CDS-AFCAT 1 2025

SSBCrack EXAMS

LIVE

MATHS

NUMBER SYSTEM

CLASS 2

NAVJYOTI SIR

21 Oct 2024 Live Classes Schedule

8:00AM	21 OCTOBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	21 OCTOBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:30AM	MOCK PERSONAL INTERVIEWS	ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

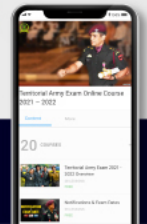
11:30AM	GK - POLITY - UT & CITIZENSHIP	RUBY MA'AM
1:00PM	CHEMISTRY - ELEMENTS-COMPOUNDS-MIXTURES	SHIVANGI MA'AM
4:00PM	MATHS - ANALYTICAL GEOMETRY 2D - CLASS 1	NAVJYOTI SIR
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 1	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

11:30AM	GK - POLITY - UT & CITIZENSHIP	RUBY MA'AM
1:00PM	CHEMISTRY - ELEMENTS-COMPOUNDS-MIXTURES	SHIVANGI MA'AM
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - NUMBER SYSTEM - CLASS 2	NAVJYOTI SIR

AFCAT 1 2025 LIVE CLASSES

4:00PM	STATIC GK - NATIONAL & INTERNATIONAL ORG & HQ	DIVYANSHU SIR
5:30PM	ENGLISH - IDIOMS & PHRASES - CLASS 1	ANURADHA MA'AM
7:00PM	MATHS - NUMBER SYSTEM - CLASS 2	NAVJYOTI SIR



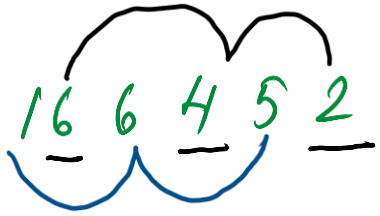
SSBCrack EXAMS

DIVISIBILITY RULES

Divisibility by 11

166452

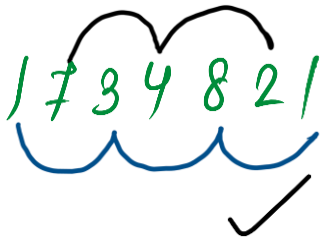
$6+4+2=12$



$1+6+5=12$

$12 - 12 = 0$

} If difference is 0 or multiple of 11, then number is divisible by 11.



$1+3+8+1 = 13$

$7+4+2 = 13$

$13 - 13 = 0$

Two groups of alternate digits Difference of their sum should be 0 or multiple of 11.

DIVISIBILITY RULES

Divisibility by 12

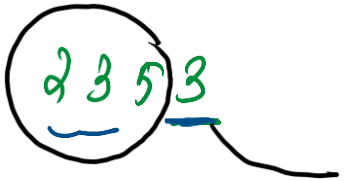
$12 = 3 \times 4$

should be divisible by both 3 and 4.

DIVISIBILITY RULES

Divisibility by 13

2353



$235 + 4 \times 3 = 235 + 12 = 247$

$24 + 4 \times 7 = 24 + 28 = 52$

multiple of 13,

2353 is divisible by 13.

DIVISIBILITY RULES

Divisibility by 16

→ Last 4 digits should be divisible by 16.

178256 ⟶ divisible by 16 as 8256 is divisible by 16.

DIVISIBILITY RULES

Divisibility by 17

3587

3587

$358 - (7 \times 5) = 358 - 35 = 323$

$32 - 3 \times 5 = 32 - 15$

$= 17$ ✓

DIVISIBILITY RULES

Divisibility by 25 and 125

25 ⟶ Number should end with 25.

125 ⟶ " " " 125.

SSBCrack EXAMS

DIVIDING $a^n + b^n$ BY (a + b) and (a – b)

