

## Answers and Solutions

[Numbers refer to paragraphs. Solutions are full answers or extensive answers. These are given where methods and steps are as important as the results. Thus chapters 1 to 7 get answers in details. For the others, only answers are given].

## Chapter – 1

1.3.4 55, 56, 59, 61, 64, 65, 76, 89, 91, 104

1.3.5 160, 170, 190, 220, 255, 260, 270, 1110

Ex I.1      a. 7b. 77                      c. 777                      d. 707                      e. 7007 f. 7077  
                  g. 70777                      h. 7007                      i. 707000                      j. 7070007

Ex I. 2

- Naluvaththelu – Forty Seven
- Eighty Seven
- One hundred and seven
- Three hundred and fifty nine
- Eight thousand eight hundred eighty nine
- Sixty six lakhs sixty six thousand six hundred eight nine
- Sixty six thousand six hundred eighty nine
- Five lakhs sixty seven thousand eight hundred ninety one.
- One crore twenty three lakhs forty five thousand six hundred seventy eight.

Ex l. 3      a.  $101 > 99$       b.  $801 > 799$       c.  $49999 > 5001$       d.  $100001 > 99899$

Ex 1.4      a.  $6989 > 7444$       b.  $609 < 906$       c.  $769 < 771$       d.  $9898989 < 10203040$

Ex I.5      a.  $112 < 121 < 201$       b.  $999 < 1001 < 9821$       c.  $41099 < 101012 < 110012$   
               d.  $7667766 < 20202021 < 191919191$

Ex I.6      a. 201>121>112      b. 999<1001<9821      c. 41099<101012<110012  
d. 191919191>20202021>7667766

Ex 1.7

- $1<3<4<5<8; 8>5>4>3>1$
- $11<13<14<15<18; 18>15>14>13>11$
- $10<30<40<50<80; 80>50>40>30>10$
- $5<65<85<125<325; 325>125>85>65>5$
- $1<11<101<111<1001<10001; 100001>1001>111>101>11>1$
- $190<889<898<900<989<998<1989; 1989>998>989>900>898>889>190$
- $1002<1020<1112<1120<1201<1220; 1220>1201>1120>1112>1020>1002$

Ex. I.8 Oral: a. (28+1) Twenty nine, thirty, thirty one, thirty two = 32  
(2) (3) (4)  
b. 131 c. 104 d. 104 e. 105 f. 1240 g. 107 h. 12391

Ex. I.9

|                                    |                                    |
|------------------------------------|------------------------------------|
| a. $98 + 9 = 108 - 1 = 107$        | b. $89 + 8 = 99 - 2 = 97$          |
| c. $184 + 7 = 194 - 3 = 191$       | d. $178 + 8 = 188 - 2 = 186$       |
| e. $12345 + 9 = 12355 - 1 = 12354$ | f. $12346 + 8 = 12356 - 2 = 12354$ |

Ex. 1.10

a. 
$$\begin{array}{r} 99 \\ +1 \\ \hline 100 \\ \hline \end{array}$$

$$\left. \begin{array}{l} 99 = 90 + 9 \\ 1 = 1 \end{array} \right\} = 90 + 10 = 100$$

b. 
$$\begin{array}{r} 87 \\ +3 \\ \hline 90 \\ \hline \end{array}$$

$$\left. \begin{array}{l} 87 = 80 + 7 \\ 3 = 3 \end{array} \right\} = 80 + 10 = 90$$

$$\begin{array}{r} \text{c. } 76 \\ + 3 \\ \hline 79 \\ \hline \end{array} \quad \left. \begin{array}{l} 76 = 70 + 6 \\ 3 = \quad 3 \end{array} \right\} = 70 + 9 = 79$$

$$\begin{array}{r} \text{d. } 65 \\ + 4 \\ \hline 69 \\ \hline \end{array} \quad \left. \begin{array}{l} 65 = 60 + 5 \\ 4 = \quad 4 \end{array} \right\} = 60 + 9 = 69$$

$$\begin{array}{r} \text{e. } 43 \\ + 36 \\ \hline 79 \\ \hline \end{array} \quad \left. \begin{array}{l} 43 = 40 + 3 \\ 36 = 30 + 6 \end{array} \right\} = 70 + 9 = 79$$

$$\begin{array}{r} \text{f. } 10099 \\ + \quad 1 \\ \hline 10100 \\ \hline \end{array} \quad \left. \begin{array}{l} 10099 = 10000 + 90 + 9 \\ \quad \quad 1 \quad \quad \quad 1 \end{array} \right\} \begin{array}{l} = 10000 + 90 + 10 \\ = 10000 + 100 \\ = 10100 \end{array}$$

$$\begin{array}{r} \text{g. } 20087 \\ + \quad 3 \\ \hline 20090 \\ \hline \end{array} \quad \left. \begin{array}{l} 20087 = 20000 + 80 + 7 \\ \quad \quad 3 \quad \quad \quad 3 \end{array} \right\} \begin{array}{l} = 20000 + 80 + 10 \\ = 20000 + 90 \\ = 20090 \end{array}$$

$$\begin{array}{r} \text{h. } 30076 \\ + \quad 3 \\ \hline 30079 \\ \hline \end{array} \quad \left. \begin{array}{l} 30076 = 30000 + 70 + 6 \\ \quad \quad 3 \quad \quad \quad 3 \end{array} \right\} \begin{array}{l} = 30000 + 70 + 9 \\ = 30000 + 79 \\ = 30079 \end{array}$$

$$\begin{array}{r} \text{i. } 40065 \\ + \quad 4 \\ \hline 40069 \\ \hline \end{array} \quad \left. \begin{array}{l} 40065 = 40000 + 60 + 5 \\ \quad \quad 4 \quad \quad \quad 4 \end{array} \right\} \begin{array}{l} = 40000 + 60 + 9 \\ = 40000 + 69 \\ = 40069 \end{array}$$

$$\begin{array}{r} \text{j. } 50043 \\ + \quad 36 \\ \hline 50079 \\ \hline \end{array} \quad \left. \begin{array}{l} 50043 = 50000 + 40 + 3 \\ \quad \quad 36 \quad \quad \quad 30 + 6 \end{array} \right\} \begin{array}{l} = 50000 + 70 + 9 \\ = 50000 + 79 \\ = 50079 \end{array}$$

Ex. I.11

$$\begin{array}{r} \text{a. } 99 \\ + 3 \\ \hline 102 \\ \hline \end{array} \quad \left. \begin{array}{l} 99 = 90 + 9 \\ 3 = \quad 3 \end{array} \right\} = 90 + 12 = 102$$

$$\begin{array}{r} \text{b. } 87 \\ + 5 \\ \hline 92 \\ \hline \end{array} \quad \left. \begin{array}{l} 87 = 80 + 7 \\ 5 = \quad 5 \end{array} \right\} = 80 + 12 = 92$$

$$\begin{array}{r} \text{c. } 176 \\ + 6 \\ \hline 182 \\ \hline \end{array} \quad \left. \begin{array}{l} 176 = 170 + 6 \\ 6 = \quad 6 \end{array} \right\} = 170 + 12 = 182$$

$$\begin{array}{r} \text{d. } 465 \\ + 7 \\ \hline 472 \\ \hline \end{array} \quad \begin{array}{l} 465 = 400 + 60 + 5 \\ 7 = \quad \quad 7 \end{array} \left. \vphantom{\begin{array}{l} 465 \\ 7 \end{array}} \right\} = 400 + 60 + 12 = 472$$

$$\begin{array}{r} \text{e. } 843 \\ + 38 \\ \hline 881 \\ \hline \end{array} \quad \begin{array}{l} 843 = 800 + 40 + 3 \\ 38 = \quad 30 + 8 \end{array} \left. \vphantom{\begin{array}{l} 843 \\ 38 \end{array}} \right\} \begin{array}{l} = 800 + 70 + 11 \\ = 800 + 81 \\ = 881 \end{array}$$

$$\begin{array}{r} \text{f. } 10099 \\ + 3 \\ \hline 10100 \\ \hline \end{array} \quad \begin{array}{l} 10099 = 10000 + 90 + 9 \\ 1 \quad \quad \quad 1 \end{array} \left. \vphantom{\begin{array}{l} 10099 \\ 1 \end{array}} \right\} \begin{array}{l} = 10000 + 90 + 10 \\ = 10000 + 100 \\ = 10100 \end{array}$$

$$\begin{array}{r} \text{g. } 10087 \\ + 5 \\ \hline 10092 \\ \hline \end{array} \quad \begin{array}{l} 10087 = 10000 + 80 + 7 \\ 5 \quad \quad \quad 5 \end{array} \left. \vphantom{\begin{array}{l} 10087 \\ 5 \end{array}} \right\} \begin{array}{l} = 10000 + 80 + 12 \\ = 10000 + 92 \\ = 10092 \end{array}$$

$$\begin{array}{r} \text{h. } 1000176 \\ + 6 \\ \hline 100182 \\ \hline \end{array} \quad \begin{array}{l} 10000176 = 100000 + 100 + 70 + 6 \\ 6 \quad \quad \quad 6 \end{array} \left. \vphantom{\begin{array}{l} 10000176 \\ 6 \end{array}} \right\} \begin{array}{l} = 100000 + 100 + 82 + 12 \\ = 100000 + 100 + 82 \\ = 100182 \end{array}$$

$$\begin{array}{r} \text{i. } 100465 \\ + 7 \\ \hline 100472 \\ \hline \end{array} \quad \begin{array}{l} 100465 = 100000 + 400 + 60 + 5 \\ 7 \quad \quad \quad 7 \end{array} \left. \vphantom{\begin{array}{l} 100465 \\ 7 \end{array}} \right\} \begin{array}{l} = 100000 + 400 + 60 + 12 \\ = 100000 + 400 + 72 \\ = 100472 \end{array}$$

$$\begin{array}{r} \text{j. } 100843 \\ + 38 \\ \hline 100881 \\ \hline \end{array} \quad \begin{array}{l} 100843 = 100000 + 800 + 40 + 3 \\ 38 \quad \quad \quad 30 + 8 \end{array} \left. \vphantom{\begin{array}{l} 100843 \\ 38 \end{array}} \right\} \begin{array}{l} = 100000 + 800 + 70 + 11 \\ = 100000 + 800 + 81 \\ = 100881 \end{array}$$

|         |                                                                                         |                                                                                     |                                                                                |                                                                                |                                                                                     |                                                                                              |
|---------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Ex I.12 | a. $\begin{array}{r} 11 \\ 29 \\ 38 \\ \hline 78 \\ \hline \end{array}$                 | b. $\begin{array}{r} 12 \\ 28 \\ 37 \\ 55 \\ \hline 132 \\ \hline \end{array}$      | c. $\begin{array}{r} 14 \\ 27 \\ 35 \\ 55 \\ \hline 131 \\ \hline \end{array}$ | d. $\begin{array}{r} 17 \\ 24 \\ 34 \\ 56 \\ \hline 131 \\ \hline \end{array}$ | e. $\begin{array}{r} 10011 \\ 10029 \\ 10038 \\ \hline 30078 \\ \hline \end{array}$ | f. $\begin{array}{r} 10012 \\ 10028 \\ 10037 \\ 10055 \\ \hline 40132 \\ \hline \end{array}$ |
|         | g. $\begin{array}{r} 1014 \\ 1027 \\ 1035 \\ 1055 \\ \hline 4131 \\ \hline \end{array}$ | h. $\begin{array}{r} 917 \\ 924 \\ 934 \\ 956 \\ \hline 3731 \\ \hline \end{array}$ |                                                                                |                                                                                |                                                                                     |                                                                                              |

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**Chapter – 2**

2.1

|             |     |             |     |             |
|-------------|-----|-------------|-----|-------------|
| $1 + 4 = 5$ | and | $5 - 4 = 1$ | and | $5 - 1 = 4$ |
| $2 + 3 = 5$ | and | $5 - 3 = 2$ | and | $5 - 2 = 3$ |
| $3 + 2 = 5$ | and | $5 - 2 = 3$ | and | $5 - 3 = 2$ |
| $4 + 1 = 5$ | and | $5 - 1 = 4$ | and | $5 - 4 = 1$ |
| $5 + 0 = 5$ | and | $5 - 5 = 0$ | and | $5 - 0 = 5$ |

