
بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Part-II (General Ability) 40 Marks

VI. Quantitative Ability/Reasoning

· Basic Mathematical Skills.

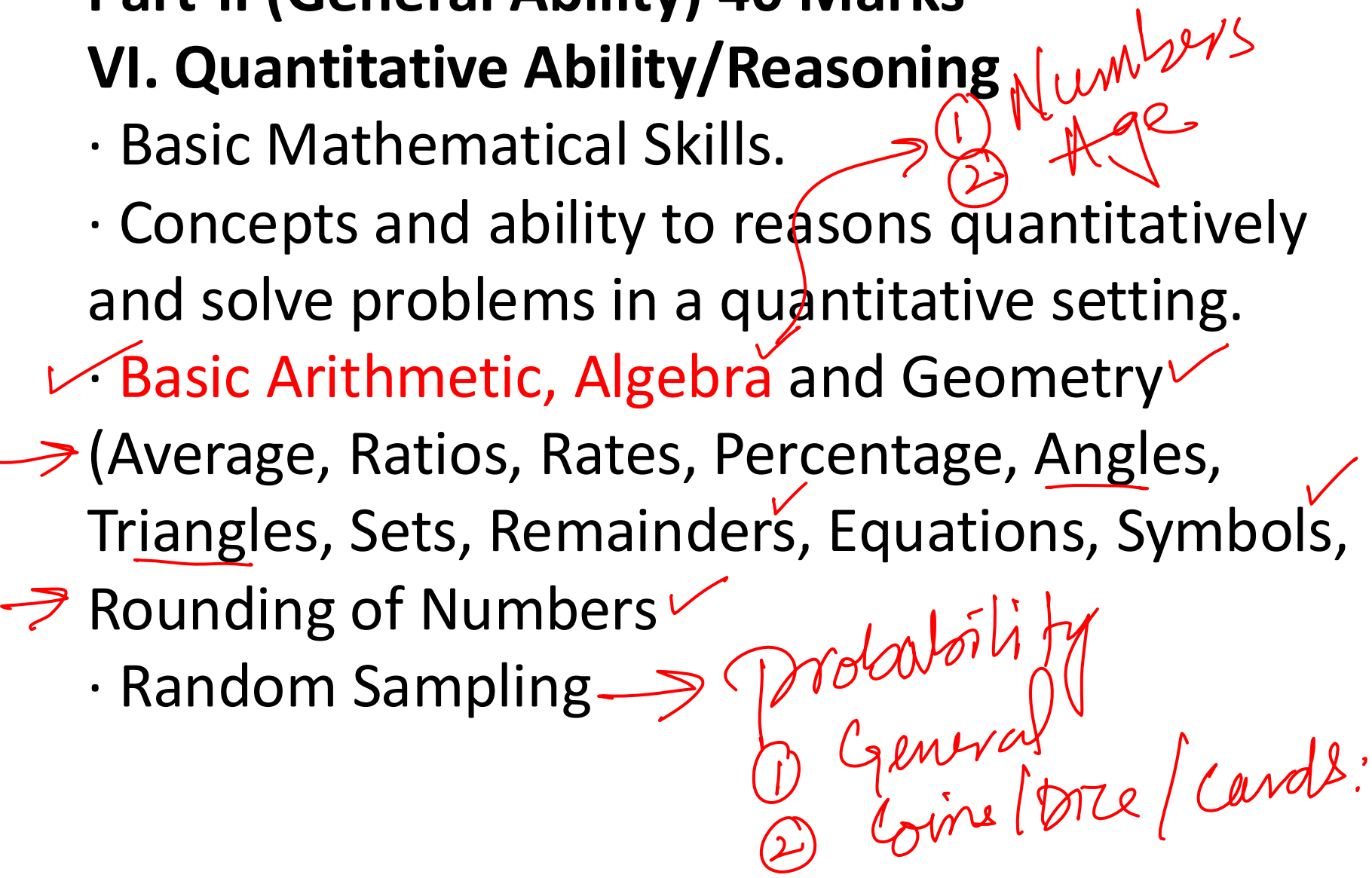
· Concepts and ability to reasons quantitatively and solve problems in a quantitative setting.

· Basic Arithmetic, Algebra and Geometry

(Average, Ratios, Rates, Percentage, Angles, Triangles, Sets, Remainders, Equations, Symbols,

Rounding of Numbers

· Random Sampling



VII. Logical Reasoning and Analytical Reasoning/Ability

· **Logical Reasoning** includes the process of using a rational, systematic series of steps based on sound mathematical procedures and given statements to arrive at a conclusion

· **Analytical Reasoning/Ability** includes visualizing, articulating and solving both complex and uncomplicated problems and concepts and making decisions that are sensible based on available information, including demonstration of the ability to apply logical thinking to gathering and analyzing information.

