

CHAPTER - 4

PLAYING WITH NUMBERS

$$\begin{aligned} 1. \quad & 7 \times (15 + 5) \\ & = 7 \times 20 \\ & = 140 \end{aligned}$$

$$\begin{aligned} 2. \quad & 6 + 3 \text{ of } 7 - 5 \\ & = 6 + 3 \times 7 - 5 \\ & = 6 + 21 - 5 \\ & = 27 - 5 \\ & = 22 \end{aligned}$$

$$\begin{aligned} 3. \quad & 20 + 21 \div 3 \times 2 \\ & = 20 + 7 \times 2 \\ & = 20 + 14 \\ & = 34 \end{aligned}$$

$$\begin{aligned} 4. \quad & 17 + (8 - 5) \times 5 \\ & = 17 + 3 \times 5 \\ & = 17 + 15 \\ & = 32 \end{aligned}$$

$$\begin{aligned} 5. \quad & 25 - 48 \div 6 + 12 \times 2 \\ & = 25 - 8 + 12 \times 2 \\ & = 25 - 8 + 24 \\ & = 25 + 24 - 8 \\ & = 49 - 8 \\ & = 41 \end{aligned}$$

$$\begin{aligned} 6. \quad & 7 + (6 \times 5 + 3) \\ & = 7 + (30 + 3) \\ & = 7 + 33 \\ & = 40 \end{aligned}$$

$$\begin{aligned} 7. \quad & 3 + 6 \div 3 \times 2 \\ & = 3 + 2 \times 2 \\ & = 3 + 4 \\ & = 7 \end{aligned}$$

$$\begin{aligned} 8. \quad & 5 \times 3 - 12 \div 4 + 8 \\ & = 5 \times 3 - 3 + 8 \\ & = 15 - 3 + 8 \\ & = 15 + 8 - 3 \\ & = 23 - 3 \\ & = 20 \end{aligned}$$

$$\begin{aligned} 9. \quad & 5 \times 4 - 2 \times 3 + 16 \div 4 \\ & = 5 \times 4 - 2 \times 3 + 4 \\ & = 20 - 6 + 4 \\ & = 20 + 4 - 6 \\ & = 24 - 6 \\ & = 18 \end{aligned}$$

$$\begin{aligned} 10. \quad & 30 - (5 \times 2 - 15) \\ & = 30 - (10 - 15) \\ & = 30 - (-5) \\ & = 30 + (+5) \\ & = 35 \end{aligned}$$

$$\begin{aligned}
 11 \quad & 6 - \{5 \times 3 - (4 - 3) \times 16 \div (-4)\} && () \\
 = & 6 - \{5 \times 3 - 1 \times 16 \div (-4)\} && \{ \} \\
 & 6 - \{5 \times 3 - 1 \times (-4)\} && [] \\
 & 6 - \{15 - (-4)\} \\
 & 6 - \{15 + (+4)\} \\
 & 6 - \{19\} \\
 & 6 - 19 \\
 & -13 \text{ Ans}
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & [12 \div (3 \text{ of } 2 - 3) - 9(5 - 4)] \\
 = & [12 \div (3 \times 2 - 3) - 9(1)] \\
 & [12 \div (6 - 3) - 9] \\
 & [12 \div 3 - 9] \\
 & [4 - 9] \\
 & = -5 \text{ Ans}
 \end{aligned}$$

class - VI

Ex - 4.2

1 (i) 68

$1 \times 68 = 68$

$2 \times 34 = 68$

$4 \times 17 = 68$

factors are = 1, 2, 4, 17, 34, 68

(ii) 46

$1 \times 46 = 46$

$2 \times 23 = 46$

factors are :-

1, 2, 23, 46

(iii) 24

$1 \times 24 = 24$

$2 \times 12 = 24$

$3 \times 8 = 24$

$4 \times 6 = 24$

factors are: 1, 2, 3, 4, 6, 8, 12, 24

(iv) 36

$1 \times 36 = 36$

$2 \times 18 = 36$

$3 \times 12 = 36$

$4 \times 9 = 36$

$6 \times 6 = 36$

factors are = 1, 2, 3, 4, 6, 9, 12, 18, 36

(v) 128

$1 \times 128 = 128$

$2 \times 64 = 128$

$4 \times 32 = 128$

$8 \times 16 = 128$

factors are = 1, 2, 4, 8, 16, 32, 64, 128

(vi) 142

$1 \times 142 = 142$

$2 \times 71 = 142$

factors are = 1, 2, 71, 142

2 ci) Prime numbers b/w 5 and 37 :

7, 11, 13, 17, 19, 23, 29, 31

(ii) from 5 to 44 :

5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43

(iii) less than 72 and greater than 29

31, 37, 41, 43, 47, 53, 59, 61, 67, 71

(iv) between 1 and 23

2, 3, 5, 7, 11, 13, 17, 19

3 factors of 39 = 1, 3, 13, 39
 factors of 175 = 1, 5, 25, 35, 175
 39 and 175 do not have any common factor other than 1
 So 39 and 175 are co-prime numbers

$$\begin{array}{r} \text{4 (i)} \quad 3 \overline{) 39} \\ 13 \overline{) 13} \\ 1 \end{array}$$

$$39 = 3 \times 13$$

$$\text{(ii)} \quad 2 \overline{) 94} \\ 47 \overline{) 47} \\ 1$$

$$94 = 2 \times 47$$

$$\text{(iii)} \quad 2 \overline{) 560} \\ 2 \overline{) 280} \\ 2 \overline{) 140} \\ 2 \overline{) 70} \\ 5 \overline{) 35} \\ 7 \overline{) 7} \\ 1$$

$$560 = 2 \times 2 \times 2 \times 2 \times 5 \times 7$$

$$\text{(iv)} \quad 3 \overline{) 99} \\ 3 \overline{) 33} \\ 11 \overline{) 11} \\ 1$$

$$99 = 3 \times 3 \times 11$$

Ex-4.3

Q2 (i) 6 and 7

$$\begin{array}{r|l} 2 & 6 \\ \hline 3 & 3 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 7 & 7 \\ \hline & 1 \end{array}$$

$$6 = 2 \times 3$$

$$7 = 7 \times 1$$

$$\text{H.C.F} = 1$$

(ii) 28 and 58

$$\begin{array}{r|l} 2 & 28 \\ \hline 2 & 14 \\ \hline 7 & 7 \\ \hline & 1 \end{array}$$