2.2.3

|                |                |                |                |                |                |                |                |                |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| $\frac{8}{-1}$ | $\frac{8}{-2}$ | $\frac{8}{-3}$ | $\frac{8}{-4}$ | $\frac{8}{-5}$ | $\frac{8}{-5}$ | $\frac{8}{-6}$ | $\frac{8}{-7}$ | $\frac{8}{-8}$ | $\frac{8}{-0}$ |
| $\frac{7}{7}$  | $\frac{6}{6}$  | $\frac{5}{5}$  | $\frac{4}{4}$  | $\frac{3}{3}$  | $\frac{2}{2}$  | $\frac{2}{2}$  | $\frac{1}{1}$  | $\frac{0}{0}$  | $\frac{8}{8}$  |

2.3.1

|                |                |                |                |                |                  |                  |                  |                  |                  |
|----------------|----------------|----------------|----------------|----------------|------------------|------------------|------------------|------------------|------------------|
| $\frac{5}{-0}$ | $\frac{6}{-1}$ | $\frac{7}{-2}$ | $\frac{8}{-3}$ | $\frac{9}{-4}$ | $\frac{55}{-10}$ | $\frac{66}{-20}$ | $\frac{77}{-30}$ | $\frac{82}{-42}$ | $\frac{99}{-44}$ |
| $\frac{5}{5}$  | $\frac{5}{5}$  | $\frac{5}{5}$  | $\frac{5}{5}$  | $\frac{5}{5}$  | $\frac{45}{45}$  | $\frac{46}{46}$  | $\frac{47}{47}$  | $\frac{46}{46}$  | $\frac{55}{55}$  |

2.3.3

|                    |                    |                    |
|--------------------|--------------------|--------------------|
| $\frac{123}{-122}$ | $\frac{123}{-112}$ | $\frac{246}{-135}$ |
| $\frac{1}{1}$      | $\frac{11}{11}$    | $\frac{111}{111}$  |

2.4.1

|                |                |                 |                 |
|----------------|----------------|-----------------|-----------------|
| $\frac{2}{-1}$ | $\frac{2}{-2}$ | $\frac{2}{-1}$  | $\frac{12}{-2}$ |
| $\frac{1}{1}$  | $\frac{0}{0}$  | $\frac{11}{11}$ | $\frac{10}{10}$ |

2.5 Subtraction Grid

|   |   |   |   |   |   |   |   |   |    |   |
|---|---|---|---|---|---|---|---|---|----|---|
| - | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9 |
| 0 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9 |
| 1 |   | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7  | 8 |
| 2 |   |   | 0 | 1 | 2 | 3 | 4 | 5 | 6  | 7 |
| 3 |   |   |   | 0 | 1 | 2 | 3 | 4 | 5  | 6 |
| 4 |   |   |   |   | 0 | 1 | 2 | 3 | 4  | 5 |
| 5 |   |   |   |   |   | 0 | 1 | 3 | 23 | 4 |
| 6 |   |   |   |   |   |   | 0 | 1 | 2  | 3 |
| 7 |   |   |   |   |   |   |   | 0 | 1  | 2 |
| 8 |   |   |   |   |   |   |   |   | 0  | 1 |
| 9 |   |   |   |   |   |   |   |   |    | 0 |

- Ex. II.1
- $25 - 4 = 24 \quad 23 \quad 22 \quad 21 = 21$   
(1) (2) (3) (4)
  - $16 - 3 = 13$  (in 3 steps)
  - $17 - 5 = 12$  (in 5 steps)
  - $29 - 2 = 27$  (in 2 steps)
  - $30 - 6 = 24$  (in 6 steps)
  - $10025 - 4 = 10021$  (in 4 steps) [see 1 & in 1 step]
  - $20016 - 3 = 20013$  (in 3 steps) [see 2 & in 2 step]
  - $30017 - 5 = 30012$  (in 5 steps) [see 3 & in 3 step]
  - $50029 - 2 = 50027$  (in 2 steps) [see 4 & in 4 step]
  - $99930 - 6 = 99924$  (in 6 steps) [see 5 & in 1 step]

Ex. II.2 Oral Method

- $25 - 6 = (25 - 10) + 4 = 15 + 4 = 19$
- $16 - 7 = 7 + 3 = 9$
- $17 - 9 = 7 + 1 = 8$
- $29 - 8 = 19 + 2 = 21$
- $30 - 9 = 20 + 1 = 21$
- $10025 - 6 = 10019$  [see 1 & in 1 step]
- $20016 - 7 = 20009$  [see 2 & in 2 step]
- $30017 - 9 = 30008$  [see 3 & in 3 step]

- i.  $50029 - 8 = 50021$  [see 4 & in 4 step]  
 j.  $99930 - 9 = 99921$  [see 5 & in 5 step]

Ex. II.3    a. 
$$\begin{array}{r} 987 \\ - 76 \\ \hline 911 \end{array}$$
    b. 
$$\begin{array}{r} 987 \\ - 43 \\ \hline 933 \end{array}$$
    c. 
$$\begin{array}{r} 654 \\ - 42 \\ \hline 612 \end{array}$$
    d. 
$$\begin{array}{r} 109 \\ - 107 \\ \hline 2 \end{array}$$
    e. 
$$\begin{array}{r} 20128 \\ - 10117 \\ \hline 10011 \end{array}$$

f. 
$$\begin{array}{r} 17 \\ - 6 \\ \hline 11 \end{array}$$
    g. 
$$\begin{array}{r} 26 \\ - 13 \\ \hline 13 \end{array}$$
    h. 
$$\begin{array}{r} 34 \\ - 12 \\ \hline 22 \end{array}$$
    i. 
$$\begin{array}{r} 9823109 \\ - 9823107 \\ \hline 2 \end{array}$$
    j. 
$$\begin{array}{r} 138 \\ - 107 \\ \hline 31 \end{array}$$

Ex. II.4    a. 
$$\begin{array}{r} 987 \\ - 88 \\ \hline 899 \end{array}$$
    b. 
$$\begin{array}{r} 931 \\ - 43 \\ \hline 888 \end{array}$$
    c. 
$$\begin{array}{r} 654 \\ - 65 \\ \hline 589 \end{array}$$
    d. 
$$\begin{array}{r} 107 \\ - 88 \\ \hline 19 \end{array}$$
    e. 
$$\begin{array}{r} 20117 \\ - 10128 \\ \hline 9989 \end{array}$$
    f. 
$$\begin{array}{r} 27 \\ - 18 \\ \hline 9 \end{array}$$

g. 
$$\begin{array}{r} 56731 \\ - 12343 \\ \hline 44388 \end{array}$$
    h. 
$$\begin{array}{r} 123654 \\ - 12365 \\ \hline 111289 \end{array}$$
    i. 
$$\begin{array}{r} 987107 \\ - 987088 \\ \hline 119 \end{array}$$
    j. 
$$\begin{array}{r} 7117 \\ - 6128 \\ \hline 989 \end{array}$$

Ex. II.5    **Same as Ex. II.4**

### Chapter – 3

3.2    a. 
$$\begin{array}{r} 5 \\ + 4 \\ \hline 9 \end{array}$$
    b. 
$$\begin{array}{r} 18 \\ + 4 \\ \hline 22 \end{array}$$
    c. 
$$\begin{array}{r} 215 \\ + 4 \\ \hline 219 \end{array}$$
    d. 
$$\begin{array}{r} 215 \\ + 14 \\ \hline 229 \end{array}$$
    e. 
$$\begin{array}{r} 215 \\ + 114 \\ \hline 329 \end{array}$$
    f. 
$$\begin{array}{r} 3215 \\ + 114 \\ \hline 3329 \end{array}$$

g. 
$$\begin{array}{r} 3215 \\ + 2215 \\ \hline 5430 \end{array}$$
    h. 
$$\begin{array}{r} 1234500678 \\ + 234005121 \\ \hline 1464505799 \end{array}$$

3.3    a. 
$$\begin{array}{r} 6 \\ + 4 \\ \hline 10 \end{array}$$
    b. 
$$\begin{array}{r} 86 \\ + 4 \\ \hline 10 \end{array}$$
    c. 
$$\begin{array}{r} 96 \\ + 4 \\ \hline 100 \end{array}$$
    d. 
$$\begin{array}{r} 886 \\ + 4 \\ \hline 890 \end{array}$$
    e. 
$$\begin{array}{r} 996 \\ + 4 \\ \hline 1000 \end{array}$$
    f. 
$$\begin{array}{r} 9886 \\ + 4 \\ \hline 9890 \end{array}$$

g. 
$$\begin{array}{r} 9886 \\ + 14 \\ \hline 9900 \end{array}$$
    h. 
$$\begin{array}{r} 9886 \\ + 104 \\ \hline 9990 \end{array}$$

3.6.2    a. 
$$\begin{array}{r} 12345 \\ - 2345 \\ \hline 10000 \end{array}$$
    b. 
$$\begin{array}{r} 12345 \\ - 2234 \\ \hline 10111 \end{array}$$
    c. 
$$\begin{array}{r} 12345 \\ - 11345 \\ \hline 1000 \end{array}$$
    f.

3.6.3    a. 
$$\begin{array}{r} 8765 \\ - 7965 \\ \hline 798 \end{array}$$
    b. 
$$\begin{array}{r} 12345 \\ - 3456 \\ \hline 8889 \end{array}$$
    c. 
$$\begin{array}{r} 1234 \\ - 235 \\ \hline 999 \end{array}$$

Ex. III.1    1    One  
 21    Twenty one  
 331    Three hundred thirty one  
 4331    Four thousand three hundred thirty one  
 54441    Fifty four thousand four hundred forty one  
 654321    = 6,54,321    Six lakh fifty four thousand three hundred twenty one.  
                  = 654,321    Six hundred fifty four thousand three hundred twenty one.

- 7654321 = 76,54,321 Seventy six lakh fifty four thousand three hundred twenty one.  
 = 7,654,321 Seven million seventy six lakh fifty four thousand three hundred twenty one.
- 87654321 = 8,76,54,321 Eight crores seventy six lakh fifty four thousand three hundred twenty one.  
 = 87,654,321 Eighty seven million six lakh fifty four thousand three hundred twenty one.
- 987654321 = 98,76,54,321 Ninety eight crores seventy six lakh fifty four thousand three hundred twenty one.  
 = 987,654,321 Nine hundred eighty seven million six lakh fifty four thousand three hundred twenty one.

Ex. III.2

9  
 89  
 889  
 9889  
 9911  
 900001  
 990001  
 6500004  
 7060005  
 4000000001  
 400000001

Ex. III.3

a. 1 lakh      b. 10 lakhs      c. 100 lakhs      d. 10 millions      e. 1000 millions      f. 100 crores      h. 10000 lakhs

Ex. III.4

a. 600      b. 600      c. 100      d. 0      e. 674      f. 664      g. 564      h. 70      i. 60      j. 100  
 k. 90      l. 80      m. 590      n. 589      o. 577      p. 79

Ex. III.5

a. 32000010      b. 32000000      c. 31999990      d. 31999980  
 e. 31998990      f. 31988990      g. 31888990      h. 32000042  
 i. 31889248      j. 31688990

Ex. III.6

(+,+), (+,+), (+,+), (+,-), (+,-), (+,-), (-,+), (-,+), (+,-), (-,+), (+,-), (-,+), (+,-), (-,+), (+,-), (-,+), (+,-), (-,+), (+,+), (+,+)

## Chapter – 4

4.6 Multiplication grid :

| X | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
|---|---|----|----|----|----|----|----|----|----|
| 1 | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  |
| 2 | 2 | 4  | 6  | 8  | 10 | 12 | 14 | 16 | 18 |
| 3 | 3 | 6  | 9  | 12 | 15 | 18 | 21 | 24 | 27 |
| 4 | 4 | 8  | 12 | 16 | 20 | 24 | 28 | 32 | 36 |
| 5 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| 6 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 |
| 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 |
| 8 | 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 |
| 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 |

4.10b

| X | 1 | 2  | 3  | 4  | 5  |
|---|---|----|----|----|----|
| 1 | 1 | 2  | 3  | 4  | 5  |
| 2 | 2 | 4  | 6  | 8  | 10 |
| 3 | 3 | 6  | 9  | 12 | 15 |
| 4 | 4 | 8  | 12 | 16 | 20 |
| 5 | 5 | 10 | 15 | 20 | 25 |