VIII. Mental Abilities

· Mental Abilities Scales that measures specific constructs such as verbal, mechanical, numerical and social ability.

① Consumption → (:

② Digestion → ✓

Analogy → Image/personality:

Evidence/Fact, example case/study:

P A C E R

P → Procedure → Math ✓ → practice ✓

A → Analogy → Image/personality:

C → Critique → SW, Police Method: Concept:

E → Evidence/Fact, example case/study:

R → Rehearsal → ✓

→ Math ?.

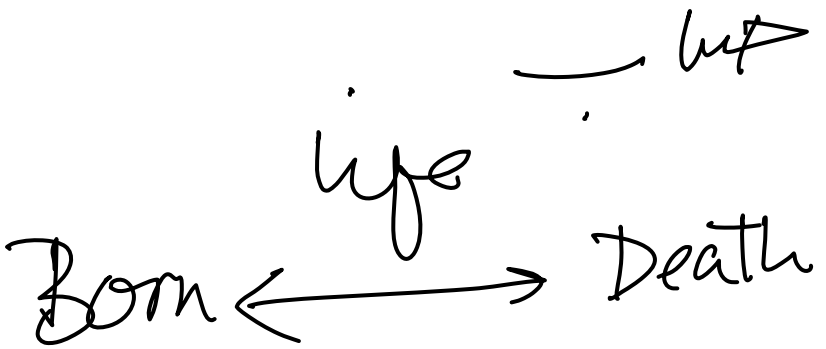
1. calculation ✓
2. equations
3. Shapes
4. Mental
5. Pattern/logics
6. Numbers ✓
7. Rules & Formula.

8. Language of God.

→ solar system:

↳ equilibrium

↳ Human structure



① Whole Numbers = [0, 1, 2, 3, 4, 5 ----]

② Natural No = [1, 2, 3, 4, 5 -----]

③ Even No = [2, 4, 6, 8, ----]

④ odd No = [1, 3, 5, 7, 9, ----]

⑤ prime No = [2, 3, 5, 7, 11, 13 ----]

2 Factors :
① Divided by itself ✓
② Divided by one ✓

① $\frac{N}{N}$	$\frac{2}{1} = 2$
② $\frac{N}{1}$	$\frac{2}{2} = 1$

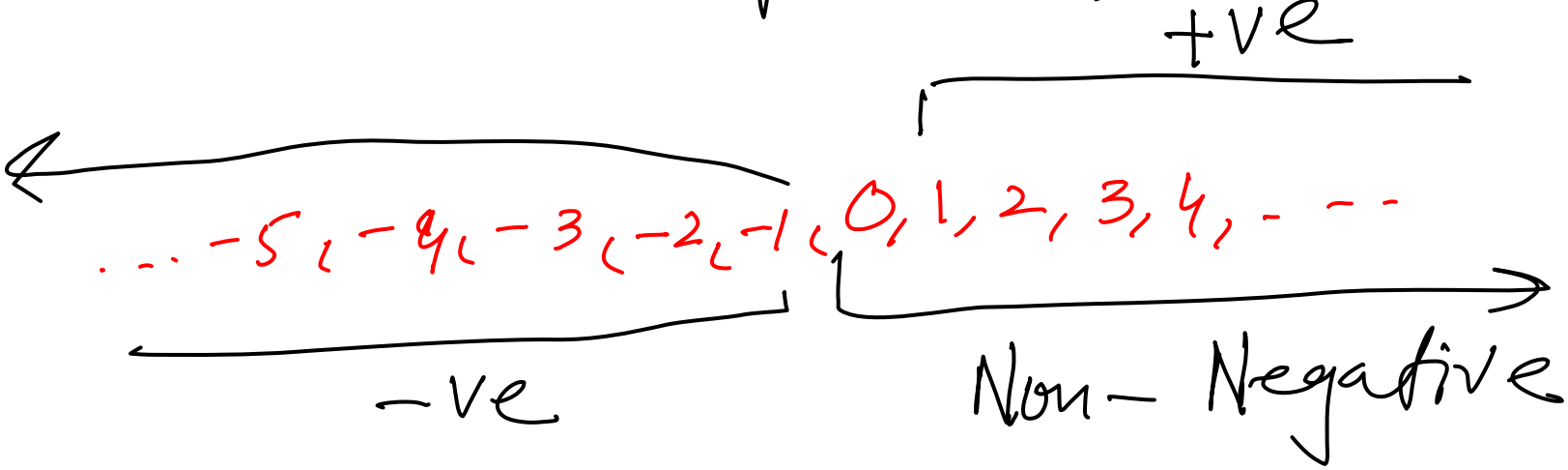
(6) Integers = [0, ±1, ±2, ±3, ±4 ----]

Positive integers = [+1, +2, +3, +4 ----] ✓

Negative integer = [−1, −2, −3, −4 ----]

Non-Negative integer = [0, 1, 2, 3, ----]

Zero ⇒ Boundry line b/w +ve & -ve.



eg(1) what is the sum of first four positive integer

Sol:- $1+2+3+4 \Rightarrow 10$ ✓

eg(2), what is the sum of first four non-negative integers.