$$\begin{array}{r|l} 2 & 58 \\ \hline 29 & 29 \\ \hline & 1 \end{array}$$

$$28 = 2 \times 2 \times 7$$

$$58 = 2 \times 29$$

$$\text{H.C.F} = 2$$

(iii) 24, 46, 78

$$\begin{array}{r} 2 \overline{) 24} \\ 2 \overline{) 12} \\ 2 \overline{) 6} \\ 3 \overline{) 3} \\ \hline 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 46} \\ 23 \overline{) 23} \\ \hline 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 78} \\ 3 \overline{) 39} \\ 13 \overline{) 13} \\ \hline 1 \end{array}$$

$$24 = 2 \times 2 \times 2 \times 3$$

$$46 = 2 \times 23$$

$$78 = 2 \times 3 \times 13$$

$$\text{H.C.F} = 2$$

(iv) 13, 26, 39, 156

$$\begin{array}{r} 13 \overline{) 13} \\ 1 \\ 13 \overline{) 26} \\ 13 \\ \hline 1 \\ 13 \overline{) 39} \\ 13 \\ \hline 1 \end{array}$$

$$\begin{array}{r} 2 \overline{) 156} \\ 2 \overline{) 78} \\ 3 \overline{) 39} \\ 13 \overline{) 13} \\ \hline 1 \end{array}$$

$$13 = 13 \times 1$$

$$26 = 2 \times 13$$

$$39 = 3 \times 13$$

$$156 = 2 \times 2 \times 3 \times 13$$

$$\text{H.C.F} = 13$$

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18 and 28

$$18 \overline{) 28} [1$$

$$18$$

$$10 \overline{) 18} [1$$

$$10$$

$$8 \overline{) 10} [1$$

$$8$$

$$2 \overline{) 8} [4$$

$$8$$

x

$$\text{H.C.F} = 2$$

(ii) 15 and 25

$$15 \overline{) 25} [1$$

$$15$$

$$10 \overline{) 15} [1$$

$$10$$

$$5 \overline{) 10} [2$$

$$10$$

x

$$\text{H.C.F} = 5$$

3(iii) 12, 38 and 56

$$\begin{array}{r} 12 \overline{) 38} \quad (3 \\ 36 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \overline{) 12} \quad (6 \\ 12 \\ \hline \times \end{array}$$

$$\begin{array}{r} 2 \overline{) 56} \quad (28 \\ 4 \\ \hline 16 \\ 16 \\ \hline \times \end{array}$$

H.C.F = 2

(iv) 18, 28, 48 and 78

$$\begin{array}{r} 18 \overline{) 28} \quad (1 \\ 18 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \overline{) 18} \quad (1 \\ 10 \\ \hline \end{array}$$

$$\begin{array}{r} 10 \overline{) 10} \quad (1 \\ 10 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \overline{) 8} \quad (4 \\ 8 \\ \hline \times \end{array}$$

$$\begin{array}{r} 2 \overline{) 48} \quad (24 \\ 4 \\ \hline 16 \\ 16 \\ \hline \times \end{array}$$

$$\begin{array}{r} 2 \overline{) 78} \quad (39 \\ 6 \\ \hline 18 \\ 18 \\ \hline \times \end{array}$$

H.C.F = 2

4 Given numbers are 20, 25, 35 and 50
Method I - Common factor

factor of 20 = 1, 2, 4, 5, 10, 20

factor of 25 = 1, 5, 25

factor of 35 = 1, 5, 7, 35

factor of 50 = 1, 2, 5, 10, 50

C.F = 1, 5,

H.C.F = 5

Method II - Prime factorisation

$\begin{array}{r} 2 \overline{) 20} \\ 2 \overline{) 10} \\ 5 \overline{) 5} \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \overline{) 25} \\ 5 \overline{) 5} \\ \hline 1 \end{array}$	$\begin{array}{r} 5 \overline{) 35} \\ 7 \overline{) 7} \\ \hline 1 \end{array}$	$\begin{array}{r} 2 \overline{) 50} \\ 5 \overline{) 25} \\ 5 \overline{) 5} \\ \hline 1 \end{array}$
-------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------	----------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------

$$20 = 2 \times 2 \times 5$$

$$25 = 5 \times 5$$

$$35 = 5 \times 7$$

$$50 = 2 \times 5 \times 5$$

H.C.F = 5

Method III - Division Method

$$20 \overline{) 25} \begin{array}{l} 1 \\ \underline{20} \\ 5 \end{array}$$

$$5 \overline{) 20} \begin{array}{l} 4 \\ \underline{20} \\ x \end{array}$$

$$5 \overline{) 35} \begin{array}{l} 7 \\ \underline{35} \\ x \end{array}$$

$$5 \overline{) 50} \begin{array}{l} 10 \\ \underline{5} \\ 0 \\ \underline{0} \\ x \end{array}$$

So H.C.F = 5

Given numbers = 306, 450, 540

$$306 \overline{) 450} \begin{array}{l} 1 \\ \underline{306} \\ 144 \end{array}$$

$$144 \overline{) 306} \begin{array}{l} 2 \\ \underline{288} \\ 18 \end{array}$$

$$18 \overline{) 540} \begin{array}{l} 30 \\ \underline{54} \\ 0 \\ \underline{0} \\ x \end{array}$$

$$18 \overline{) 144} \begin{array}{l} 8 \\ \underline{144} \\ x \end{array}$$

So H.C.F = 18

$$132 - 2 = 130$$

$$242 - 2 = 240$$

$$382 - 2 = 380$$

$$95 - 5 = 90$$

$$114 - 4 = 110$$

$$129 - 3 = 126$$

$$10 \overline{) 240} \begin{array}{l} 24 \\ \underline{130} \\ 110 \end{array}$$

$$110 \overline{) 130} \begin{array}{l} 1 \\ \underline{110} \\ 20 \end{array}$$

$$20 \overline{) 110} \begin{array}{l} 5 \\ \underline{100} \\ 10 \end{array}$$

$$10 \overline{) 380} \begin{array}{l} 38 \\ \underline{30} \\ 80 \\ \underline{80} \\ x \end{array}$$