Ex. IV.1

a. 
$$\begin{array}{r} 123 \\ \times 3 \\ \hline 369 \end{array}$$

$(123) \times 3$   
 $= (100 + 20 + 3)3$   
 $= 300 + 60 + 9 = 369$

b. 
$$\begin{array}{r} 812 \\ \times 3 \\ \hline 2436 \end{array}$$

$(812) \times 3$   
 $= (800 + 10 + 2)3$   
 $= 2400 + 30 + 6 = 2436$

c. 
$$\begin{array}{r} 922 \\ \times 4 \\ \hline 3688 \end{array}$$

$(922) \times 4$   
 $= (900 + 20 + 2)4$   
 $= 3600 + 80 + 8 = 3688$

d. 
$$\begin{array}{r} 202 \\ \times 5 \\ \hline 1010 \end{array}$$

$(202) \times 5$   
 $= (200 + 2)5$   
 $= 1000 + 10 = 1010$

e. 
$$\begin{array}{r} 123123 \\ \times 3 \\ \hline 369369 \end{array}$$

$(123123) \times 3$   
 $= (100000 + 20000 + 3000 + 100 + 20 + 3)3$   
 $= 300000 + 60000 + 9000 + 300 + 60 + 9 = 368889$

f. 
$$\begin{array}{r} 812312312 \\ \times 3 \\ \hline 2436936936 \end{array}$$

$(812312312) \times 3$   
 $= 2400000000$   
 $30000000$   
 $6000000$   
 $900000$   
 $30000$   
 $6000$   
 $900$   
 $30$   
 $6$   
 $\hline 2436936936$

g. 
$$\begin{array}{r} 9222121 \\ \times 4 \\ \hline 36888484 \end{array}$$

$(9222121) \times 4$   
 $= 36000000$   
 $8000000$   
 $800000$   
 $8000$   
 $400$   
 $80$   
 $4$   
 $\hline 36888484$

$$\begin{array}{r}
 \text{h. } 102102102 \\
 \times \quad 5 \\
 \hline
 510510510
 \end{array}
 \qquad
 \begin{array}{r}
 (102102102) \times 5 \\
 = 500000000 \\
 00000000 \\
 1000000 \\
 500000 \\
 00000 \\
 10000 \\
 500 \\
 00 \\
 10 \\
 \hline
 510510510
 \end{array}$$

|          |                                                                                     |                                                                                                           |
|----------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Ex. IV.2 | $  \begin{array}{r}  \text{a. } 12 \\  \times 8 \\  \hline  96  \end{array}  $      | $8 \times (12)$<br>$= 8 (10+2)$<br>$= 80 + 16$<br>$= 96$                                                  |
|          | $  \begin{array}{r}  \text{b. } 22 \\  \times 8 \\  \hline  176  \end{array}  $     | $8 \times (22)$<br>$= 8 (20+2)$<br>$= 160 + 16$<br>$= 176$                                                |
|          | $  \begin{array}{r}  \text{c. } 35 \\  \times 9 \\  \hline  315  \end{array}  $     | $9 \times (35)$<br>$= 9 (30+5)$<br>$= 270 + 45$<br>$= 315$                                                |
|          | $  \begin{array}{r}  \text{d. } 9876 \\  \times 5 \\  \hline  49380  \end{array}  $ | $5 \times (9876)$<br>$= 5 (9000+800+70+6)$<br>$= 45000$<br>$4000$<br>$350$<br>$30$<br>$\hline$<br>$49380$ |
|          | $  \begin{array}{r}  \text{e. } 9876 \\  \times 2 \\  \hline  19752  \end{array}  $ | $2 \times (9876)$<br>$= 2 (9000+800+70+6)$<br>$= 18000$<br>$1600$<br>$140$<br>$12$<br>$\hline$<br>$19752$ |
|          | $  \begin{array}{r}  \text{f. } 9143 \\  \times 2 \\  \hline  18286  \end{array}  $ | $2 \times (9143)$<br>$= 2 (9000+100+40+3)$<br>$= 18000$<br>$200$<br>$80$<br>$6$<br>$\hline$<br>$18286$    |
|          | $  \begin{array}{r}  \text{g. } 9143 \\  \times 3 \\  \hline  27429  \end{array}  $ | $3 \times (9143)$<br>$= 3 (9000+100+40+3)$<br>$= 27000$<br>$300$<br>$120$<br>$9$<br>$\hline$<br>$27429$   |

|                                                                                                  |                                                                                  |
|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| $\begin{array}{r} \text{h. } 2\ 3\ 4\ 5 \\ \times \quad 4 \\ \hline 9380 \\ \hline \end{array}$  | $4 \times (2345) = 4 (2000+300+40+5)$ $= 8000$ $1200$ $160$ $20$ $\hline 9380$   |
| $\begin{array}{r} \text{i. } 2\ 2\ 2\ 8 \\ \times \quad 6 \\ \hline 13368 \\ \hline \end{array}$ | $6 \times (2228) = 6 (2000+200+20+8)$ $= 12000$ $1200$ $120$ $48$ $\hline 13368$ |

Ex. IV.3 Writing is important

|                                                                                                 |                                                          |                                                                                                 |                                                          |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| $\begin{array}{r} \text{a. } 3\ 4 \\ \times 1\ 2 \\ \hline 68 \\ 340 \\ \hline 408 \end{array}$ | $34 \times 12 = 34 (10 + 2)$ $= 340$ $+ 68$ $\hline 408$ | $\begin{array}{r} \text{b. } 2\ 3 \\ \times 3\ 3 \\ \hline 69 \\ 690 \\ \hline 759 \end{array}$ | $23 \times 33 = 23 (30 + 3)$ $= 690$ $+ 69$ $\hline 759$ |
|-------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------|

Similarly do others: (c), (d), (e), (f), (g), (h), (i), (j)

|          |                                                                                                   |
|----------|---------------------------------------------------------------------------------------------------|
| Ex. IV.4 | $\text{a. } 56789 \times 11 = 56789 (10 + 1)$ $= 567890$ $56789$ $\hline 624679$                  |
|          | $\text{b. } 56789 \times 111 = 56789 (110 + 1)$ $= 6246790$ $56789$ $\hline 6303579$              |
|          | $\text{c. } 56789 \times 1112 = 56789 (1110 + 2)$ $= 63035790$ $56789$ $56789$ $\hline 6449368$   |
|          | $\text{d. } 56789 \times 12 = 56789 (11 + 1)$ $= 624679$ $56789$ $\hline 681468$                  |
|          | $\text{e. } 56789 \times 123 = 56789 (120 + 3)$ $= 6814680$ $170367$ $\hline 6985047$             |
|          | $\text{f. } 56789 \times 1234 = 56789 (1230 + 4)$ $= 69850470$ $170367$ $56789$ $\hline 70077626$ |



5.4.3

| Ratio      | Fraction | Quotient | Remainder |
|------------|----------|----------|-----------|
| 15 ÷ 5     | 15/5     | 3        | 0         |
| 16 ÷ 5     | 16/5     | 3        | 1         |
| 18 ÷ 5     | 18/5     | 3        | 3         |
| 9 ÷ 3      | 9/3      | 3        | 0         |
| 8 ÷ 3      | 8/3      | 2        | 2         |
| 10 ÷ 3     | 10/3     | 3        | 1         |
| 12345 ÷ 25 | 12345/25 | 493      | 20        |
| 12375 ÷ 25 | 12375/25 | 495      | 0         |
| 9676 ÷ 8   | 9676/8   | 129      | 4         |
| 9672 ÷ 8   | 9672/8   | 129      | 0         |

5.8.1

a.  $13 \times 1 = 13$

$13 \times 2 = 26$

$13 \times 3 = 39$

$13 \times 4 = 52$

$13 \times 5 = 65$

Seeing this

a1)  $\frac{65}{13} = 5$

a2)  $\frac{52}{4} = 13$

a3)  $\frac{26}{2} = 13$

a4)  $\frac{39}{13} = 3$

b. Students own question and answers

c.  $137 \times 17 = 2329. \therefore \frac{2329}{17} = 137$

d.  $(13579) \times 24 = 325896 \therefore \frac{325896}{13579} = 24$

$\frac{325896}{24} = 13579$

5.8.3 a. Same as 5.8.1(a)

a1.  $\frac{67}{13} = \frac{65+2}{13} = 5 + \text{Remainder } 2$

a2.  $\frac{50}{4} = \frac{52-2}{4} = 13 - (2 \text{ remaining}) = 12 + 2 \text{ remainder}$

a3.  $\frac{25}{2} = \frac{26-1}{2} = 13 - (1 \text{ remaining}) = 12 + 1 \text{ remainder}$

a4.  $\frac{42}{13} = \frac{39+3}{13} = 3 + (3 \text{ remaining}) = 3 + 3 \text{ remainder}$

b. Students own question and answers.

c.  $13 \times 17 = 221 \quad \frac{228}{13} = \frac{221+7}{13} = 17 + (7 \text{ remainder})$

d.  $13 \times 17 = 221 \quad \frac{228}{17} = \frac{221+7}{17} = 13 + (7 \text{ remainder})$

e.  $(1234) (56789) = 70077626$

(e1)  $\frac{70077626}{56789} = 1234$

(e2)  $\frac{70077628}{56789} = \frac{70077626+2}{56789} = 1234 + [2 \text{ remainder}]$

(e3)  $\frac{70087626}{56789} = \frac{70077626+10000}{56789} = 1234 + [10000 \text{ remainder}]$

5.9.3 a.  $\frac{92345676}{2} = 46172838$  b.  $\frac{92345676}{4} = 23086419$   
 c.  $\frac{92345676}{5} = 18469135 + [1 \text{ remainder}]$  d.  $\frac{92345676}{6} = 15390946$   
 e.  $\frac{92345676}{7} = 13192239 + [3 \text{ remainder}]$  f.  $\frac{92345676}{8} = 11543209 + [1 \text{ remainder}]$   
 g.  $\frac{92345676}{9} = 10260630 + [6 \text{ remainder}]$  h.  $\frac{92345676}{10} = 9234567 + [6 \text{ remainder}]$   
 i.  $\frac{124}{6} = 20 + [4 \text{ remainder}]$  j.  $\frac{125}{5} = 25$  k.  $\frac{126}{7} = 18$  l.  $\frac{121}{11} = 11$

- 5.9.6 a. Add all digits i.e.,  $9+2+3+4+5+6+7+6 = 42$  div by 3 yes  
 b. Last 2 digits 76. It is div by 4 yes. Therefore 92345676 is div by 4 yes.  
 c. by 5 – No.  
 d. Div by 2 & 3. Therefore div by 6 – yes.  
 e. Div by 4 and 3. Therefore div by 12 – yes.  
 f. by 9;  $\frac{42}{9}$  - No. Therefore 92345676 div by 9 – No.  
 g.  $9 + 3 + 5 + 7 = 24$  and  $2 + 4 + 6 + 6 = 18$ ; div by 11 – No.