Sol:- $0+1+2+3 \Rightarrow 6$ ✓

⇒ Real Numbers

① Rational Numbers: ✓

(A) In the form of p/q, $q \neq 0$

eg① $\frac{2}{3}, \frac{6}{7}, \frac{5}{13}, \frac{17}{3}$ ✓ ... | $\frac{1}{2} = 0.5$

(B) In Decimal form:

(i) Terminating (ii) Repeating ✓

a) 2.3456 (b) 3.066666....

eg ② $\frac{2}{6} \Rightarrow$

$$
\begin{array}{r}
0.33\ldots \\
6\,\overline{)\,20} \\
18 \\
\hline
20
\end{array}
$$

$$\frac{2}{6} = 0.333333\ldots$$

(2) Irrational Numbers

(A) in under root form

eg: $\sqrt{13}$, $\sqrt{23}$, ------ $\sqrt{5}$

(B) Decimal → Neither terminating nor repeating.

eg = $\pi = 3.14159$------

⇒ Under Root values:

① Square Root values: ⇒ $\sqrt{\ } = \frac{1}{2}$

ⓐ Perfect square root ✓

ⓑ Imperfect square Root

ⓐ Perfect square root,

Number → Two identical pairs

eg① $\sqrt{25} = \sqrt{5^2} = (5^2)^{\frac{1}{2}} = 5^{2\times\frac{1}{2}}$ ✓

$= 5^1 = 5$

$[25 = 5\times5 = 5^2]$

→ How to check a number for perfect square: Ans = Factorization

eg (2) $\sqrt{484} = \sqrt{22^2} = 22$

Ans: 2

2	484
2	242
11	121
11	11
	1

$484 = 2 \times 2 \times 11 \times 11$

$= (2 \times 11)(2 \times 11)$

$= (22)(22)$

$= 22^2$

(b) Imperfect square root values:

↳ Not having two identical pairs

eg(1) $\sqrt{13}$, $\sqrt{7}$ ⇒ $\text{logic} = \dfrac{x+y}{2\sqrt{y}}$

$2 \times 2 = 2^2$ → $3 \times 3 = 3^2$

eg(1) $\sqrt{7}$ (4), 5, 6, 7, 8, (9)

$x = 7$, $y = 9$ ⇒ $\dfrac{7+9}{2\sqrt{9}}$

$\Rightarrow \dfrac{16}{4 \times 3} = \dfrac{8}{3} = 2.66\ldots$

x → Whose square root is required

y → Nearest perfect square to x.

eg② $\sqrt{13} = 3.62$

$x = 13$

$y = 16$

$\Rightarrow \frac{x+y}{2\sqrt{y}} = \frac{13+16}{2\sqrt{16}} = \frac{29}{2\times 4}$ $\therefore \sqrt{16} = 4$

$= \frac{29}{8} = 3.625$

$$\begin{array}{r} 3.62 \\ 8\overline{)29} \\ \underline{24} \\ 50 \\ \underline{48} \\ 20 \end{array}$$

$3^2 = 3\times 3$ ⑨, 10, 11, 12, 13, 14, 15, ⑯

$4\times 4 = 4^2$

⇒ Cube Root values :—

① Perfect cube root values

② Imperfect cube root values.

① Perfect Cube Root :-

N = Three same pairs

eg ① $8 = 2 \times 2 \times 2 = 2^3$

$27 = 3 \times 3 \times 3 = 3^3$

$64 = 4 \times 4 \times 4 = 4^3$

$1 = 1^3 = 1$

$2^3 = 8$

$3^3 = 27$

$4^3 = 64$

$5^3 = 125$

$6^3 = 216$

$7^3 = 343$

$8^3 = 512$ ✓

$9^3 = 729$

$10^3 = 1000$

Number → check ??

↓

Factorization

(2) Imperfect cube root values:

$$\Rightarrow \sqrt[3]{x} = \sqrt[3]{y} + \frac{x-y}{3\left[\sqrt[3]{y}\right]^2}$$

$\Rightarrow x \Rightarrow$ whose cube root is required

y = Nearest perfect cube to x.

$$\sqrt[3]{\ } = \frac{1}{3}$$

eg① $\sqrt[3]{13}$, $\sqrt[3]{29}$, $\sqrt[3]{25}$

$\sqrt[3]{50}$

---

(1) (2) ✓

Missing Terms/Number Series

↓

Rule of equality

LHS = RHS

$5 \times (3 + 2) = (2 + 3) \times 5$

PEDMAS / BODMAS:

P/B → Bracket = [{( )}]