$$90 \overline{) 110} \begin{array}{l} 1 \\ \underline{90} \\ 20 \end{array}$$

$$20 \overline{) 90} \begin{array}{l} 4 \\ \underline{80} \\ 10 \end{array}$$

$$10 \overline{) 20} \begin{array}{l} 2 \\ \underline{20} \\ x \end{array}$$

$$10 \overline{) 126} \begin{array}{l} 12 \\ \underline{10} \\ 26 \\ \underline{20} \\ 6 \end{array}$$

$$6 \overline{) 10} \begin{array}{l} 1 \\ \underline{6} \\ 4 \end{array}$$

$$4 \overline{) 6} \begin{array}{l} 1 \\ \underline{4} \\ 2 \end{array}$$

$$2 \overline{) 4} \begin{array}{l} 2 \\ \underline{4} \\ x \end{array}$$

H.C.F = 10

So H.C.F = 2

EX - 4.4

Q1 - Not in syllabus

Q2 (i)
$$\begin{array}{r} 2 \overline{) 6} \\ 3 \overline{) 3} \\ \hline 1 \end{array}$$

(ii)
$$\begin{array}{r} 5 \overline{) 5} \\ \hline 1 \end{array}$$

$6 = 2 \times 3 = 2^1 \times 3^1$
 $12 = 2 \times 2 \times 3 = 2^2 \times 3^1$
 $18 = 2 \times 3 \times 3 = 2^1 \times 3^2$
 L.C.M = $2^2 \times 3^2$
 $= 2 \times 2 \times 3 \times 3 = 36$

$5 = 5 \times 1 = 5^1$
 $10 = 2 \times 5 = 2^1 \times 5^1$
 $20 = 2 \times 2 \times 5 = 2^2 \times 5^1$
 L.C.M = $2^2 \times 5^1$
 $= 2 \times 2 \times 5 = 20$

(iii)
$$\begin{array}{r} 2 \overline{) 14} \\ 7 \overline{) 7} \\ \hline 1 \end{array}$$

(iv)
$$\begin{array}{r} 2 \overline{) 16} \\ 2 \overline{) 8} \\ 2 \overline{) 4} \\ 2 \overline{) 2} \\ \hline 1 \end{array}$$

$14 = 2 \times 7 = 2^1 \times 7^1$
 $26 = 2 \times 13 = 2^1 \times 13^1$
 $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$
 L.C.M = $2^5 \times 7^1 \times 13^1$
 $= 2 \times 2 \times 2 \times 2 \times 2 \times 7 \times 13$
 $= 2912$

$16 = 2 \times 2 \times 2 \times 2 = 2^4$
 $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$
 $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$
 $48 = 2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3^1$
 L.C.M = $2^5 \times 3^1$
 $= 2 \times 2 \times 2 \times 2 \times 2 \times 3$
 $= 96$

(v)
$$\begin{array}{r} 5 \overline{) 15} \\ 3 \overline{) 3} \\ \hline 1 \end{array}$$

$15 = 3 \times 5 = 3^1 \times 5^1$
 $30 = 2 \times 3 \times 5 = 2^1 \times 3^1 \times 5^1$
 $60 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3^1 \times 5^1$
 $120 = 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3^1 \times 5^1$
 L.C.M = $2^3 \times 3^1 \times 5^1$
 $= 2 \times 2 \times 2 \times 3 \times 5$

EX-44

L. C. M.

least common multiple

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3. (i) 14, 21 and 78

$$\begin{array}{r|l}
 2 & 14 - 21 - 78 \\
 3 & 7 - 21 - 39 \\
 7 & 7 - 7 - 13 \\
 13 & 1 - 1 - 13 \\
 & 1 - 1 - 1
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 3 \times 7 \times 13 \\
 &= 546
 \end{aligned}$$

(ii) 20, 28 and 36

$$\begin{array}{r|l}
 2 & 20 - 28 - 36 \\
 2 & 10 - 14 - 18 \\
 3 & 5 - 7 - 9 \\
 3 & 5 - 7 - 3 \\
 5 & 5 - 7 - 1 \\
 7 & 1 - 7 - 1 \\
 & 1 - 1 - 1
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 2 \times 3 \times 3 \times 5 \times 7 \\
 &= 1260
 \end{aligned}$$

(iii) 8, 16, 32 and 64

$$\begin{array}{r|l}
 2 & 8 - 16 - 32 - 64 \\
 2 & 4 - 8 - 16 - 32 \\
 2 & 2 - 4 - 8 - 16 \\
 2 & 1 - 2 - 4 - 8 \\
 2 & 1 - 1 - 2 - 4 \\
 2 & 1 - 1 - 1 - 2 \\
 & 1 - 1 - 1 - 1
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 2 \times 2 \times 2 \times 2 \times 2 \\
 &= 64
 \end{aligned}$$

(iv) 36, 48, 72 and 108

$$\begin{array}{r|l}
 2 & 36-48-72-108 \\
 \hline
 2 & 18-24-36-54 \\
 \hline
 2 & 9-12-18-27 \\
 \hline
 3 & 9-6-9-27 \\
 \hline
 3 & 3-2-3-9 \\
 \hline
 2 & 1-2-1-3 \\
 \hline
 3 & 1-1-1-3 \\
 \hline
 & 1-1-1-1
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 2 \times 2 \times 3 \times 3 \times 2 \times 3 \\
 &= 432
 \end{aligned}$$

(v) 3, 12, 48 and 72

$$\begin{array}{r|l}
 2 & 3-12-48-72 \\
 \hline
 2 & 3-6-24-36 \\
 \hline
 2 & 3-3-12-18 \\
 \hline
 2 & 3-3-6-9 \\
 \hline
 3 & 3-3-3-9 \\
 \hline
 3 & 1-1-1-3 \\
 \hline
 & 1-1-1-1
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 2 \times 2 \times 2 \times 3 \times 3 \\
 &= 144
 \end{aligned}$$