- 5.9.7 i. 2 - a factor: a. 1235 – no b. 1235 – no c. 5000 – yes d. 5005 – no  
 ii. 3 - a factor: a. 27 – yes b. 31 – n c. 121 – no d. 123 – yes e. 1234 – no  
 f. 1232 – no  
 iii. 5 and 3 factors: a. 275 – only 5 b. 285 – both 5 and 3 c. 1230 – both 5 and 3  
 d. 1235 – only 5

iv.

| Number     | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|------------|---|---|---|---|---|---|---|---|----|----|
| a. 362880  | √ | √ | √ | √ | √ | √ | √ | √ | √  | X  |
| b. 3628800 | √ | √ | √ | √ | √ | √ | √ | √ | √  | X  |
| c. 399168  | √ | √ | X | √ | √ | √ | √ | √ | X  | X  |
| d. 420     | √ | √ | √ | √ | √ | √ | √ | X | √  | X  |

a. 
$$\begin{array}{r} 10 \overline{) 362880} \\ 2 \overline{) 36288} \\ 4 \overline{) 18144} \\ 9 \overline{) 4556} \\ 7 \overline{) 504} \\ 4 \overline{) 72} \\ 9 \overline{) 18} \\ 2 \end{array}$$

$$10 \times 2 \times 4 \times 9 \times 7 \times 4 \times 9 \times 2$$

Some write this as:

$$2 \times 2 \times 2 \times 2 \times 5 \times 3 \times 3 \times 7 \times 2 \times 2 \times 3 \times 3 \times 2 = 2^7 \times 3^4 \times 5 \times 7$$

b.  $b = 10 \times a$

c. 
$$\begin{array}{r} 11 \overline{) 399168} \\ 8 \overline{) 36288} \\ 8 \overline{) 4536} \\ 7 \overline{) 567} \\ 9 \overline{) 81} \\ 9 \end{array}$$

$$399168 = 11 \times 8 \times 8 \times 7 \times 9 \times 9$$

$$\text{Can also be } = 2^6 \times 3^2 \times 7 \times 11$$

d. 
$$\begin{array}{r} 10 \overline{) 420} \\ 2 \overline{) 42} \\ 7 \overline{) 21} \\ 3 \end{array}$$

$$420 = 10 \times 2 \times 7 \times 3$$

- 5.9.7.1 Extra
- |                                |                                 |                                |                                |
|--------------------------------|---------------------------------|--------------------------------|--------------------------------|
| a. $6 = 2 \times 3$            | b. $62 = 2 \times 31$           | c. $98 = 2 \times 7 \times 7$  | d. $256 = 2^8$                 |
| e. $22 = 2 \times 11$          | f. $198 = 2 \times 9 \times 11$ | g. $106 = 2 \times 53$         | h. $162 = 2 \times 9 \times 9$ |
| i. $298 = 2 \times 149$        | j. $10256 = 2^4 \times 641$     | k. $15 = 5 \times 3$           | l. $47 = 1 \times 47$          |
| m. $141 = 1 \times 141$        | n. $255 = 5 \times 5 \times 17$ | o. $189 = 9 \times 3 \times 7$ | p. $115 = 5 \times 23$         |
| q. $147 = 7 \times 7 \times 3$ | r. $241 = 1 \times 241$         | s. $55 = 5 \times 11$          | t. $199 = 1 \times 199$        |

- 5.9.8
- a.  $\frac{6860}{7} = 980$  Numerators < 7000 Therefore Ans: 1000 Approx 150 less  
Therefore  $1000 - 20 = 980$
- b.  $\frac{788}{8} = 98.5$  Numerator < 800 Therefore Ans: 100 12 less  
Therefore 1 less =  $100 - 1 \approx 99$
- c.  $\frac{12423}{123} = 101$  Numerator > 12300 Therefore Ans: 100 130 more  
Therefore 1 more =  $100 + 1 \approx 101$
- d.  $\frac{1678}{17} = 98$  Numerator < 1700 Therefore Ans: 100 20 less  
Therefore 2 less =  $100 - 2 \approx 98$
- e.  $\frac{1768}{17} = 104$  Numerator > 1700 Therefore Ans: 100 70 more  
Therefore 4 more =  $100 + 4 \approx 104$
- f.  $\frac{525252}{51} = 10305$  Numerator > 510000 Therefore Ans: 10000 15000 more  
 $\frac{15000}{50} = 300$ ; Therefore Ans: 10300
- g.  $\frac{1222382}{1202} = 1016$  Numerator > 1200000 Therefore Ans: 1000 22000 more  
 $\frac{22000}{1200} = 20$ ; Therefore Ans: 1020
- h.  $\frac{122230}{1201} = 102$  Numerator > 120000 Therefore Ans: 100 2200 more  
Therefore 2 more Ans: 102
- i.  $\frac{998}{19} = 52$  Denominator  $\approx 20$  Ans  $\approx 50$
- j.  $\frac{1028}{19} = 54$  Denominator  $\approx 20$  Ans  $\approx 53$

- Ex. V.1
- |                 |        |            |      |      |      |      |             |            |
|-----------------|--------|------------|------|------|------|------|-------------|------------|
| a. 9            | b. 3   | c. 3       | d. 9 | e. 3 | f. 5 | g. 2 | h. 3 dozens | i. Rs. 150 |
| j. Approx Rs. 4 | k. 120 | l. 3 each. |      |      |      |      |             |            |

Ex. V.2

a.

$$\begin{array}{r}
 121 \\
 2 \overline{) 242} \\
 \underline{04} \\
 4 \\
 \underline{02} \\
 2 \\
 \underline{0}
 \end{array}$$

b.

$$\begin{array}{r}
 123 \\
 3 \overline{) 369} \\
 \underline{06} \\
 6 \\
 \underline{09} \\
 9 \\
 \underline{0}
 \end{array}$$

c. 2

$$\begin{array}{r} 212 \\ \hline 848 \\ 8 \downarrow \\ \hline 04 \\ 4 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 0 \end{array}$$

e. 6

$$\begin{array}{r} 110 \\ \hline 660 \\ 6 \downarrow \\ \hline 06 \\ 6 \downarrow \\ \hline 00 \\ 0 \downarrow \\ \hline 0 \end{array}$$

g. 8

$$\begin{array}{r} 111 \\ \hline 888 \\ 8 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 0 \end{array}$$

i.

$$\begin{array}{r} 1212121 \\ \hline 4848484 \\ 4 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 04 \\ 4 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 04 \\ 4 \downarrow \\ \hline 08 \\ 8 \downarrow \\ \hline 04 \\ 4 \downarrow \\ \hline 0 \end{array}$$

Ex. V.3

a. 3

$$\begin{array}{r} 109 \\ \hline 327 \\ 3 \downarrow \\ \hline 027 \\ 27 \downarrow \\ \hline 0 \end{array}$$

c.

$$\begin{array}{r} 203 \\ \hline 812 \\ 8 \downarrow \\ \hline 012 \\ 12 \downarrow \\ \hline 0 \end{array}$$

d. 5

$$\begin{array}{r} 123 \\ \hline 1055 \\ 10 \downarrow \\ \hline 05 \\ 5 \downarrow \\ \hline 05 \\ 5 \downarrow \\ \hline 0 \end{array}$$

f. 7

$$\begin{array}{r} 101 \\ \hline 707 \\ 7 \downarrow \\ \hline 007 \\ 7 \downarrow \\ \hline 0 \\ 0 \downarrow \\ \hline 0 \end{array}$$

h. 9

$$\begin{array}{r} 101 \\ \hline 909 \\ 9 \downarrow \\ \hline 009 \\ 9 \downarrow \\ \hline 0 \\ 0 \downarrow \\ \hline 0 \end{array}$$

j same as i

k same as i

l similar to i

b. 9

$$\begin{array}{r} 103 \\ \hline 927 \\ 9 \downarrow \\ \hline 027 \\ 27 \downarrow \\ \hline 0 \end{array}$$

d. 4

$$\begin{array}{r} 109 \\ \hline 436 \\ 4 \downarrow \\ \hline 036 \\ 36 \downarrow \\ \hline 0 \end{array}$$

$$\begin{array}{r} 203 \\ 5 \overline{) 1015} \\ \underline{10} \phantom{15} \\ 015 \\ \underline{15} \\ 0 \end{array}$$

f, g, h, i, j to be done in the same way.

Ans: f. 105      g. 102  
h. 105 (4 remaining)      i. 109  
j. 107

Ex. V.4 Writing method is important

$$\begin{array}{r} 011 \\ 11 \overline{) 121} \\ \underline{11} \phantom{1} \\ 011 \\ \underline{11} \\ 0 \end{array}$$

$$\begin{array}{r} 0606 \\ 16 \overline{) 9696} \\ \underline{96} \phantom{96} \\ 096 \\ \underline{96} \\ 0 \end{array}$$

Similarly all others

Ans: a. 11      b. 506      c. 706      d. 304      e. 403  
f. 705      g. 306      h. 313      i. 606      j. 502  
k. 20303 (16 remaining)      l. 204      m. 503      n. 509

## Chapter – 6

|       |                    |            |                  |                   |
|-------|--------------------|------------|------------------|-------------------|
| 6.1.2 | a. $15 \div 3$     | $15/3$     | Numerator=15     | Denominator = 3   |
|       | b. $1501 \div 501$ | $1501/501$ | Numerator=1501   | Denominator = 501 |
|       | c. $999 \div 9$    | $999/9$    | Numerator=999    | Denominator = 9   |
|       | d. $101 \div 101$  | $101/101$  | Numerator = 101  | Denominator = 101 |
|       | e. $1010 \div 10$  | $1010/10$  | Numerator = 1010 | Denominator = 10  |

6.1.3 a.  $\frac{15}{5} \rightarrow 15 \div 5$       b.  $\frac{10}{3} \rightarrow 10 \div 3$       c.  $\frac{123123}{123} \rightarrow 123123 \div 123$

6.1.4 a.  $\frac{9}{2} = 4\frac{1}{2}$       b.  $\frac{10}{3} = 3\frac{1}{3}$       c.  $\frac{17}{4} = 4\frac{1}{4}$       d.  $\frac{19}{5} = 3\frac{4}{5}$

e.  $\frac{15}{6} = 2\frac{3}{6}$       f.  $\frac{20}{7} = 2\frac{6}{7}$       g.  $\frac{31}{8} = 3\frac{7}{8}$       h.  $\frac{17}{9} = 1\frac{8}{9}$

6.2 a. 5      b.  $3\frac{2}{3}$       c.  $2\frac{1}{2}$       d. 3      e. 2      f.  $2\frac{1}{5}$

g. 2      h.  $2\frac{1}{6}$       i. 2      j.  $2\frac{1}{7}$       k.  $2\frac{7}{8}$       l. 2

m.  $1\frac{8}{9}$       n. 2      o. 1      p.  $1\frac{1}{9}$       q.  $1\frac{1}{4}$       r.  $1\frac{3}{7}$

s.  $1\frac{2}{3}$

6.4.1 a.  $12\frac{3}{10}$       b.  $13\frac{1}{5}$       c.  $100\frac{1}{10}$       d.  $1010\frac{1}{10}$       e.  $908070\frac{1}{10}$       f. 123

g.  $123\frac{1}{10}$       h. 132      i. 1001      j.  $10010\frac{1}{2}$

k. 10101      l.  $10102\frac{3}{5}$       m. 90807      n.  $908070\frac{1}{10}$

6.4.2 d1) 2      d2) 4      d3) 5      d4) 100      d5) 101      d6) 617  
d7) 4444      d8) 4999      d9) 505051

e1)  $2\frac{1}{20}$       e2)  $4\frac{1}{20}$       e3)  $4\frac{19}{20}$       e4)  $100\frac{9}{20}$       e5)  $101\frac{1}{4}$       e6)  $617\frac{8}{20}$   
 e7)  $4444\frac{8}{20}$       e8)  $4999\frac{9}{20}$

[see (d1) write (e1), see (d7) write (e7) etc].

6.4.3 a1. 4 (+ remainder 10) a2. 1 (+ remainder 10) a3. 49 (+ remainder 10)

b1. 4 (+ remainder 18) b2. 1 (+ remainder 16) b3. 49 (+ remainder 18)

6.6.1 (Steps are important)

a.  $\frac{205}{5} = \frac{200+5}{5}$       Ans: 41      b.  $\frac{2025}{5} = \frac{2000+25}{5}$       Ans: 405

c.  $\frac{5555}{11} = \frac{5500+55}{11}$       Ans: 105      d.  $\frac{2821}{7} = \frac{2800+21}{7}$       Ans: 403

e.  $\frac{333378}{3} = \frac{330000+3300+78}{3}$       Ans: 111126

f.  $\frac{17171734}{17} = \frac{17000000+170000+1700+34}{17}$       Ans: 1010102

g.  $\frac{34516817}{17} = \frac{34000000+510000+6800+17}{17}$       Ans: 2030401

6.6.2 a.  $\frac{30021}{3} = \frac{30000+21}{3}$       Ans: 10007

b.  $\frac{1339}{13} = \frac{1300+39}{13}$       Ans: 103

c.  $\frac{2200121}{11} = \frac{220000+121}{11}$       Ans: 20011

6.6.3 (Step is important)

a.  $\frac{156}{12} = \frac{144+12}{12}$       Ans : 13      b.  $\frac{143}{11} = \frac{110+33}{11}$       Ans : 14

c.  $\frac{169}{13} = \frac{130+39}{13}$       Ans : 13      d.  $\frac{209}{19} = \frac{190+19}{19}$       Ans : 11

e.  $\frac{544}{17} = \frac{510+34}{17}$       Ans: 32

6.7.4 Answers are not important, steps are important.

a.  $224\frac{1}{11}$       b.  $373\frac{4}{11}$       c. 103      d. 343      e. 49      f. 49

6.8.3 Steps are important: 2 methods for each.

a. 2      b. 25      c. 14      d.  $373\frac{4}{11}$       e. 1919      f. 19      g. 101

- Ex. VI.1    a. 114195                      b. 152260                      c. 91356                      d. 22839                      e. 38060  
                  f. 30452                              g. 7613                              h. 7613 (see f and write h)

Ex. VI.2    (More than one answer is possible)