E/O = power/order/Exponent = $2^2 = 4$

D → ÷

M → X

A → +

S → −

$2+3\times4^2-(5-2)$

$2+3\times4^2-(3) \Rightarrow 2+3\times16-3$

$\Rightarrow 2+48-3 \Rightarrow 50-3 = 47$

Find the missing number to complete each sum

a. 9+8-5=2x(__)

b. 3x9-14=24-(__)

c. 15÷3x12=41+(__)

d. 24÷4+5=66÷(__)

e. 8x6-13+3=7x6-(__)

$9+8-5=2x(x)$

$17-5=2x$

$12=2x \Rightarrow x=\frac{12}{2}$

$x=6$

$8X6-13+3=7X6-(A)$

$48-13+3=42-A$

$48+3-13=42-A$

$51-13=42-A$

$38=42-A \Rightarrow A=42-38$

$A=4$

Number Series:

1. Increasing/Ascending
2. Decreasing/Descending

(1) Patterns ⇒ (a) Increasing order

↳ $+, \times, x^n$, mixed form

eg (a) 2, 4, 6, 8, 10

(b) Decreasing order

$-, \div, x^{-n}$, mixed form

eg (1) 18, 12, 6, 0, −6, −12, ...

(−6, −6, −6)

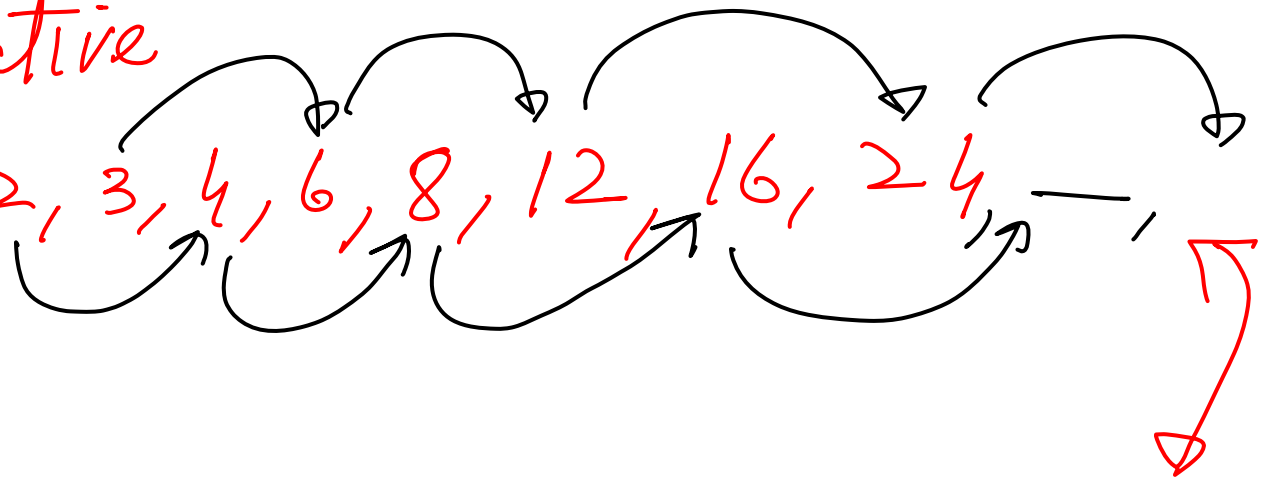
② Nature

(a) Consecutive

eg① 2, 4, 8, 16, 32, ---

(b) Alternative

eg① 2, 3, 4, 6, 8, 12, 16, 24, —,



(c) Pairs

eg① (2, 4) (3, 6), (4, 8), (5, 10) - -

Find the missing terms in given series

4, 12, 20, 28

+8 +8 +8

Pattern ① same
② Variable

2 2 2 2 2 2

2, 3, 4, 5, 6, 7

4, 9, 16, 25, 36, 49

+5 +7 +9 +11 +13

+2 +2 +2 +2

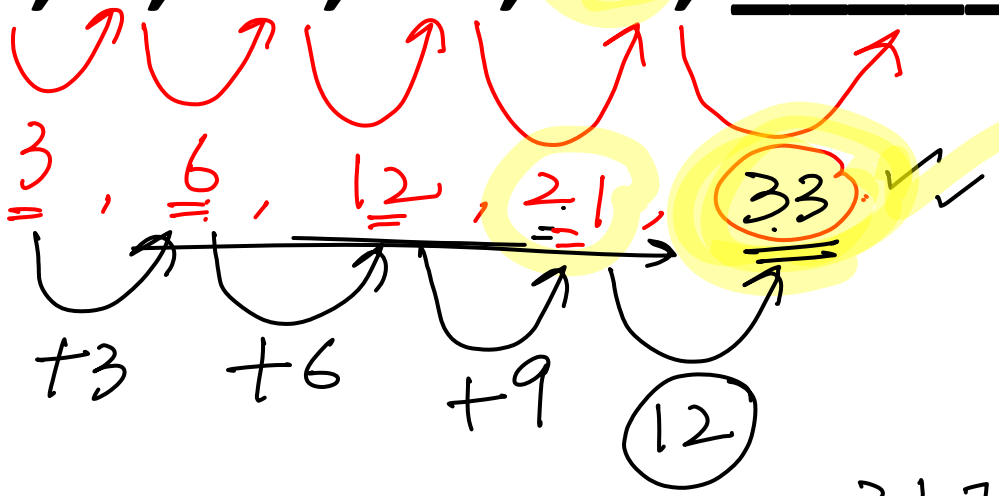
36
13
49

4, 8, 16, 32, 64

x2 x2 x2 x2

2, 5, 11, 23, 44, 77

+33

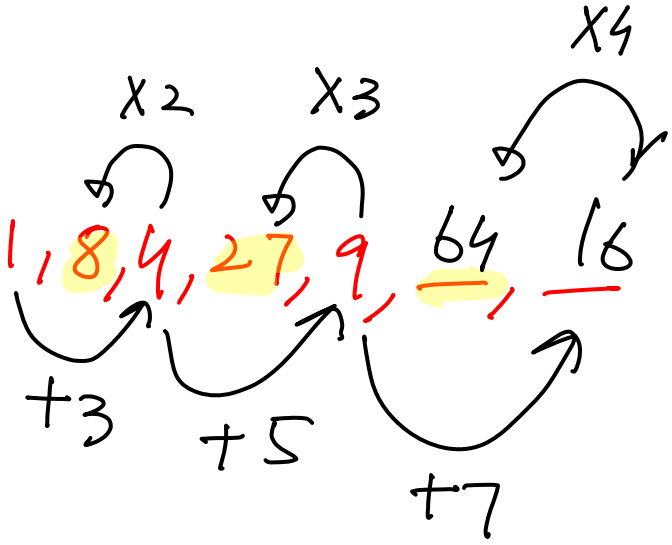


21
12
33

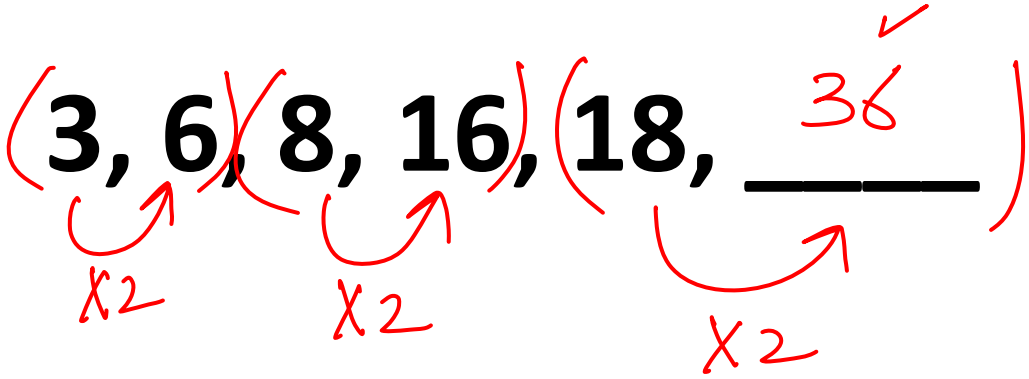
3X1 = 3
3X2 = 6
3X3 = 9 X (1) =
3X4 = 12
3X5 = 15 X
3X6 = 18 X [2]
3X7 = 21
3X8 = 24
3X9 = 27 [3]
3X10 = 30
3X11 = 33