Q3 Already done

Q4 H.C.F = 18
L.C.M = 108

One number = 54

Other number = $\frac{\text{Product of H.C.F and L.C.M}}{\text{one number}}$

$$= \frac{18 \times 108}{54} = 36 \text{ Ans}$$

Q5 Product of two numbers = 25,857
L.C.M = 1989

H.C.F = $\frac{\text{Product of two numbers}}{\text{L.C.M}}$

$$= \frac{25,857}{1989} = 13 \text{ Ans}$$

Q6 Product of two numbers = 288

H.C.F = 2

L.C.M = $\frac{\text{Product of two nos.}}{\text{H.C.F}}$

$$= \frac{288}{2} = 144 \text{ Ans}$$

Q7 L.C.M of 34, 85 and 51

$\begin{array}{r l} 2 & 34 \\ \hline 17 & 17 \\ \hline & 1 \end{array}$	$\begin{array}{r l} 5 & 85 \\ \hline 17 & 17 \\ \hline & 1 \end{array}$	$\begin{array}{r l} 3 & 51 \\ \hline 17 & 17 \\ \hline & 1 \end{array}$
-------------------------------------------------------------------------	-------------------------------------------------------------------------	-------------------------------------------------------------------------

34 = 2 x 17

85 = 5 x 17

51 = 3 x 17

L.C.M = 17 x 2 x 5 x 3 = 510

Required no. = 510 - 3 = 507

Q8 The smallest number which is exactly divisible by 15, 25, 35 and 40 is their L.C.M

L.C.M = 5 x 5 x 3 x 7 x 8

5	15-25-35-40
5	3-5-7-8
3	3-1-7-8
7	1-1-7-8
8	1-1-1-8
	1-1-1-1

Ex-4.5

Q1. (i) 751024

Since last digit is 4 (even), so 751024 is divisible by 2.

$7+5+1+0+2+4 = 19$ not divisible by 3
 \therefore 751024 is not divisible by 3

751024 is divisible by 2 but not by 3
 \therefore 751024 is not divisible by 6

Last two digits are 24, divisible by 4
 \therefore 751024 is divisible by 4

Last three digits are 024, divisible by 8
 \therefore 751024 is divisible by 8

(ii) 78056

Since last digit is 6 (even), so 78056 is divisible by 2.

$7+8+0+5+6 = 26$ not divisible by 3
 \therefore 78056 is not divisible by 3

78056 is divisible by 2 but not by 3
 \therefore 78056 is not divisible by 6

Last two digits are 56, divisible by 4
 \therefore 78056 is divisible by 4

Last three digits are 056, divisible by 8
 \therefore 78056 is divisible by 8

(iii)

350736

Since last digit is 6 (even) so 350736 is divisible by 2

$3 + 5 + 0 + 7 + 3 + 6 = 24$, divisible by 3
 \therefore 350736 is divisible by 3

350736 is divisible by 2 and 3 both
 \therefore 350736 is divisible by 6

Last two digits are 36, divisible by 4
 \therefore 350736 is divisible by 4

Last three digits are 736, divisible by 8
 \therefore 350736 is divisible by 8

(iv), (v) H.W

20

(i) 23485

Since last digit is 5, so 23485 is divisible by 5

Since last digit is not 0, so 23485 is not divisible by 10

(ii)

15020

Since last digit is 0, so 15020 is divisible by 5

Since last digit is 0, so 15020 is divisible by 10

(iii) 250025

Since last digit is 5, so 250025 is divisible by 5

Since last digit is not 0, so 250025 is not divisible by 10

(iv), (v) Jd. w

30 (i) 7136985

$7+1+3+6+9+8+5 = 39$, divisible by 3
 \therefore 7136985 is divisible by 3

$7+1+3+6+9+8+5 = 39$, not divisible by 9
 \therefore 7136985 is not divisible by 9

To check divisibility by 11

7136985
 O E O E O E O

Sum of the digits at the even places =
 $1+6+8 = 15$

Sum of the digits at odd places = $7+3+9+5 = 24$

Difference = $24 - 15$

= 9, which is not divisible by 11

\therefore 7136985 is not divisible by 11

(iv) 6732018

$6+7+3+2+0+1+8 = 27$, divisible by 3

\therefore 6732018 is divisible by 3

Page

$$6+7+3+2+0+1+8 = 27, \text{ divisible by } 9$$

$\therefore 6732018$ is divisible by 9

To check divisibility by 11

$$\begin{array}{r} 6732018 \\ 0 \quad 1 \quad 0 \quad 1 \quad 0 \quad 1 \quad 0 \end{array}$$

sum of digits at even places = $7+2+1=10$
sum of digits at odd places = $6+3+0+8=17$
Difference = $17-10$
= 7, not divisible by 11

$\therefore 6732018$ is not divisible by 11

(iv) 6231038

$$6+2+3+1+0+3+8 = 23, \text{ not divisible by } 3$$

$\therefore 6231038$ not divisible by 3

$$6+2+3+1+0+3+8 = 23, \text{ not divisible by } 9$$

$\therefore 6231038$ not divisible by 9

To check divisibility by 11

$$\begin{array}{r} 6231038 \\ 0 \quad 1 \quad 0 \quad 1 \quad 0 \quad 1 \quad 0 \end{array}$$

sum of digits at even places = $2+1+3=6$
sum of digits at odd places = $6+3+0+8=17$
Difference = $17-6$
= 11, divisible by 11

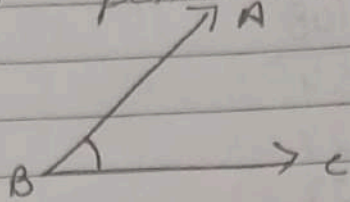
$\therefore 6231038$ is divisible by 11

(iii), (ii) H.W

Angles
Ch-12

EX-12.1

A shape formed by two rays intersecting at a common point is called an angle



Vertices - O

Arms - OA, OB

angle - $\angle AOB$

(i) P, R, T, D

(ii) S, U, V, W

(iii) X, Y, Z

REDAI NOTE 8 PRO
AI QUAD CAMERA

Class-VI Sub-Maths EX-17

- (i) Circle - A circle is a set of point in a plane that are a given distance from a given point in the plane.
- (ii) Chord - A line segment inside a circle whose end points lie on the circle called a chord
- (iii) Diameter - A diameter is the longest line segment passing through the centre whose end points lie on the circle
- (iv) Segment - A chord divides the circle into two parts ^{these two parts} are called segment.