1. +, -                      2. +, ÷                      3. +, X                      4. -, X                      5. X, X                      6. X, -    7. +, +  
 8. X, +                      9. ÷, +

### Chapter - 7

- Ex. VII.1    a. a    b. b    c. c    d. d    e. Own
- Ex. VII.2    a. 3, 3    b. 5, 3    c. 7, 7    d. 5, 11    e. 299, 1    f. 2, 4    g. Own
- Ex. VII.3    a. 2, 9 or 3, 6    b. 6, 10 or 2, 30 or 5, 12    c. 5, 33 etc.,    d. 5, 279 etc.,    f. 2, 8 etc.,  
                  g. Own
- Ex. VII. 4    Method important, not the answer  
                  a.  $4 \times 20$  Ans: 76    b.  $14 \times 10$  Ans : 126    c.  $100 \times 13$  ans : 1287  
                  d.  $10 \times 1$  Ans : 120    e.  $8 \times 150$  Ans : 1208    f.  $20 \times 15$  Ans 270
- Ex. VII.5    a.  $779 - 41 = 748$                       b.  $1800 + 54 = 1054$
- Ex. VII.6    a. 7    b. 19    c. 41    e. 19    f. 19000    g. 103    h.  $1854 \div 103 = 18$ ;  $18 \div 2 = 9$  Ans :  
                  9    i.  $[\text{Ans of h}] \div 3 = 3$
- Ex. VII. 7    a.  $6 \times 7 \times 8$     b.  $6 \times 7$     c. 6    d.  $8 \times 9$     e.  $6 \times 9$     f.  $7 \times 8$
- Ex. VII.8    a. Rs. 5 (30-10) + Rs. 3 x (20) = Rs. 160                      b.  $50 - 40 = \text{Rs. } 10$   
                  c. Rs. 27 per person                      d. 5 each; later 4 each    e. 500    f. Rs. 6  
                  g. Rs. 30

### Chapter – 8

- 8.1    Rs. 6.60
- 8.2    Rs. 60
- 8.3    Rs. 50
- 8.4    Assume 40 guntas = 1 acre. Rs. 12  $\frac{1}{2}$  lakhs
- 8.6    a. 30 cm    b. 42 km    c. 50 mph    d. Own    e. Assume 1 kg = 202 pounds Ans = 88 lbs  
                  f. Rs. 4500    g. \$222    h. Parle Rs. 9 per kg
- 8.7    1. Re. 1    2. Rs. 33    3. 5    4. 8 units    5. 2880 or 2920    6. Rs. 3 lakhs    7. Rs. 2 lakhs    8.  
                  Son - Rs. 2 lakhs Daughter – Rs. 2 Lakhs    9. 1.5 Lakhs
- 8.8    1. Rs. 48    2. Rs. 1 Lakh or 83000    3. Yes    4. No    5. OK    6. No loss No Profit.

### Chapter – 9

- 9.1.2    1. 32°C                      2. By maths 34°. By guess 32° c or less                      3. 40 km/liter
- 9.1.3    d. 123478
- 9.1.4    a. 123518
- 9.1.6    a1) 4    a2) 1.5    a3) 45                      b1) 10 lakhs    b2) 10000    b3) 10500
- 9.2.5    a. ~61    b. 210    c. 360    d. Assume 75% Ans: 450    e. 38    f. 32

Ex. IX.1 15

Ex. IX.2 15.7

Ex. IX.3 3 years, 6 months

Ex. IX.4 a. 40 b. 2 c. 1 d. 5 e. 12.2 out of 25 or 50%

Ex. IX.5 Examples : Class- Interval, Frequency, Standard Deviation

**Chapter – 10**

10.5 a. 1 b. 1 c. 1 d. 5 e. 8 f. 16

10.8 a.  $\frac{2}{6}$  or  $\frac{1}{3}$  b.  $\frac{29}{30}$  c. 1 d. 2 e.  $\frac{2}{7}$  f.  $\frac{6}{7}$  g. 1 h. 1 i. 1 j. 1 k. 2

l. 1 m. 2 n.  $\frac{2}{986543}$  o. 1

10.10 a.  $\frac{2}{3}$  b.  $\frac{1}{3}$  c.  $\frac{5}{6}$  d.  $\frac{1}{6}$  e.  $\frac{3}{4}$  f. 1 g.  $\frac{15}{16}$  h.  $\frac{1}{16}$  i.  $\frac{13}{8}$  j.  $\frac{5}{8}$

**Chapter – 11**

11.1.1 a. &gt;1 b. =1 c. &lt;1 d. &lt;1 f. &gt;1 g. &lt;1 h. &gt;1

11.2.2 a. 1 b.  $1\frac{1}{8}$  c.  $111\frac{1}{8}$  e. 12361 f.  $1\frac{1}{12}$  g. 11 h.  $111\frac{1}{6}$  i.  $1028\frac{5}{6}$

k.  $9\frac{1}{111}$

11.2.3 See 11.2.2 and use the results.

a.  $27\frac{1}{2}$  b.  $2060\frac{1}{8}$  c.  $2\frac{1}{6}$  d. See g of 11.2.2 and do Ans: 11

e. (j) of above  $9\frac{1}{111}$  f.  $\approx 3\frac{1}{3}$

11.5.4 a.  $\frac{1}{3}$  b.  $\frac{1}{8}$  c.  $\frac{1}{16}$  d.  $\frac{3}{7}$  e.  $\frac{111}{9}$  f.  $\frac{8}{111}$  g.  $\frac{2}{9}$  h.  $\frac{1}{4}$  i. 4

11.5.5 a.  $84\frac{1}{5}$  b.  $16\frac{21}{25}$  c.  $8\frac{2}{5}$  d.  $\frac{24}{25}$  e. 22

**Chapter – 12**

12.1 A. 1) 1 2)  $\frac{4}{3}$  3) 2 4) 3

B. 1)  $\frac{1}{2}$  2) 1 3) 2 4) 3

C. 1) 1 2) 1 3) 2 4) 3

D. 1) 1 2) 1 3) 2 4) 3

12.2 A. 1)  $\frac{1}{3}$  2) 0 3)  $\frac{4}{3}$  4)  $\frac{5}{3}$

B. 1)  $\frac{1}{6}$  2)  $\frac{5}{6}$  3)  $\frac{2}{3}$  4)  $\frac{2}{3}$

C. 1) 1                      2)  $\frac{1}{7}$                       3) 1                      4) 1

D. 1)  $\frac{16}{17}$                       2)  $\frac{3}{17}$                       3) 1                      4) 1

12.4.3 1. a.  $2\frac{2}{5}$     b.  $1\frac{5}{7}$     c.  $1\frac{1}{2}$     d.  $1\frac{1}{3}$     e.  $3\frac{1}{4}$     f.  $4\frac{1}{3}$     g.  $6\frac{1}{2}$     h.  $30\frac{1}{4}$     i.  $30\frac{1}{2}$   
       j.  $40\frac{1}{3}$     k.  $13\frac{4}{9}$   
 2. a.  $\frac{12}{5}$     b.  $\frac{12}{7}$     c.  $\frac{3}{2}$     d.  $\frac{12}{8}$     e.  $\frac{4}{3}$     f.  $\frac{12}{9}$     g.  $\frac{13}{4}$     h.  $\frac{13}{3}$   
 i.  $\frac{13}{2}$     j.  $\frac{121}{4}$     k.  $\frac{121}{3}$     l.  $\frac{131}{3}$     m.  $\frac{12001}{3}$     n.  $\frac{1201}{4}$

12.7.1 2 methods for the students.

a.  $2\frac{1}{2}$                       b.  $2\frac{2}{7}$                       c.  $14\frac{1}{5}$                       d.  $4\frac{1}{3}$                       e.  $18\frac{24}{35}$   
 f.  $6\frac{3}{10}$                       g.  $2\frac{2}{3}$                       h.  $2\frac{2}{5}$                       i.  $14\frac{2}{5}$

Ex. XII.1 a.  $10\frac{1}{4}$     b.  $10\frac{1}{4}$     c.  $10\frac{2}{3}$     d.  $10\frac{1}{4}$     e.  $9\frac{2}{3}$     f.  $10\frac{1}{5}$   
 Ex. XII.2 a.  $10\frac{1}{4}$     b.  $10\frac{1}{4}$     c.  $7\frac{1}{3}$     d.  $8\frac{1}{4}$     e.  $9\frac{2}{3}$     f.  $10\frac{1}{5}$   
 Ex. XII.3 a. 11    b. 11    c. 11    d.  $9\frac{1}{2}$     e.  $10\frac{1}{3}$     f.  $10\frac{3}{5}$   
 Ex. XII.4 a.  $5\frac{3}{4}$     b.  $7\frac{3}{4}$     c.  $1\frac{1}{3}$     d. 1    e.  $\frac{1}{2}$     f.  $1\frac{1}{3}$   
 Ex. XII.5 a.  $5\frac{3}{4}$     b.  $7\frac{3}{4}$     c.  $1\frac{1}{3}$     d. 1    e.  $\frac{1}{2}$     f.  $1\frac{1}{3}$  (See 4 & 5 above are similar)  
 Ex. XII.6 a.  $\frac{3}{4}$     b.  $\frac{3}{4}$     c.  $\frac{6}{11}$

### Chapter – 13

13.5 a. X    b. X    c. X    d.  $\sqrt{\quad}$     e. X    f. X    g. X    h.  $\sqrt{\quad}$     i. X    j.  $\sqrt{\quad}$     k. X  
 l. Own

13.10 a. 6    b. 10    c. 14    d. 18    e. 22    f. 12    g. 15    h. 150    i. 30    j. 30    k. 50  
 l. 12    m. 12    n. 12    o. 24

13.11 a.  $\frac{4}{5}$     b.  $\frac{4}{5}$     c.  $\frac{1}{2}$     d.  $\frac{4}{5}$     e.  $\frac{11}{12}$     f.  $\frac{5}{6}$     g.  $\frac{4}{5}$

13.13 a.  $\frac{9}{12} = \frac{3}{4}$     b.  $\frac{1}{4}$     c.  $\frac{8}{10} = \frac{4}{5}$     d.  $\frac{2}{10} = \frac{1}{5}$     e.  $\frac{15}{10} = 1\frac{1}{2}$     f.  $\frac{1}{10}$     g.  $\frac{29}{20} = 1\frac{9}{20}$     h.  $\frac{1}{20}$

13.14 Two methods needed

a.  $\frac{3}{4}$     b.  $\frac{1}{4}$     c.  $\frac{8}{10} = \frac{4}{5}$     d.  $\frac{8}{10} = \frac{4}{5}$     e.  $\frac{15}{10} = 1\frac{1}{2}$     f.  $\frac{1}{10}$     g.  $1\frac{9}{10}$   
 h.  $\frac{1}{20}$     i.  $\frac{33}{36} = \frac{11}{12}$     j.  $\frac{1}{36}$  [see 13.14 a to h are the same as 13.13 a to h]

**Chapter – 14**

- 14.2.1 a.  $12345 = 1 \times 10000 + 2 \times 1000 + 3 \times 100 + 4 \times 10 + 5 \times 1$   
 b.  $10234 = 1 \times 10000 + 2 \times 100 + 3 \times 10 + 4 \times 1$   
 c.  $10023 = 1 \times 10000 + 2 \times 10 + 3 \times 1$   
 d.  $10002 = 1 \times 10000 + 2 \times 1$   
 e.  $908040 = 9 \times 100000 + 8 \times 1000 + 4 \times 10$
- 14.2.2 a.  $100001 > 98231$  b.  $9024 > 8924$  c.  $190 > 88$
- 14.2.3.1 a.  $88 < 190 < 8924 < 10002 < 10010 < 10023 < 10234 < 12345 < 50403 < 98231 < 100001 < 908040$
- 14.3.2 a.  $\frac{1}{10} + \frac{2}{100} + \frac{3}{1000} + \frac{4}{10000} + \frac{5}{100000}$   
 b.  $\frac{1}{10} + \frac{2}{10000} + \frac{3}{100000}$   
 c.  $\frac{1}{10} + \frac{2}{10000} + \frac{2}{100000}$   
 d.  $\frac{1}{100} + \frac{2}{100000}$   
 e.  $\frac{9}{10} + \frac{8}{10000} + \frac{4}{1000000}$
- 14.3.3 a. .982 b. .98231 c. .9 d. .9 e. .91 f. .9 g. .88 h. 88
- 14.3.4 a.  $.10023 < .10234 < .12345$   
 b.  $.01002 < .090804 < .10023$   
 c.  $.01002 < .090804 < .10023 < .10234 < .12345$   
 d.  $.01002 < .090804 < .1001 < .10023 < .10234 < .12345 < .50403$   
 e.  $.100001 < .101 < .190 < .199 < .8 < .81 < .88 < .89 < .893 < .90 < .91 < .982 < .98231$
- 14.5.2 a. yes b. yes c. yes d. yes e. yes f. no g. no h. no i. No j. yes k. yes
- 14.6.1 a. .123 b. .10002 c. .5403 d. .504 e. .053 f. .0078 g. .0708 h. .708  
 =====