→ 1, 8, 4, 27, 9, 64, 16

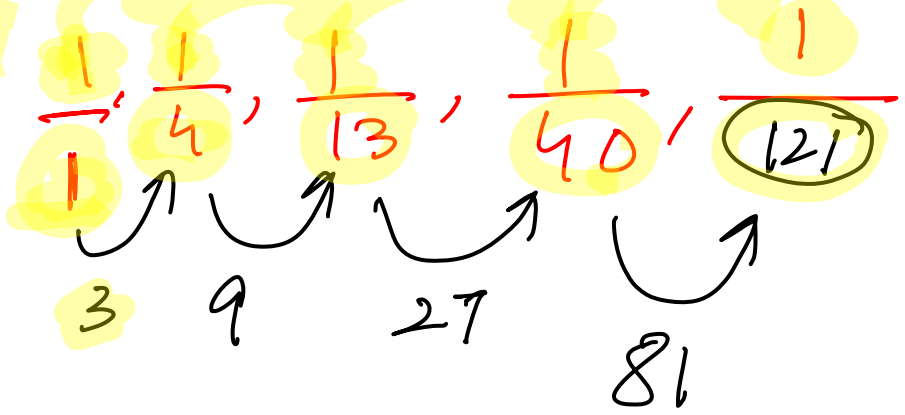
$1^3, 2^2, 3^3, 4^2, 5^3, 6^2$

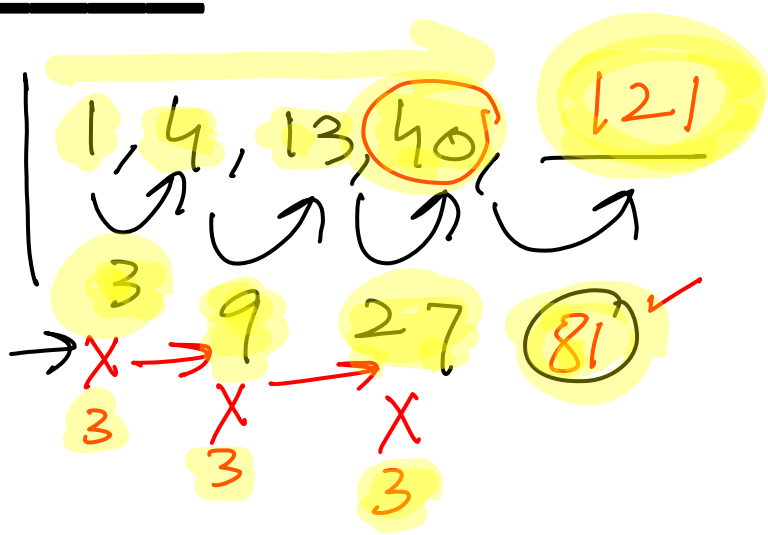


→ (3, 6), (8, 16), (18, 36)