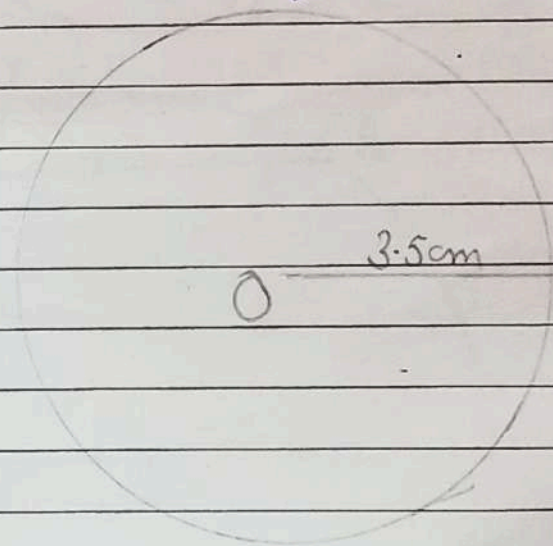
$$\underline{2} \quad \text{Diameter} = 2 \times \text{Radius}$$

Or

$$\text{Radius} = \frac{\text{Diameter}}{2}$$

- 3 (i) Centre (ii) Diameter (iii) Longest (iv) Inside
(v) 10 cm

4 (i) Diameter = 7 cm
Radius = $\frac{7}{2} = 3.5 \text{ cm}$

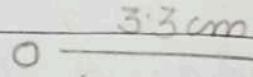


Note: Questions 6 and 8 are not in syllabus.

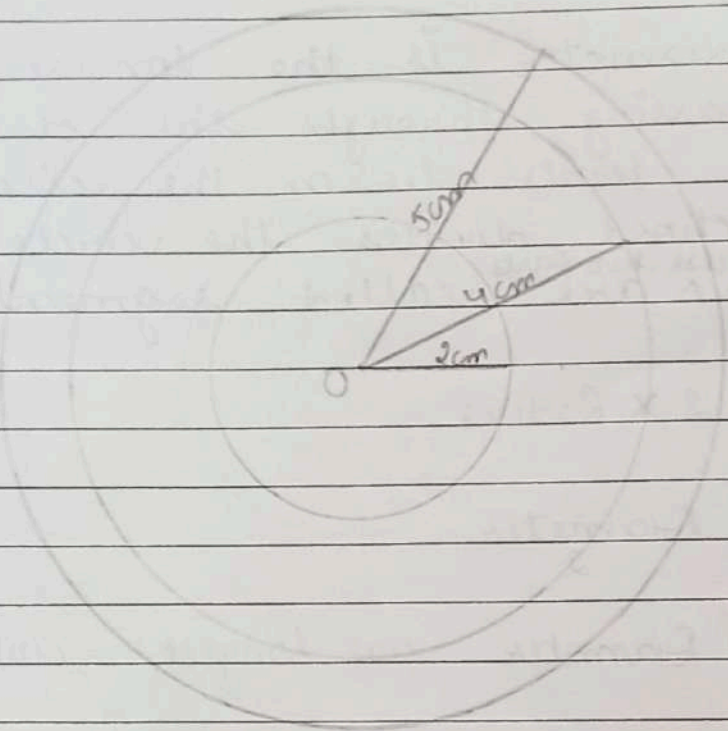
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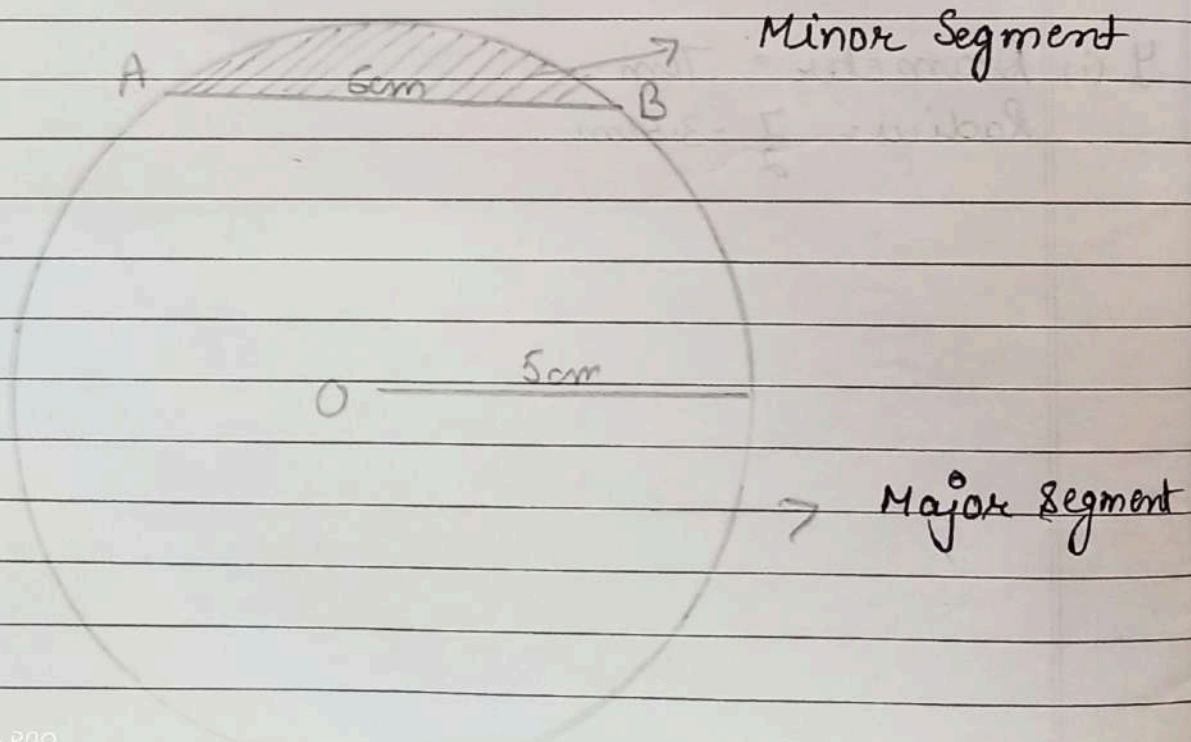
(ii) Diameter = 6.6 cm
Radius = $\frac{6.6}{2} = 3.3$ cm



5



7.