**Chapter – 15**

- 15.6 a. .5 b. 1.0 c. 1.5 d. 3.5 e. 27.5 f. .2 g. .2 h. .6 i. 8 j. 1.0 k. 11.0 l. 11.2 m. 11.8
- 15.8.2 a. 0.6 b. 1.2 (Actually 1.33) c. 1 d. 1.25 e. 1.75 f. 1.2 g. 1.4  
 h. 1.6 i. 1.8 j. 3.8 k. 0.80 (actually 0.08) l. 0.28 m. 0.42 n. 0.70  
 o. 0.84 p. 2.4 q. 1.88 r. 1.88 s. 0.375 t. 1.625 u. 0.77 v. 1.88
- 15.9.1 Ans already given.
- 15.10.1 2 methods by the students  
 a. 3.5 b. 2.857 c. 11.8 d. 2.77 e. 2.77 f. 277.7
- 15.11.1 a. 0.22 b. 0.233 c. 0.2404 d. 0.515 e. 0.5001 f. 0.5617 g. 6.0617 h. 0.665  
 i. 0.66606 j. 6.565 k. 2.1 l. 0.21 m. 0.021 n. 1.0021
- 15.12.1 a.  $\frac{1}{6} = 0.166$ ;  $\frac{1}{7} = 0.1428571$ ;  $\frac{1}{9} = 0.11$  b.  $\frac{22}{7} = 3.1428$   
 =====

**Chapter – 16**

- 16.2 a. a. 0.95 b. 0.91 c. 0.34 c. 0.59  
 b. I class - a and b; Failed – c  
 c. a. 30% b. 60% c. 75% d. 90%  
 d. a. 30% b. 50% c. 92% d. 72%

- 16.4 a. 55% b. 60% c. 60.25% d. 1% e. 2% f. 5% g. 10% h. 99%
- =====

**Chapter – 17**

- 17.3.1 a. No Profit No Loss b. No Profit No Loss c. Profit Rs. 200 d. profit Rs. 100  
 e. Loss 10000 f. Profit 2 lakhs

- 17.4.1 a. Profit 44% b. Profit 50% c. Profit 55% d. Loss 4% sell at Rs. 100 each.
- =====

**Chapter - 18**

- 18.5 a. Rs. 10 b. Rs. 20 c. Rs. 18

- 18.6 a. 50 b. 150 c. 300 d. 1000 e. 5 f. 1

- 18.7 a. 50 b. 100 c. 250 d. 5 e. 5 f. < Re 1

- 18.7.1 g. Rs. 2 h. ~ Rs. 2

- 18.8.1 a. 250% b. 240% c. 200%

- 18.10.2 a. 400 b. 1000 c. 25% d. Bank is better

- 18.12.4 a. Rs. 400 b. 180%
- =====

**Chapter – 19**

- 19.11 1. 290 2. 295 3. Compound interest 4. Simple Interest 5. Yes
- =====

**Chapter – 20**

1. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19  
 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

2. Place value is "thousand"

3. 6

4. a. A b. A

5. 12, 6, 4, 3

6. a. .5 = 50% b. .75 = 75% c. .3 = 30% d. .66 = 66% e. .8 = 80%

7. a.  $\frac{2}{3} = \frac{4}{6} = \frac{10}{15}$  b.  $\frac{4}{3} = \frac{8}{6} = \frac{20}{15}$  c.  $\frac{3}{5} = \frac{9}{15} = \frac{30}{50}$

8. a. 10005 b. 12345

9.  $\frac{6}{2} \times \frac{6}{3} = 6$

10. a. 100 b. 0.001 c. 3600 d. Refer (nor recommended for memory) e. 12

11. a. 2.5 b. False c. True d. d
12. a. 4 b. 1 c. 10, 20, 30 d. 0 e.  $\frac{9}{3} = 3$
13. a. 111105 b.  $123450 + 12345 = 135785$
14. a. 70 b. 112.5
15. a.  $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}$  b.  $\frac{1}{260}, \frac{1}{250}, \frac{1}{25}, \frac{1}{22}, \frac{1}{2}$  c.  $\frac{4}{240}, \frac{3}{160}, \frac{5}{255}, \frac{1}{50}, \frac{2}{97}$
16. a.  $\frac{5}{2}$  b.  $\frac{5}{4}$  c.  $\frac{7}{4}$  d.  $\frac{19}{4}$
17. a. 4 (2 rem) b. 2 (6 rem) c. 3 (1 rem) d. 3 (1 rem) e. 0 (1 rem)
18. a. 204 b. 204
19. a.  $(5 \times 2) + 4 = 14$  b.  $5 \times (2 + 4) = 30$  c.  $(5 \times 2) + 4 - 2 = 12$   
d.  $5 \times (2 + 4) - 2 = 28$
20. a.  $\frac{1}{3}$  b. 1 c.  $\frac{2}{3}$  d. 1 e. 1
21. a.  $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}$  b.  $\frac{1}{6}, \frac{1}{3}, \frac{1}{2}, \frac{2}{3}, \frac{3}{4}$  c.  $\frac{7}{12}, \frac{3}{5}, \frac{3}{4}, \frac{5}{6}$
22. a.  $\frac{1}{12}$  b.  $\frac{1}{2}$  c.  $\frac{1}{4}$  d.  $\frac{1}{4}$
23. a.  $\frac{2}{3}$  b.  $\frac{5}{6}$  c.  $\frac{4}{5}$
24. a.  $\frac{1}{3}$  b.  $\frac{1}{2}$  c.  $1\frac{1}{12}$
25. a. 24 b. 30 c. 30
26. Loss Rs. 16000. Nothing. Try to sell 100 more good ones.
27. Rs. 250
28. Rs. 32
29. a. 60% b. 55% c. 375 marks
30. No profit no loss 0%
31. a. Profit 25% b. Profit 50% c. Loss 40% d. Loss 40% e. Loss 25% f. Profit 100%
32. 6.6 km
33. Rs. 50
34. Rs. 50
35. 50
36. 4
37. 8

38. 30 small size; 70 adult size; profit 55%

39. Profit 39.5%

40.

|    |    |    |    |    |
|----|----|----|----|----|
| 17 | 24 | 1  | 8  | 15 |
| 23 | 5  | 7  | 14 | 16 |
| 4  | 6  | 13 | 20 | 22 |
| 10 | 12 | 19 | 21 | 3  |
| 11 | 18 | 25 | 2  | 9  |

41. See text

42. Activity A, B, C

### Chapter – 21

21.5.1 a. Rs. 10 b. Rs. 5 c. Rs. 2.50 d. Yes e. Yes; Condition: sets intact

21.5.3 Do

21.6.1 Do

21.7.1 A.  $\acute{e}=4$   $\acute{o}=3$   $\hat{a}=2$   $\Delta=1$   
B.  $! =4$   $?=3$   $\%=2$   $\acute{o}=1$

21.9.1 a. Addition and multiplication: 2 methods to be done; 16, 24, 712  
b. All 16

21.9.2 a. Put  $y = 5$   $LHS = 3y + 2y = 15 + 10 = 25$   
 $RHS = 5 \times 5 = 25$

Do Similarly b and c.

21.10.2 A. Do it by own B. 199, 1 C: 1. 100 2. 80 3. 81 4. 99 D: 1. 100 2. 80

21.11.2 4, 25

21.11.4 Activity

### Chapter – 22

22.3.1 1. 200 2. 59 3. 1600 4. Rs. 310

22.3.2 1. 1 2. -35 3. Rs. 800 4: a. Rs.40 b. Rs. 300 c. Rs. 144

22.4 1. d 2. d 3. d

22.6 a. 1 b. 0 c. -1 d. 4 e. -4 f. 2 g. 0 h. -1 i. 6 j. -6

22.7 c, e, h, j

22.8.2 Pictures to make

22.11.1 (a) a. 7 b. -3 c. 1 d. 7 e. -3 f. -7 g. 7 h. +3 i. -1  
j. 7 k. -7 l. -7 m. 7

(b) a. 12350 b. 12340 c. -12340 d. -12340 e. 12350  
f. -12340 g. 12340 h. -12350

22.11.2

| - | 1  | 2  | 3  | 4  | 5  | 5  | 7  | 8  | 9 |
|---|----|----|----|----|----|----|----|----|---|
| 1 | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8 |
| 2 | -1 | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7 |
| 3 | -2 | -1 | 0  | 1  | 2  | 3  | 4  | 5  | 6 |
| 4 | -3 | -2 | -1 | 0  | 1  | 2  | 3  | 4  | 5 |
| 5 | -4 | -3 | -2 | -1 | 0  | 1  | 2  | 3  | 4 |
| 6 | -5 | -4 | -3 | -2 | -1 | 0  | 1  | 2  | 3 |
| 7 | -6 | -5 | -4 | -3 | -2 | -1 | 0  | 1  | 2 |
| 8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0  | 1 |
| 9 | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 |

### Chapter – 23

23.5 a. 85 b. 100 c. 2 d. 1 e. 11 f. 2

23.6 a. 4 b. 1 c. 2 d. 4 e. 1 f. 1 g. 1 h. 1

23.7.1 a. 30 b. 10 c. -10 d. 2 e.  $\frac{1}{2}$  f. 323.7.2 a. 50 b. 30 c. -60 d. 4 e.  $\frac{1}{8}$  f.  $\frac{5}{3}$  g.  $\frac{5}{4}$ 23.9.1 c.  $A = T + 5$  where  $A$  = Akka's age,  $T$  = Thangi's age  
 $T = 10$   
 $A = 65$ 

23.9.2 A1. 10 hrs A2. 75 kmph C. 0.1mm

### Chapter – 24

24.1 1. Yes 2. No 3. No 4. No 5. Yes 6. No 7. Yes 8. Yes 9. Yes 10. Yes  
11. Yes

24.2 See 24.1

24.5 a.  $\sqrt{\quad}$  b. X c. X d. X e.  $\sqrt{\quad}$  f.  $\sqrt{\quad}$  g.  $\sqrt{\quad}$  h.  $\sqrt{\quad}$  i.  $\sqrt{\quad}$ 24.6.1 a)  $5a + 5b + 5c$  b)  $5a + 3a + 2a (=10a)$  c)  $5a + 3a$  d)  $5a + ab$  e)  $a^2 + ab + ac$   
f.  $5 \times 1 + 5 \times 2 + 5 \times 3 + 5 \times 4 + 5 \times 5 (=75)$  g.  $15a$  h.  $2x + 2y + 2z$  i.  $ax + ay + az$ 24.6.2 a.  $\frac{4}{5} + \frac{1}{5} = 1$  b.  $\frac{a+b}{5} = 2$  c.  $\frac{8}{a} = \frac{8}{4} = 2$  d.  $\frac{7}{a} + \frac{8}{b} = \frac{7}{7} + \frac{8}{8} = 2$ 24.8.1 a.  $4a + 5b$  b.  $2a - 5b$  c.  $-4a + 5b$  d.  $a^2 + b^2 + c^2 + a + b + c$  e.  $6a + 8b + 11c$   
f. 37 g. -19 h. +13 i. 98 j. 135 k. 83 l. 15 m. 225 n.  $M > K$ 

24.12.1 a. 0 b. y c. -x

24.12.2 a. 0 b. y c. -a d. a e. a

### Chapter – 25

25.1.1 a.  $\sqrt{\quad}$  b. X c. X d. X e.  $\sqrt{\quad}$  f.  $\sqrt{\quad}$  g.  $\sqrt{\quad}$  h. X i.  $\sqrt{\quad}$ 25.1.2 a. X b. X c. X d. X e.  $\sqrt{\quad}$  f.  $\sqrt{\quad}$  g.  $\sqrt{\quad}$  h. X i.  $\sqrt{\quad}$ 