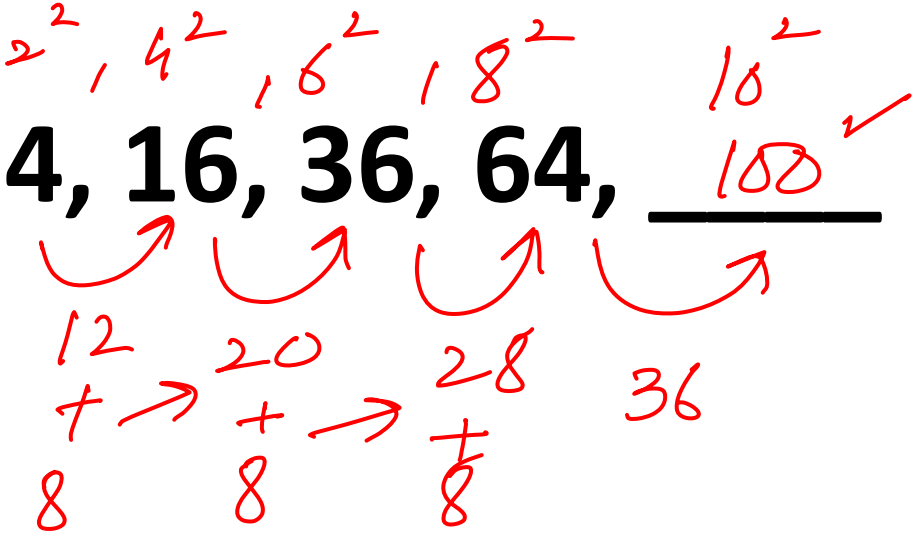


1, 1/4, 1/13, 1/40, _____





4, 16, 36, 64, _____



3,5,10,20,37 ____ 63 ✓

2 5 10 17 26 ✓

3 5 7 9

17
9
26+37 = 63 ✓

+6 +6 +6 +6

8,5,13,11,18,17,23,23,28 ____ 29

+5 +5 +5 +5

(8,5), (13,11), (18,17), (23,23), (28, 29) ✓

−3 −2 −1 0 +1

→

① $14 \times 2 = 28 - 1 = 27$

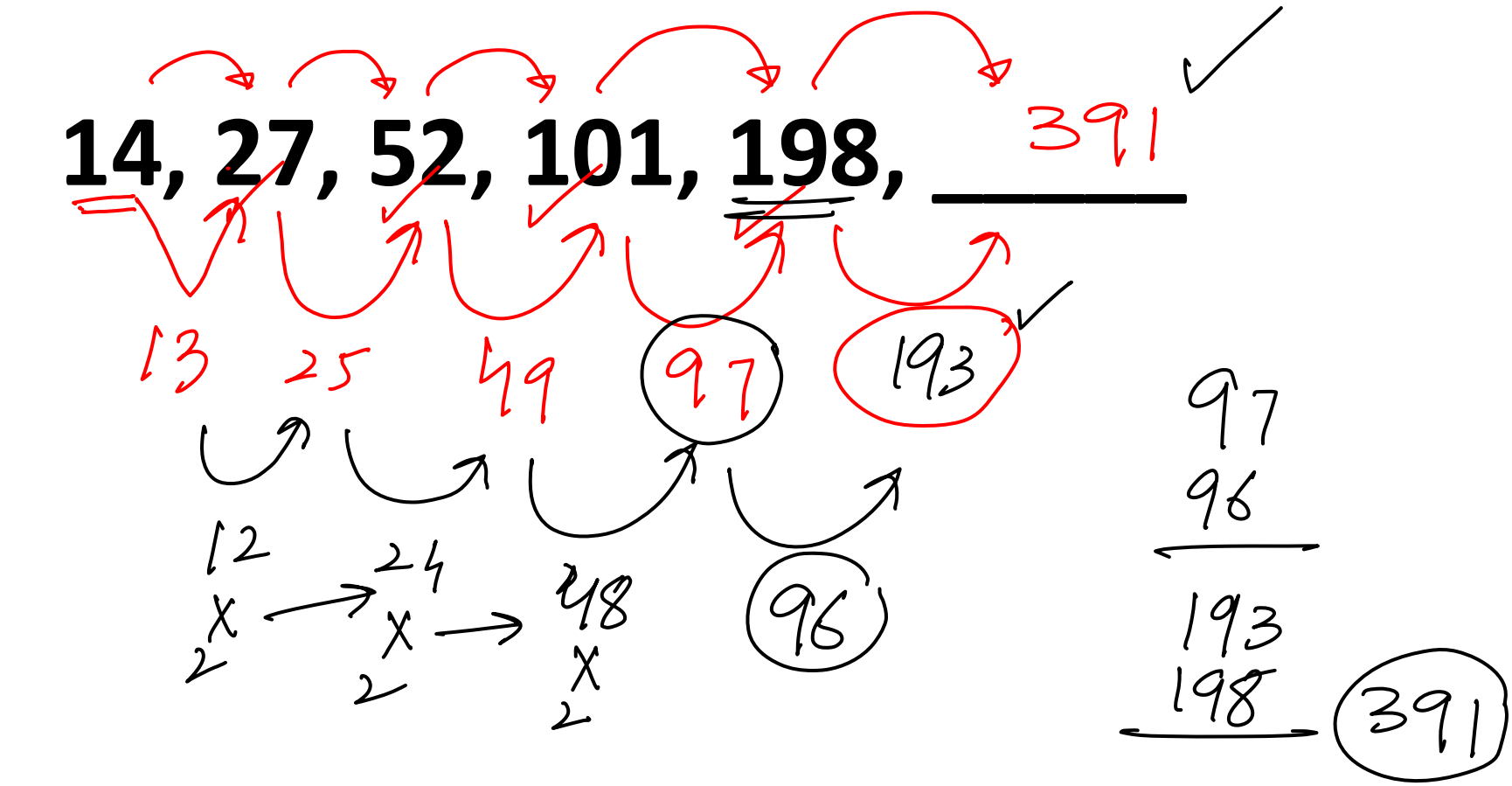
② $27 \times 2 = 54 - 2 = 52$

③ $52 \times 2 = 104 - 3 = 101$

④ $101 \times 2 = 202 - 4 = 198$

$198 \times 2 = 396 - 5 = 391$

14, 27, 52, 101, 198, _____



97
96
193
198
391

H.W

CSS-2021

a. 1, 8, 27, 64, 125, ___

b. 4, 18, ____, 100, 180, 294

c. 132, 156, ___, 210, 240

d. 8, 24, 12, 36, 18, 54, ____

e. 15, 31, 63, 127, ____

H.W

CSS-2024

Find the missing terms

a. 121, 11, 81, 9, ___, 7

b. 100, 50, 25, ___, 6.25

c. 4, 9, 64, 125, 1296, ___

d. 2, 5, 12, 24, 48, ___

e. 44, 22, 66, 33, 132, ___

Alphabetical Series
&
Coding/Decoding

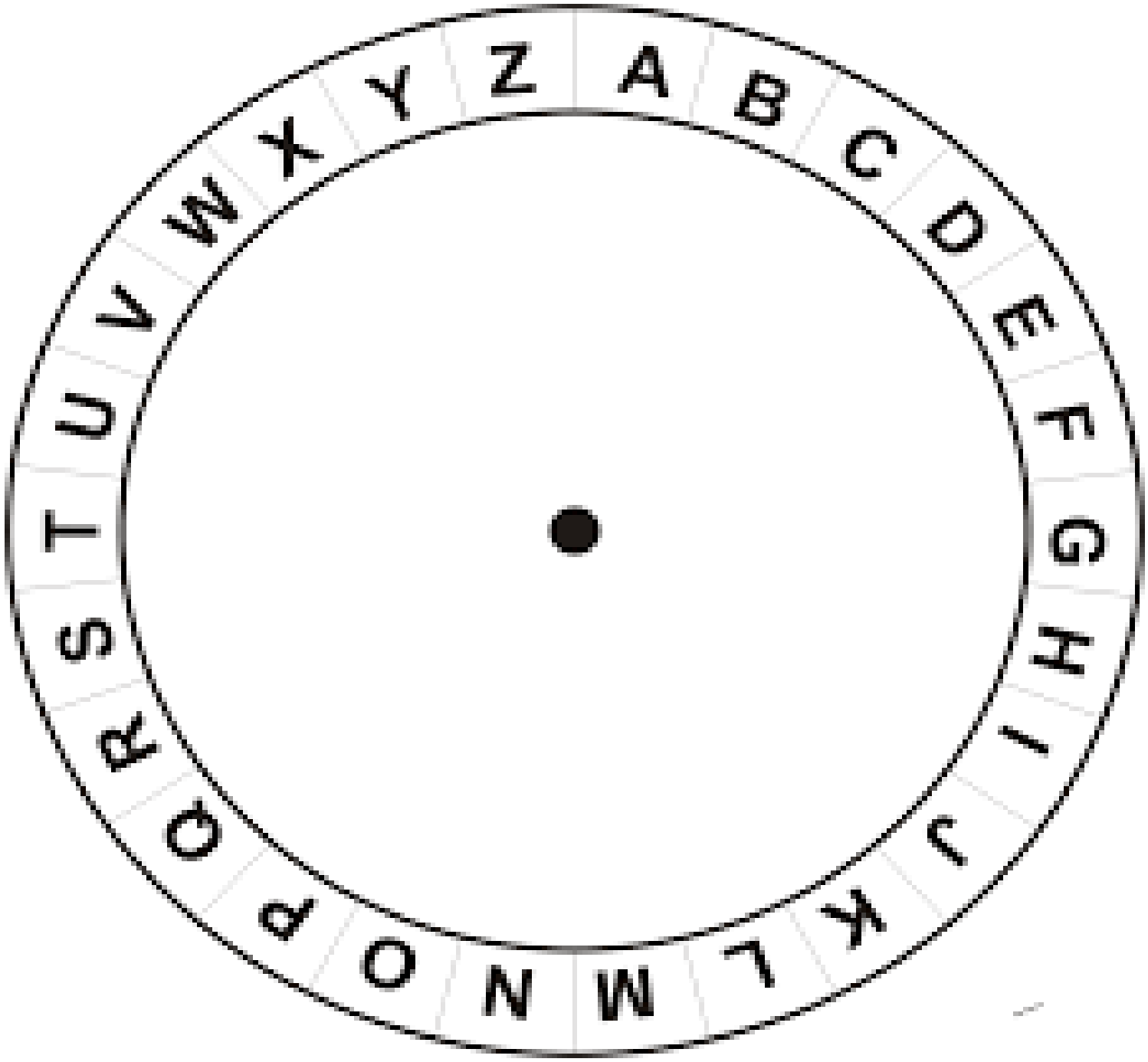
Memorize This:

Number Substitution Cypher

A	B	C	D	E	F	G	H	I	J
1	2	3	4	5	6	7	8	9	10

K	L	M	N	O	P	Q	R	S	T
11	12	13	14	15	16	17	18	19	20

U	V	W	X	Y	Z
21	22	23	24	25	26