EXERCISE - 21.1

10

Marks	Tally Marks	Frequency
0		1
3		1
11		2
12		2
15		3
20		2
Total		11

20

Scores	Tally Marks	Frequency
1		5
2		6
3		4
4		2
5		5
6		3
Total		25

(a)

4

(b) = 2

30

January	👤👤👤👤
February	👤👤👤👤👤👤
March	👤👤👤👤👤👤👤👤
April	👤👤👤
May	👤👤👤👤👤👤
June	👤👤👤👤👤

40

(a) Wednesday

(b) Tuesday and Thursday

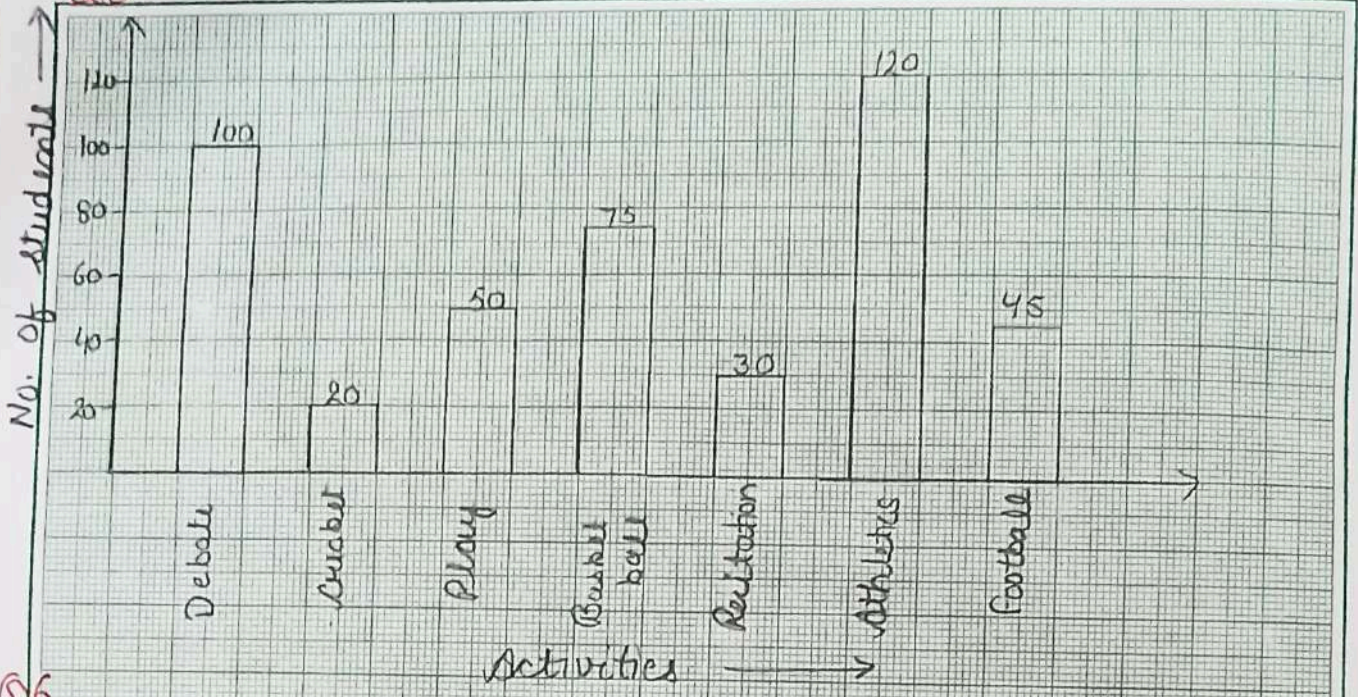
(c) 1600

(d) Friday = 250

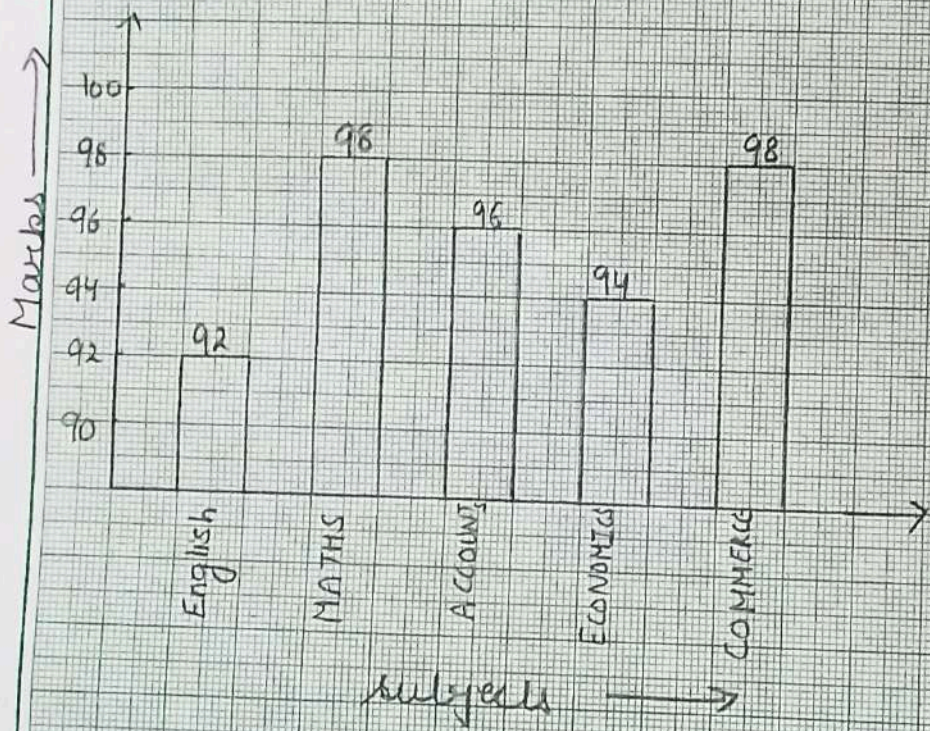
Saturday = 300

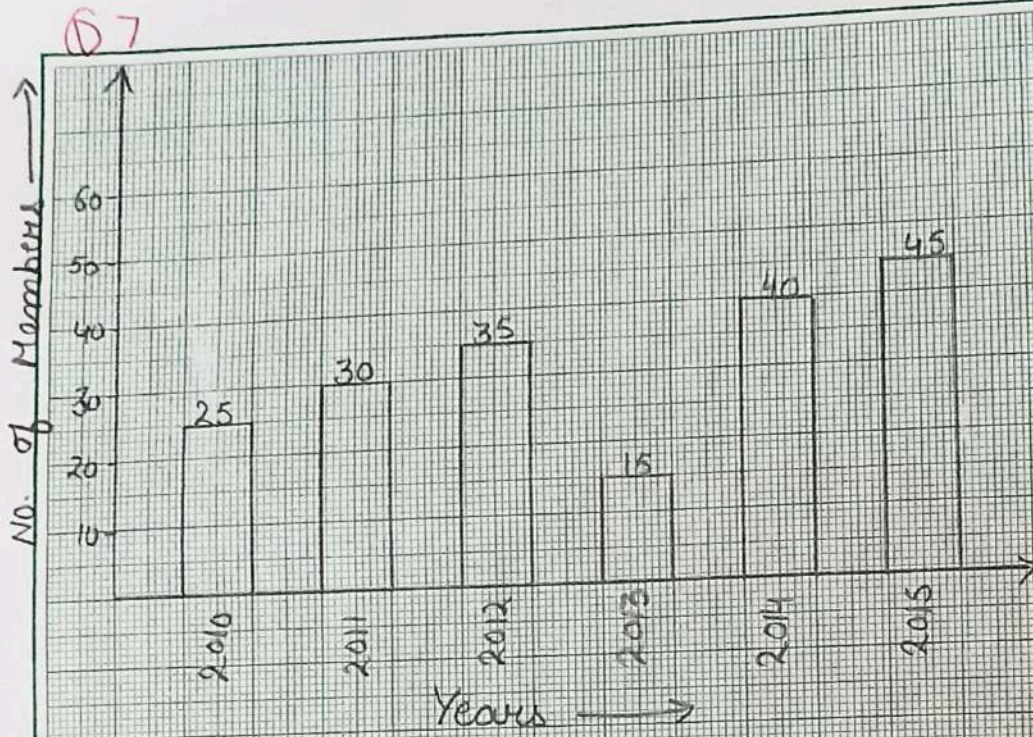
Difference = $300 - 250 = 50$

Q5



Q6





RESUME UPDATES FOR
AT 10:00 AM EDT

8. Q (i) St. Judes school
(ii) 420 students
(iii) 580 students
(iv) 40 students more

9. Q (i) Nikhil
(ii) Tarun
(iii) 54 tickets

10. Q (i) Hyundai
(ii) Tata
(iii) 130 cars
(iv) 670 cars

$$1) (i) \text{ Mean } (\bar{x}) = \frac{\text{Sum of the observations}}{\text{number of observations}}$$

$$= \frac{0+2+3+6+8+4+5}{7} = \frac{28}{7} = \frac{4}{1} = 4 \text{ ans}$$

$$(ii) \text{ Mean } (\bar{x}) = \frac{\text{Sum of the observations}}{\text{number of observations}}$$

$$= \frac{2.4 + 2.3 + 4.6 + 1.2 + 3.5}{5} = \frac{14.0}{5} = 2.8$$

P.W
2.4
2.3
4.6
1.2
3.5
<hr/>
14.0

2. Weights of 10 students are - 42, 44, 41, 40, 42, 46, 47, 38, 39 & 41

$$\text{Mean } (\bar{x}) = \frac{\text{Sum of the observations}}{\text{number of observations}}$$

$$= \frac{42+44+41+40+42+46+47+38+39+41}{10} = \frac{426}{10} = \frac{426}{1} = 42 \text{ Kg}$$

3. Weight of 10 new born babies are :-
2.2, 2.5, 2.7, 2.8, 3.2, 2.6, 3.0, 3.4, 2.6, 3.0

