## Hard-Level Pseudocode MCQs – Arithmetic Operators

*Assume all variables are integers, division is integer division (floor), and overflow wraps around on fixed-width (e.g., 32-bit two's-complement).*

1.

```
a ← 2^30
b ← 2^30
c ← a + b - (a * b) / (a + b)
print c
```

A. 0

B. 2^30

C. 2^31

D. –2^31

---

2.

```
x ← 5
y ← 3
while (y * y <= x * x) do
   x ← x + 1
   y ← y * 2
end while
print x - y
```

A. –4

B. –3

C. 0

D. 3

---

3.

```
m ← 2147483647          // 2^31 - 1
m ← m + m + 2
m ← (m / 3) * 3 + 1
print m
```

A. –2147483647

B. –1

C. 1

D. 2147483647

4.

```
a ← 6
b ← 40
b ← b - (b / a) * a
a ← (a * a) / (b + 1)
print a + b
```

A. 11

B. 12

C. 13

D. 14

---

5.

```
p ← 1
q ← 1
for i ← 1 to 30 do
   p ← p * 2
   q ← q + p
end for
print q mod 1000
```

A. 647

B. 703

C. 751

D. 807

---

6.

```
n ← 987654321
sum ← 0
while n > 0 do
   sum ← sum + (n mod 10)
   n ← n / 10
end while
print (sum * sum) mod 1000
```

A. 81

B. 361

C. 441

D. 961

---

7.

```
x ← 0
for k ← 1 to 63 do
    x ← x + (k * k) mod (k + 1)
end for
print x
```

A. 2016

B. 2032

C. 2047

D. 2080

---

8.

```
a ← 2
b ← 33
c ← 1
while b > 0 do
    if b mod 2 = 1 then
        c ← c * a
    end if
    a ← a * a
    b ← b / 2
end while
print c mod 100
```

A. 2

B. 8

C. 32

D. 64

---

9.

```
s ← 0
for i ← 1 to 1000 do
    s ← s + (i * (i + 1)) / 2
end for
print s mod 100
```

A. 0

B. 50

C. 75

D. 100

---

10.

```
x ← –2147483648        // –2^31
y ← –1
z ← x / y
w ← x + y - z
print w
```

A. –2147483649

B. 2147483647

C. 0

D. 1

---

Answers (for your reference)

1 B  2 A  3 B  4 C  5 B  6 D  7 A  8 B  9 A  10 B