Z
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y

Find the missing term in given

1. E, H, L, O, S, ____

2. A, A, B, F, ____

3. AB,DE,GH,JK, ____

4. PDZ, _____, RBX, SAW

A,D,I,P,Y,J___

PMT, OOS, NQR, MSQ, ___

AZ, GT, MN, ___, YB

1. BCB, DED, FGF, HIH, _

2. QPO, NML, KJI, ___, EDC

3. SCD, TEF, UGH, __, WKL

4. QAR, RAS, SAT, TAU, ___

5. JAK, KBL, LCM, MDN, ___

6. ELFA, GLHA, ILJA, ___, MLNA

The word SUPERMAN is written as a code "TTQDSLBM" then the code of SPIDERMAN is?

S U P E R M A N : T T Q D S L B M

S P I D E R M A N :

P A K I S T A N: S C L I R R X J

P E S H A W A R:

C E R T A I N: B F Q U Z J M

M U N D A N E:

If in a certain language, *BROTHER* is written as *QDGSNQA*, then in the same language *SISTER* would be written as…? (CSS-2022)

B R O T H E R : *Q D G S N Q A*

S I S T E R :

C O M P U T E R: ***R F U V Q N P C***

M E D I C I N E:

(CSS-2017/19)

Look at this series: *F2,___, D8, C16, B32*. What number should fill the blank? (CSS-2018)

In a certain language *LANDMINE* is written as *PYRBQGRC*. How will *HOMEMADE* be written in that code language? (CSS-2018)

Thank You