

Solution: false

6. What is the value of `result` when the following code is executed?

```
1        boolean result = (true && true) || (true && false);
```

Solution: true

7. What is the value of `result` when the following code is executed?

```
1        boolean e1 = (15/4 == 3);
2        boolean e2 = (6%4 == 2);
3        boolean result = e1 && e2;
```

Solution: true (e1 and e2 are both true)

8. What is the value of `result` when the following code is executed?

```
1        boolean result = 5 > 3 || 6 < 4 && 3 == 3;
```

Solution: true

9. Write an expression that adds 5 to the product of 2 and 7.

Solution:

```
1 2 * 7 + 5 (or 5 + 2 * 7)
```

10. Write an expression that multiplies the sum of 2 and 7 by 5.

Solution:

```
1 5 * (2 + 7)
```

11. Write an expression that evaluates to the last digit of a given integer `n` (assume the given integer is not negative).

Solution:

```
1 n % 10
```

12. Write an expression that evaluates to `true` if a given integer `n` is between 1 and 6 (including 1 and 6), otherwise evaluates to `false`.

Solution:

```
n >= 1 && n <= 6
```

13. Write an expression that evaluates to `true` if a given integer is outside the range [1...6] (including 1 and 6), otherwise evaluates to `false`.

Solution:

```
n < 1 || n > 6
or
!(n >= 1 && n <= 6)
```

14. Write an assignment statement that assigns, to a `boolean` variable `result`, `true` if two `boolean` values $e1$ and $e2$ are different, otherwise`false`. This is known as the `XOR` operator.

Solution:

```
1 boolean result = (e1 != e2); //brackets for clarity
```

15. Write an expression that evaluates to `true` if a given integer `n` is a multiple of 3 but not a multiple of 27, otherwise evaluates to `false`.

Solution:

```
1 n % 3 == 0 && n % 27 != 0
```

a second way is,

```
1 n % 27 == 3 || n% 27 == 9
```

16. Write an assignment statement that assigns, to an integer variable `result`, the remainder when 57 is divided by 6.

Solution:

```
1 int result = 57 % 6;
```