$$(iii) \text{ Mean} = \frac{\text{Sum of the observations}}{\text{number of the observations}}$$

$$= \frac{2.2+2.5+2.7+2.8+3.2+2.6+3.0+3.4+2.6+3.0}{10} = \frac{28.0}{10} = \frac{28}{10} = 2.8 \text{ Kg}$$

(i) 3.4 Kg

(ii) 2.2 Kg

4. Ascending order - 28, 32, 35, 55, 60, 61, 71, 72, 89
 $n = 9$ (odd)

$$\text{Median} = \left(\frac{n+1}{2}\right)^{\text{th}} \text{ term} = \left(\frac{9+1}{2}\right)^{\text{th}} \text{ term}$$

$$= 5^{\text{th}} \text{ term}$$

$$= 60 \text{ ans}$$

(ii) Ascending order: 13, 19, 21, 22, 26, 29, 32, 35, 36, 40

$n = 10$ (even)

$$\therefore \text{Median} = \frac{1}{2} \left[\left(\frac{n}{2} \right)^{\text{th}} \text{ term} + \left(\frac{n}{2} + 1 \right)^{\text{th}} \text{ term} \right]$$

$$= \frac{1}{2} \left[\left(\frac{10}{2} \right)^{\text{th}} \text{ term} + \left(\frac{10}{2} + 1 \right)^{\text{th}} \text{ term} \right]$$

$$= \frac{1}{2} \left[5^{\text{th}} \text{ term} + 6^{\text{th}} \text{ term} \right]$$

$$= \frac{1}{2} \left[26 + 29 \right]$$

$$= \frac{1}{2} \left[55 \right] = \frac{55}{2} = 27.5$$

$$5. \text{ Mean salary} = \frac{190 + 180 + 210 + 250 + 200 + 300 + 320 + 260 + 210 + 280}{10}$$

$$= \frac{2400}{10} = ₹ 240$$

Median

Ascending order = 180, 190, 200, 210, 210, 250, 260, 280, 300, 320

$n = 10$ (even)

$$\text{Med} = \frac{1}{2} \left[\left(\frac{n}{2} \right)^{\text{th}} \text{ term} + \left(\frac{n}{2} + 1 \right)^{\text{th}} \text{ term} \right]$$

$$= \frac{1}{2} \left[\left(\frac{10}{2} \right)^{\text{th}} \text{ term} + \left(\frac{10}{2} + 1 \right)^{\text{th}} \text{ term} \right]$$