25.1.3 Activity

25.3 1.  $30x$  2.  $30x$  3.  $30x$  4.  $30x$  5.  $90x$  6.  $60x$  7.  $60x$  8.  $15x + 60$  9.  $15x + 60$

25.4.1 1.  $2x$  2.  $2x$  3.  $15x$  4.  $x + 4$  5.  $3(x + 4)$  6.  $x$  7. 1

25.4.2 a.  $\frac{2}{x}$  b.  $2x$  c. 3 d. 1 e.  $\frac{1}{2x}$  f. 1

25.5.1 a.  $X$  b.  $X$  c.  $\sqrt{\quad}$  d.  $X$  e.  $\sqrt{\quad}$

25.5.3 a.  $\frac{5}{x}$  b. 1 c.  $\frac{6}{n}$  d. 1 e.  $\frac{45}{d}$  f. 3 g. 9 h. 15 i. 1 j.  $\frac{a+b+c+d+e}{5}$

k. 2 l.  $\frac{a+b+c+d+e}{n}$

25.8 B: 1)  $6X$  2)  $18X^2$  3)  $6X$  4)  $9X$  5)  $8X^2$  6)  $y^{10}$  7)  $10d$  8)  $b^n$  9)  $X^m$

25.9 a.  $20a^3$  b.  $39a^2$  c.  $296a$

25.10.1 a.  $\frac{1}{5}$  b.  $\frac{1}{50}$  c.  $\frac{1}{500}$  d. 1 e. 100 f. 10000 g.  $\frac{1}{8}$  h.  $\frac{8}{1}$  i.  $\frac{3}{8}$  j.  $\frac{8}{3}$   
k.  $\frac{100}{8}$  l.  $\frac{125}{100}$

25.10.2 a. 30 b. 0.480 c.  $0.003 \times 66 \times 99 = 0.3 \times 66 = 20.0$

### Chapter – 26

26.3 a. 50 b. 42 c. 10 & 40 d. (5, 25), (6, 20), (7, 15), (8, 10) etc e. 8, 10

26.6.1 A: 1. Money in my account =  $m$   
2. Money I owe you =  $m_1$   
3.  $2d = x$   $d = \text{distance between points}$   
 $x = \text{total distance / day}$   
4.  $I = 3I_1$   $I = \text{my eating, } I_1 = \text{your eating}$   
5.  $T_N = \frac{1}{2} T_1$   $T_1 = \text{your time } T_N - \text{Nirmala's time}$   
6.  $B_p = 4 BD$   $B_p = \text{Paradise bill; } D_p = \text{Darshni bill}$   
7.  $S = L - 10\% L$   $S = \text{Sale Price, } L = \text{Label Price}$

B: 1) 4500 2) 110 3) 100 4) 6, 2 5) 2 days, 3 man days 6) 60 7) Rs. 68.60

C: 1) 200 to N, 100 to K 2) 20 / day to N, 10 / day to K

### Chapter – 27

27.2.1 Writing steps is important

a. 720 b. Product =  $10 \times x \times 3 \times y \times 4$  c. Result =  $2(5 + x) + 3(y + 4)$   
 $= 30 \times x \times 3 \times y \times 4$   $= 10 + 2x + 3y + 12$   
 $= 120 \times x \times y$   $= 2x + 3y + 22$   
 $= 120xy$

d.  $5x + 22$  e.  $x + 2$  f.  $-x - 2$

27.3.2 Step by step

a. i)  $5 \times 38 = 190$       ii)  $\frac{38}{1000} \times 300 = 11.4 = \text{Rs. } 11.40$

b. Loose oil

27.4.1 a.  $\checkmark$  b. X c. X d.  $\checkmark$  e.  $\checkmark$  f. X g.  $\checkmark$  h.  $\checkmark$  i. X j.  $\checkmark$

27.4.2 a.  $\checkmark$  b. X c.  $\checkmark$  d.  $x - 2 = y - 5 - 3$  Wrong;  $x - 2 = y - 5 + 3$  True  
e.  $\checkmark$  f. X g.  $\checkmark$  h.  $\checkmark$  i. X j.  $\checkmark$

27.6.1 i) LHS =  $x + a + b$   
RHS =  $x - (b - a)$   
=  $x - b + a$   
=  $x + a - b$       LHS = RHS      Therefore True

ii)  $\checkmark$     iii) X    iv)  $\checkmark$     v)  $\checkmark$     vi)  $\checkmark$

27.8.1 Activity

27.10 i)  $x = 5\frac{1}{2}$     ii) Rs. 5.50    iii) Rs. 15    iv) Rs. 200, Rs. 100    v)  $x = 2$     vi) 5    vii) 35

27.11.3 a. 10    b. 1000    c. 8    d. 2    e. 2    f. 8    g. 30    h.  $\frac{1}{2}x - \frac{1}{3}x = 25$     Ans:  $x = 150$   
i.  $a = 20$     j. 20    k. 55

27.14 a. (My age) - 5    b. 250    c. Rs. 5    d. Rs. 600; Rs. 6/kg profit 40%

### Chapter – 28

28.6.3 3 methods

a. 225    b. 2.25    c. 0.0225    d. 240    e. 440    f. 4.4    g. 4.48    h.  $\frac{9}{64}$     i. 6.25    j. 0.32

28.7.2 (Activity)

28.9.1 a. 10    b. 100    c. 100    d. 25    e. 15    f. 60

28.9.2 a. 10a    b. 10a    c. 100a    d.  $25a^2$     e. a    f. 5a    g.  $15a^2$     h.  $15a^2$

28.12.2 a. 2700    b. 2700x    c. 6    d. 6ab    e. 18    f. 18(a + b)    g. 30    h. 30a(x - y)    i. 26  
j.  $\frac{26}{a}$     k. 56    l. 51    m. 12.8    n. 4.4    o. 44    p.  $56\sqrt{a}$     q.  $4.4a\sqrt{b}$     r.  $\frac{4.4}{a}$   
s.  $44\frac{a}{b}$     t.  $56\frac{\sqrt{a}}{b}$

28.14 i.  $\checkmark$     ii. x    iii. x    iv.  $\checkmark$     v.  $\checkmark$     vi. x    vii.  $\checkmark$     viii. x    ix. x    x.  $\checkmark$

28.15.1 Only for advanced students.

### Chapter – 29

29.2.1  $(a \pm b)^2 = a^2 \pm 2ab + b^2$      $(p \pm q)^2 = p^2 \pm 2pq + q^2$      $(u \pm v)^2 = u^2 \pm 2uv + v^2$   
 $(a + b)^2 = a^2 + 2ab + b^2$      $(p + q)^2 = p^2 + 2pq + q^2$      $(u + v)^2 = u^2 + 2uv + v^2$   
 $(a - b)^2 = a^2 - 2ab + b^2$      $(p - q)^2 = p^2 - 2pq + q^2$      $(u - v)^2 = u^2 - 2uv + v^2$

29.3.1  $xa + xb$     21368 - 4936     $ax^2y - 4ax^2$   
 $xa - ab$     100 - 80  
 $a^2x - cx$      $2xy + 6x$   
 $20 + 40$      $4abx + 8ax$

- 29.4 1.  $5x + 10x + 20 + 40 = 15x + 60$  Do this way.  
 2.  $5342x - 1234x + 21368 - 4936 = 4108x - 16432$   
 3.  $2xy + 6x + y + 3$   
 4.  $4abx + 8ax + b + 2$   
 5.  $a^2x - cx + a^2 - c$   
 6.  $400 - 80 - 75 + 60 = 355$   
 7.  $ax^2y - 4ax^2 + 4y - 16$
- 29.5 1.  $x^2 - x(a + b) + b^2$  2.  $x^2 - 2ax + a^2$  3.  $x^2 - 2xy + y^2$  4.  $a^2 - 2ab + b^2$   
 5.  $25 - 5(a + b) + ab$  6.  $25 - 10a + a^2$  7.  $25 - 10y + y^2$   
 8.  $25 - 15 - 15 + 9 = 25 - 30 + 9 = 25 - 30 + 9 = -5 + 9 = 4$  9.  $36 - 12b + b^2$
- 29.7 1.  $(100 - 1)^2$  2.  $(100 - 1)^2$  3.  $(50 - 1)^2$  4.  $(50 + 1)^2$   
 5.  $(1000 + 2)^2$  6.  $(500 + 5)^2$  7.  $(20 + 2)^2$  8.  $(20 - 2)^2$   
 9.  $(100 + 12)^2$  10.  $(100 - 12)^2$
- 29.8.1 a.  $(100 - 1)(100 + 1) = 9999$  b.  $(100 - 5)(100 + 5) = 9975$   
 c.  $(100 - 8)(100 + 8) = 9936$  d.  $(50 - 8)(50 + 2) = 2436$   
 e.  $(10000 + 5)(10000 - 5) = 100000075$
- 29.10 Activity – Do.  
 29.11 Activity – Do.  
 29.12 Activity – Do.
- =====

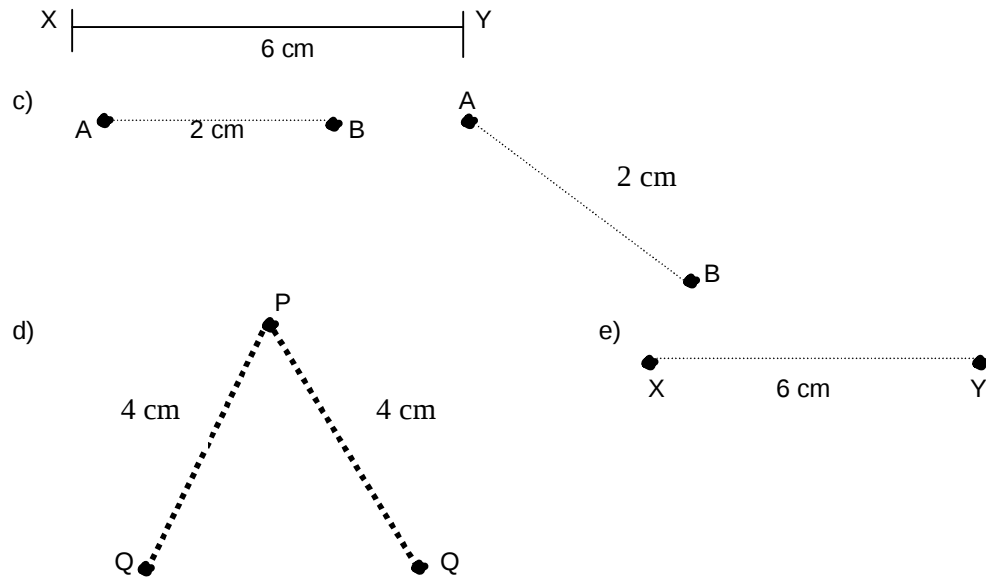
### Chapter – 30

- 30.1 a. 110 b. 110 c. 110 d.  $121a - 11$  e. 110a f. 0 g. a h. 0 i.  $a+1$  j. a
- 30.2 a. 11, 13, 15, 17, 19, 21, 23, 25 b. 10, 12, 14, 16, 18, 20, 22, 24, 26  
 c. 100, 95, 90, 85, 80, 75, 70, d. 60, 55, 50, 45, 40, 35, 30,  
 e. x, 2x, 3x, 4x, 5x, 6x, 7x, f. 2x, 4x, 6x, 8x, 10x, 12x, 14x,  
 g. 50x, 45x, 40x, 35x, 30x, 25x, 20x h. 18x, 15x, 12x, 9x, 6x, 3x, 0  
 i. 2, 4, 8, 16, 32, 64, j.  $2x, 4x^2, 8x^3, 16x^4, 32x^5$
- 30.3 a.  $\frac{2}{3} = \frac{4}{6} = \frac{10}{15}$  b.  $\frac{4}{3} = \frac{8}{6} = \frac{20}{15}$  c.  $\frac{2x}{3} = \frac{4x}{6} = \frac{10x}{15}$  d.  $\frac{2a}{5x} = \frac{4a}{10x} = \frac{10a}{15x}$   
 e.  $\frac{2}{3} = \frac{?}{3x} = \frac{22}{33} = \frac{10y}{15y}$  f.  $\frac{a}{a^2} = \frac{a^2}{a^3} = \frac{10a^4}{10a^5} = \frac{ka^3}{ka^4}$  g.  $\frac{a(a+1)}{2} = \frac{4a(a+1)}{2 \times 4}$   
 h.  $\frac{a}{b} = \frac{a \times 4}{b \times 4} = \frac{a \times (b+1)}{b \times (b+1)}$
- 30.4 a.  $\frac{3}{4}$  b.  $\frac{1}{15}$  c.  $\frac{3}{2}$  d.  $\frac{15}{4}$  e.  $\frac{c}{bd}$
- 30.5 a.  $\frac{2}{3} = \frac{4}{6} = \frac{10}{15}$  b.  $\frac{4}{3} = \frac{8}{6} = \frac{20}{15}$  c.  $\frac{3}{5} = \frac{9}{15} = \frac{30}{50}$  d.  $\frac{2a}{3} = \frac{4a}{6} = \frac{10a}{15}$   
 e.  $\frac{3}{5x} = \frac{9}{15x} = \frac{10}{50x}$  f.  $\frac{2a}{5x} = \frac{4a}{10x} = \frac{10a}{25x}$  g.  $\frac{2}{3} = \frac{2x}{3x} = \frac{20}{30} = \frac{10a}{15a}$   
 h.  $\frac{a}{a^2} = \frac{a^2}{a^3} = \frac{10a^4}{10a^5} = \frac{ka^3}{ka^4}$  i.  $\frac{a(a+1)}{1 \times 2} = \frac{4a(a+1)}{2 \times 4}$  j.  $\frac{a}{b} = \frac{a \times 4}{b \times 4} = \frac{a \times (b+1)}{b \times (b+1)}$
- 30.6 a.  $\frac{5}{6}$  b.  $\frac{10}{21}$  c.  $\frac{41}{42}$  d.  $\frac{179}{84}$  e.  $\frac{1}{6}$  f.  $\frac{13}{42}$  g.  $-\frac{59}{84}$  h.  $3\frac{1}{21}$  i.  $\frac{179x}{84}$   
 j.  $\frac{179}{84x}$

