

$$\frac{h}{h \cdot m} = \frac{0, m \cdot 1}{(0, 1)}$$

$$-8 \cdot 5 = -(8 \cdot 5) = -3$$

$$(0-5) \cdot 8 = (0 \cdot 8 - 5 \cdot 8 + 8) \cdot 8$$

$$= (-5+8) \cdot 8 = 3 \cdot 8 = 2$$

$$\frac{h}{h \cdot m} = \frac{0, m \cdot 1}{(0, 1)}$$

$$(8 \cdot 5 + 5) \cdot 8$$

$$(3+8) \cdot 5$$

$$8 \cdot 5$$

$$\frac{2}{2}$$

$$8 \cdot 5 = 2$$

$$10 = -0$$

$$-1 = +5$$

$$-2 = +3$$

$$-3 = +2$$

$$-4 = +1$$

$$-5 = +0$$

$$(0-8) \cdot 10 = (0 - 8 \cdot 10 + 80) \cdot 10$$

① $(a+b) \cdot c = (a \cdot c + b \cdot c) \cdot c$

② $(a-b) \cdot c = (a \cdot c - b \cdot c + c) \cdot c$

③ $(a \cdot b) \cdot c = (a \cdot c \cdot b \cdot c) \cdot c$

$$\begin{array}{r} 0 \ 12345 \\ -1 \ 12345 \\ \hline -2 \ 23451 \\ -3 \ 34512 \\ -4 \ 45123 \\ -5 \ 51234 \\ \hline 12345 \end{array}$$

$$\begin{array}{r} +0 \ 12345 \\ +1 \ 12345 \\ \hline +2 \ 51234 \\ +3 \ 45123 \\ +4 \ 34512 \\ +5 \ 23451 \\ \hline 12345 \end{array}$$

```
1. You are given two numbers n and k. You are required to rotate n k times to the right. If k is positive, rotate to the right i.e. remove rightmost digit and make it leftmost. For the reverse for negative value of k. Also k can have an absolute value larger than number of digits in n.
2. Take as input n and k.
3. Print the rotated number.
4. Note - Assume that the number of rotations will not cause leading 0's in the result. e.g. such an input will not be given
n = 12340056
k = 9
```

```
public static int rotateNumber(int num, int r) {
    int len = countDigitOfNumber(num);

    r = (r % len + len) % len;

    int a = num / (int) Math.pow(10, r);
    int b = num % (int) Math.pow(10, r);

    return (b * (int) Math.pow(10, len - r) + a);
}
```

$$2345678 \quad r=3, len=8$$

$$a = 12345$$

$$b = 678$$

$$(6 \times 10^5 + 9) = 6780000 + 12345$$

$$= 67812345$$

$$6 \times 10^{8-3} + 9$$

$$nsp = 4, nst = 7$$

$$\begin{array}{ccccccc} & & & & x & x & x & x \\ & & & & x & x & x & x \\ & & & & x & x & x & x \\ & & & & x & x & x & x \\ & & & & x & x & x & x \end{array}$$

$$\begin{array}{ccccccc} & & & & x & x & x & x & x \\ & & & & x & x & x & x & x \\ & & & & x & x & x & x & x \\ & & & & x & x & x & x & x \\ & & & & x & x & x & x & x \end{array}$$

n	nsp	nst
3	3	3
4	7	7
5	5	5
n	n	n

```
public static void pattern2(int n) {
    int nsp = n - 1, nst = 1;
    for (int r = 1; r <= n; r++) {
        for (int csp = 1; csp <= nsp; csp++)
            System.out.print(" ");
        for (int cst = 1; cst <= nst; cst++)
            System.out.print("x");
        nsp--;
        nst++;
        System.out.println();
    }
}
```

$$n=5, nsp=4, nst=1$$

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$$(x \ x)$$

$$\begin{array}{ccccccc} & & & & x \\ & & & & x & x & x \\ & & & & x & x & x & x \\ & & & & x & x & x & x & x \\ & & & & x & x & x & x & x & x \\ & & & & x & x & x & x & x & x & x \end{array}$$

n	nsp	nst
3	0	5
4	0	7
5	0	9
m	0	$(2 \times m - 1)$

$$(x \ x)$$

$$\begin{array}{ccccccc} x & x & x & x & x & x & x & x & x \\ - & x & x & x & x & x & x & x & x \\ - & - & x & x & x & x & x & x & x \\ - & - & - & x & x & x & x & x & x \end{array}$$

$$nsp = 0, nst = 1$$

$$nsp = 0, nst = h$$

n	nst	nsp
3	3	0
4	7	0
5	5	0
m	m	0

$$\begin{array}{ccccccc} - & - & - & x \\ - & - & x & x & x & x \\ - & x & x & x & x & x & x \\ x & x & x & x & x & x & x & x \end{array}$$

$$\begin{array}{ccccccc} x & x & x & x & x & x & x \\ - & x & x & x & x & x & x & x \\ - & - & x & x & x & x & x & x \\ - & - & - & x & x & x & x & x \end{array}$$

$$h = 7$$