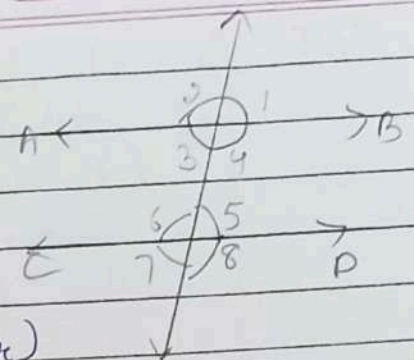
$$= \frac{1}{2} \left[5^{\text{th}} \text{ term} + 6^{\text{th}} \text{ term} \right]$$

$$= \frac{1}{2} \left[210 + 250 \right] = \frac{1}{2} \left[460 \right] = \frac{460}{2}$$

$$= ₹ 230 \text{ ans}$$

Ex-13.1

1Q In the given fig, $AB \parallel CD$ and $\angle 1 : \angle 4 = 1 : 5$ find all angles



Sol

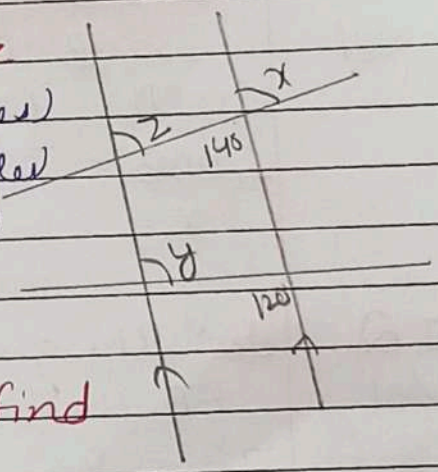
$AB \parallel CD$
 Let $\angle 1 = 1x$
 $\angle 4 = 5x$
 $\angle 1 + \angle 4 = 180^\circ$ (Linear pair)
 $1x + 5x = 180^\circ$
 $6x = 180^\circ$
 $x = \frac{180^\circ}{6} = 30^\circ \Rightarrow x = 30^\circ$

So $\angle 1 = 1 \times 30^\circ = 30^\circ$, $\angle 4 = 5 \times 30^\circ = 150^\circ$

- $\angle 1 = \angle 3 = 30^\circ$ (Vertical opposite angles)
- $\angle 1 = \angle 5 = 30^\circ$ (Corresponding angles)
- $\angle 4 = \angle 2 = 150^\circ$ (Vertical opp angles)
- $\angle 4 = \angle 6 = 150^\circ$ (Alternate angles)
- $\angle 4 = \angle 8 = 150^\circ$ (Corresponding angles)
- $\angle 7 = \angle 5 = 30^\circ$ (Vertical opp angles)

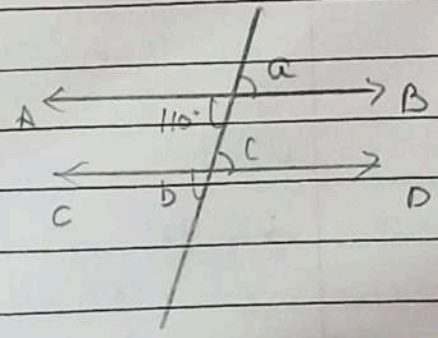
2Q find the values of x, y and z

Sol $x = 140^\circ$ (Vertical opp angles)
 $x = z = 140^\circ$ (Corresponding angles)
 $z = y = 120^\circ$ (Alternate angles)



3Q In the following fig, $AB \parallel CD$. Find the values of a, b & c

Sol $AB \parallel CD$
 $a = 110^\circ$ (Vertical opp angles)
 $c = 110^\circ$ (Alternate angles)
 $b = c = 110^\circ$ (vertical opp angles)



40) In the given fig, find the values of a and b if $AB \parallel CD \parallel EF$

Sol

 $EF \parallel CD$

$$\therefore a + 130^\circ = 180^\circ \quad (\text{Co-interior angles})$$

$$a = 180^\circ - 130^\circ$$

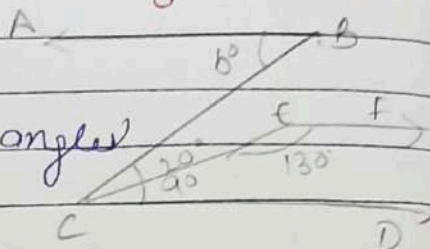
$$= 50^\circ$$

 $AB \parallel CD$

$$\therefore a + 20^\circ = b^\circ \quad (\text{alternate angles})$$

$$50^\circ + 20^\circ = b^\circ$$

$$70^\circ = b^\circ$$



50) In the given fig, $AB \parallel CD$, find the values of x

Sol

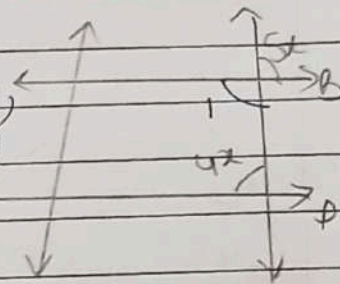
 $AB \parallel CD$

$$\angle 1 = 5x \quad (\text{vertical opp angles})$$

$$5x + 4x = 180^\circ \quad (\text{Co-interior angles})$$

$$9x = 180^\circ$$

$$x = \frac{180^\circ}{9} \Rightarrow x = 20^\circ$$



60) In the given fig, $AB \parallel CD$, $\angle OCD = 42^\circ$ and $\angle DOB = 70^\circ$, find the value of x & y

Sol

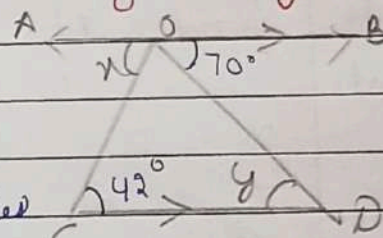
 $AB \parallel CD$

$$\angle OCD = 42^\circ$$

$$\angle DOB = 70^\circ$$

$$x = \angle OCD = 42^\circ \quad (\text{alternate angles})$$

$$y = \angle DOB = 70^\circ \quad (\text{alternate angles})$$



70) In the given fig, $AB \parallel CD$, $AD \parallel BC$ find x, y, z

Sol

 $AB \parallel CD$

$$z^\circ = 93^\circ \quad (\text{alternate angles})$$

 $AD \parallel BC$

$$y^\circ = 93^\circ \quad (\text{corresponding angles})$$

$$x + y = 180^\circ \quad (\text{Co-interior angles})$$

$$x + 93^\circ = 180^\circ$$

$$x = 180^\circ - 93^\circ$$

$$x = 87^\circ$$