$n = odd$

$(a^n + b^n)$	$(a+b)$	$(a-b)$
	✓	✗

$n = even$

$a^n + b^n$		
	✗	✗

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

Dividing $a^n - b^n$

	$a+b$	$a-b$
n = odd		
$a^n - b^n$	✗	✓
n = even		
$a^n - b^n$	✓	✓

$$a^3 - b^3 = (a-b)(a^2+ab+b^2)$$

$$a^2 - b^2 = (a+b)(a-b)$$

OTHER RULES

- **Any number of the form ABAB is divisible by 101.**

$8787 = 87 \times 101$

- **Any number of the form ABCABC is divisible by 1001, 7, 11 and 13.**

$123123 = 123 \times 1001$

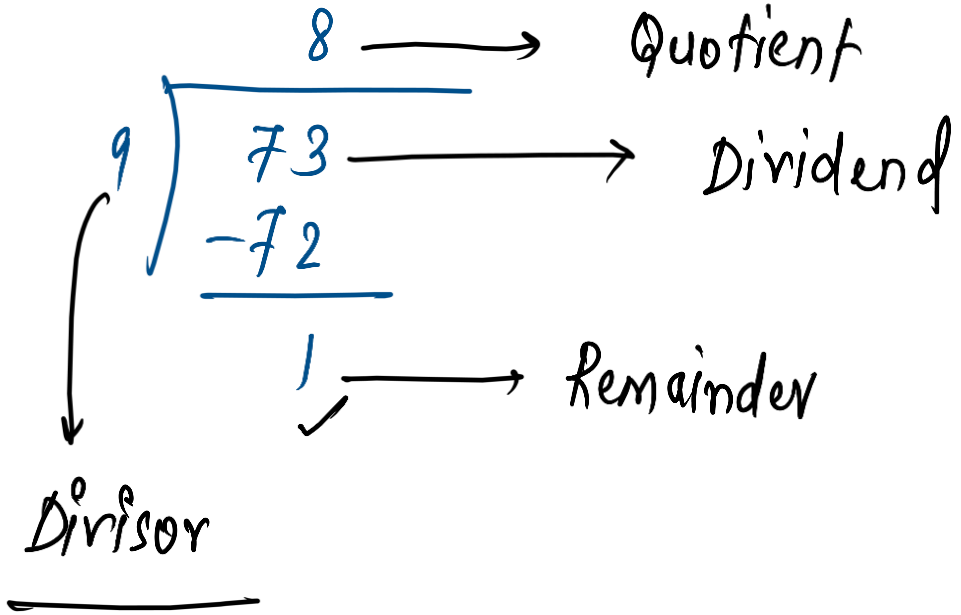
$= 123 \times (13 \times 7 \times 11)$

$1001 = 91 \times 11$

If a is divisible by b,
then a is also divisible by factors of b.

REMAINDER

Dividend = Divisor × Quotient + Remainder



REMAINDER

$$\frac{a^{P-1}}{P} = 1$$

P → prime number

a, p are co-prime,

$$\text{Rem}\left(\frac{40^{\underline{12}}}{13}\right) = 1$$

SSBCrack EXAMS

REMAINDER

$\frac{(P-1)!}{P} \rightarrow$ Remainder $= -1 = -1 + P = P - 1$

$P \rightarrow$ prime number

$4! = 4 \times 3 \times 2 \times 1 = 24$

$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$

$\frac{16!}{17} = -1 = -1 + 17 = 16$

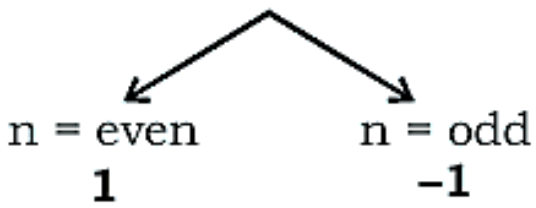
REMAINDER

$$\frac{(ax+k)^n}{a} = \text{Remainder} \rightarrow K^n$$

$$\frac{(ax+1)^n}{a} \rightarrow \text{Remainder} = 1^n = 1$$

$$\frac{(ax-k)^n}{a} \rightarrow \text{Remainder} = (-k)^n$$

$$\frac{(ax-1)^n}{a} \rightarrow \text{Remainder} = (-1)^n$$



$\frac{4^n}{6} \rightarrow \text{Rem} = 4$

$\frac{(6\times1-2)^n}{6} = (-2)^n = 4$

$-2 \quad 4 \quad | \quad -8 \quad 16 \quad | \quad -32 \quad 64$

$-2+6=4 \quad | \quad -8+12=4 \quad | \quad -32+36=4$

$\frac{(26)^{1000}}{25} = \frac{(25\times1+1)^{1000}}{25} \Rightarrow$ Remainder $\rightarrow \frac{1^{1000}}{25} = \frac{1}{25} \rightarrow 1$

UNIT DIGIT

$0 \longrightarrow 0$

$1 \longrightarrow 1$

$0^8 = 0$

$10^6 = \underline{0}$

$(230)^7 = \underline{0}$

unit digit of $(231)^{72138} = \underline{1}$ ✓

(2) ⟶

$2^1 = 2$

$2^2 = 4$

$2^3 = 8$

$2^4 = 16$

$2^5 = 32$

$2^6 = 64$

$2^7 = 128$

$2^8 = 256$

$(132)^{72}$

→ divide the power by 4, $72 \div 4 \longrightarrow$ Rem = 0

0 ⟶ 6

1 ⟶ 2

2 ⟶ 4

3 ⟶ 8

(3) $\longrightarrow$ $3^1 = 3$, $3^2 = 9$, $3^3 = 27$, $3^4 = 81$

$(173)^{286}$ $\longrightarrow$ divide power by 4 and check remainder,

$\text{Rem}(286 \div 4) = 2$ $\longrightarrow$ (9)

$0 \longrightarrow 1$

$1 \longrightarrow 3$

$2 \longrightarrow 9$

$3 \longrightarrow 7$

(4) $4^1 = 4$ $\quad 4^2 = 16$ $\quad 4^3 = 64$

(repeats after every 2nd)

$(2864)^{7231} \longrightarrow (4)$ | → divide power by 2 and check remainder

| power = odd ⟶ 4

| power = even ⟶ 6

(5) unit digit will always be 5.

(6) unit digit will always be 6.

UNIT DIGIT

(7)

$7^1 = 7$

$7^2 = 49$

$7^3 = 343$

$7^4 = 1$

Divide power by 4 and check remainder

$\left.\begin{array}{l} 0 \longrightarrow 1 \checkmark \\ 1 \longrightarrow 7 \\ 2 \longrightarrow 9 \\ 3 \longrightarrow 3 \end{array}\right\}$

(8)

$8^1 = 8$

$8^2 = 64$

$8^3 = 512$

$8^4 = 6$

Divide power by 4 and check remainder

$\left.\begin{array}{l} 0 \longrightarrow 6 \\ 1 \longrightarrow 8 \\ 2 \longrightarrow 4 \\ 3 \longrightarrow 2 \end{array}\right\}$

(9)

$9^1 = 9$

$9^2 = 81$

$9^3 = 729$

power = odd ⟶ 9

power = even ⟶ 1

Unit- digit

Same

ends with

0, 1, 5, 6

repeats after every fourth power

2, 3, 7, 8

repeats after 2nd power

power odd or even

4, 9

Number divided by 10,

remainder = unit digit of number

(number not ending with '0')

$10 \overline{)\ 467}$

$\overline{)\ 74392}$

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LIVE

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CLASS 3

NAVJYOTI SIR