- 30.7 a. 76 b. 126 c. 1287 d. 120 e. 1208 f. 1620 g.  $76x$  h.  $126x$  i.  $1287x^2$   
j.  $120y$  k.  $1208xy$  l.  $1620xy$
- 30.8 1.  $x, 3x, 5x, 8x$  2.  $x, 4x, 6x, 9x$  3.  $x, 4x, 7x, 9x$  4.  $x, 2x, x^2, x^3$  5.  $x^3, x^2, x, 2x$   
6. Same 7. Same 8. 9, 99, 101, 309, 310 9. Same as 8 10. Same
- 30.9 a.  $\frac{x}{3}$  b.  $\frac{9}{2}$  c.  $\frac{b}{6}$  d.  $\frac{2d}{3}$  e.  $\frac{2e}{5}$  f.  $\frac{f}{3}$   
g.  $\frac{7g}{12}$  h.  $\frac{9h}{99}$  i.  $\frac{y}{3}$  j.  $\frac{a}{13}$
- 30.10 a. 738 b. 1854 c. 18 d. 190 e. 19 f. 3 g.  $3a$  h.  $190y$
- 30.11 a. 2 b. 2 c. 12 d. 0 e. 4 f. 9 g. 3 h. 2
- 30.12 a. 82 b. 2 c. 2 d. 1 e.  $\frac{21}{20}$  f. 2 g.  $\frac{82}{39}$  f.  $\frac{9}{4}$  g. 5  
h. 1 i. 1 j. 1 k. 9 l. 1 m. 1 n. 1 o. 1 or 0 p. 1 1 1  
q. 8 r. 16
- 30.13 1) 54 2) 4 3) 26 4) 3 5) 0 6) 3 7) 49 8) 9 9) 48 10) 10
- 30.14 1.  $6a^2 - 2$  2.  $20a^2 + 20b^2$  3.  $6a^2 + 6b^2 + 6ab + 6a + 6b$  4.  $4a^2 + 14ab - 2a + 2b$   
5.  $a - 3b + 3c$
- 30.15 1.  $15a^2$  2.  $90a^2b^2$  3.  $-15a^2$  4.  $-15a^2$  5.  $90a^2b^2$  6.  $90a^2b^2$  7.  $a^2b^2c^2$   
8.  $8a^2b^2c^2$  9. 1 10. -1
- 30.16 1.  $x^2 + 8x + 16$  2.  $x^2 - 8x + 16$  3.  $a^2 + 4ab + b^2$  4.  $4b^2 - 8ab + a^2$   
5.  $a^2 + 8ab + 4b^2$  6. 102.04 7. 98.04 8.  $\approx 10000$  9.  $\approx 1000000$   
10.  $a^4 - b^4$  11.  $(x^2 + Y^2)(x + y)(x + y)$  12.  $(2a + b)(2a - b)$   
13.  $(3x + 2Y)(3x - 2y)$  14.  $x^2 + \frac{1}{x^2} + 2$  15.  $x^2 + \frac{1}{x^2} - 2$
- 30.17 1. Rs. 236 2. 5,10 3. 1, 2, 6, 5 4. 122, 66 boys, 56 girls 5. 15, 75 6. 3, 27  
7. 14 8. 10, 20 9. 25 10. Yes 30, 40 11. 10, 100; 5, 25; 1, 1  
12. Eg. Let age be 14. Ans. 128 (given by the students) Age =  $\frac{\text{Last 2 digits}}{2}$
- 30.18 1. a. 200 b. 1200  
2. a.  $\frac{1}{4}$  b. 250 mill amperes  
3. a. 5 b. 1000  
4. a. 10 b. 12  
5. a. 50 b. 10 (Units/Sec)  
6. a. 5.58 b. 0.04  
7. 1) 1 2) 4 3) 2 4) 5 5) 1 6) -1  
8. 1) 0 2) 1 3) 9 4) 16 5) 1 6) 16  
9. a. 154 sq. cm  $\text{cm}^2$  or (square centimeter) b. 154 sq.  $\text{m}^2$   $\text{m}^2$  or (square meter)  
10. a. 1540  $\text{cm}^3$  (cubic centimeter) b. 1540  $\text{m}^3$  (cubic meter)  
11.  $A_1 = 2500$   $A_2 = 2400$   $A_1 > A_2$
- 30.19 1) 2 2) 2 3)  $x = 3, y = 2$  4) 5 5) 3 6)  $\pm 2$  7)  $\pm 2$  8)  $\pm a$   
9)  $\pm (a+5)$  10) 5 11)  $2a - 5$  12) 9 13)  $x = 4, y = 2$  (can be -4, -2 also)  
14) 5 15) 4 16)  $\sqrt{5}$  17) 4

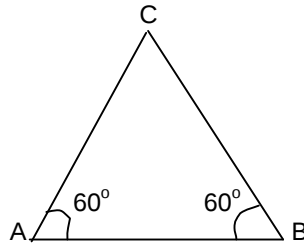
### Chapter – 31

- 31.9 a) A  $\overline{\hspace{2cm}}$  B  $\overline{\hspace{2cm}}$  P  $\overline{\hspace{2cm}}$  Q  
2 cm 4 cm



31.18

- 1) Doing activity
- 2) a) infinite b) infinite
- 3) Parallel lines, Intersecting, Perpendicular
- 4) Thick, Thin, Dotted, Dot – Dash
- 5) 1. Right 2. Acute 3. Obtuse 4. 180 deg or Obtuse 5. Obtuse 6. Acute
7. 90 deg or Right
- 6)  $(0 - 89^\circ)$ : 2, 6;  $(90^\circ)$ : 1, 7;  $(91 - 180^\circ)$ : 3, 4, 5
- 7) a) d b) 8 c) 8
- 8) a) d b) 4 c) 6
- 9)



$CA = CB$  (also  $= AB$ )  
 $\angle ACB = 60^\circ$

- 10) Activity
- 11) Square – 1; Rectangle – 18; Triangle – 12; Trapezium – 8;
- 12) Activity – Area =  $150000\text{m}^2$
- 13)  $\triangle ABC = 16$  Sq units;  $\triangle DEF = 20$  Sq units;  $\triangle PQR = 20$  Sq units
- 14) ABCD = 50 Sq units; IJKL = 20 Sq units; PQRS = 50 Sq units
- 15) 100 Sq units; 100 Sq units

### Chapter – 32

- 32.4 a) 1.7 b) 2.2 c) 2.8 d) 3.6 e) 9.5 f) 17 g) 22  
 h) 28 i) 36 j) 30 k) 54 l) 72 m) 81 n) 11.4  
 o) 99
- 32.7.2 a) 40 m b) 26 m c) Rs. 2000 and Rs. 1300 d) Rs.  $50 \times 56 = \text{Rs. } 2800$
- 32.8 a) and b) Figures c) Rs.  $20 \times 200 = \text{Rs. } 4000$ ; same  
 d) Use 1 feet = 30 cm e) Activity

**Chapter – 33**

- 33.2 a1. 24 a2. 24 a3.16 **b, c, and d activity**
- 33.4 I. Isosceles: A, B, F Equilateral: C, E Rightangles: D, G  
 II. A. 60 deg B. 30 deg C. 70 deg D. 60 deg E. 45 deg  
 F. 120 deg G. 100 deg
- 33.5 1) 5 1b) 3 1c) 4 2)  $10\sqrt{2}$ ,  $10\sqrt{2}$  3) 10 4)  $\sim 7$
- =====

**Chapter – 34**

- 34.3.2 1) 45 deg 2) 60 deg sector 3) 24; 15 deg sector
- 34.5 1) 154 sq. cm 2) 3 m 3) 14 cm, 6 m 4) 9 times
- 34.6 1) Large difference in circumferences 2a) Activity 2b) Activity  
 3) Activity 4)  $\approx 990$  inches 5) 4times 6) Second Child 7)  $\sim 0.92$  m
- =====

**Chapter – 35**

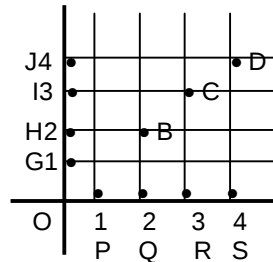
- 35.4 1) 8000 liters 2) 8000 liters 3) No
- 35.7 1) 40 liters 2)  $\approx$  same as 1 3) Total volume =  $10^6$  liters. One method is a cylinder of 1 m dia and 0.6 m height (many answers possible).
- 35.8 1)  $\approx 180 \text{ m}^3 / \text{hr} \approx 180000 \text{ liters} / \text{hr}$  2) 80 cc / min a) 800 cc b)  $\approx 5$  liters
- 35.11 Student's Work.
- =====

**Chapter – 36**

- 36.6 1) Own 2) 1 m = 100 cm; 1m = 1000 mm 3) Yes 4) Use verniers 5) Activity
- =====

**Chapter – 37**

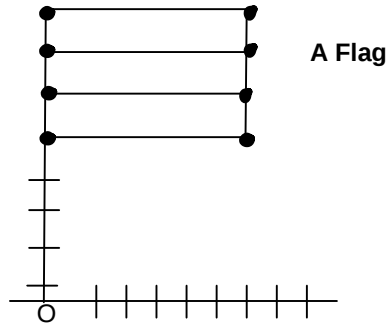
37.4.1



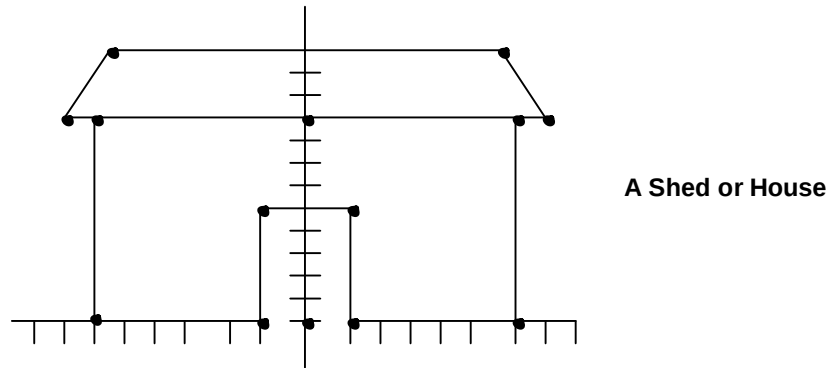
- 37.5 a. B, C, D and O straight line  
 b. G, H, I, J and O straight line  
 c. P, Q, R, S and O straight line  
 d. a is a line of slope or angle of  $45^\circ$   
 b is a vertical line, y axis  
 c is a horizontal line, x axis  
 e. 4 points will be  $(X, Y_1)$ ,  $(X, Y_2)$ ,  $(X, Y_3)$ ,  $(X, Y_4)$  Where X will be the same. Y different values.

37.7.3 (1) to (11) activity.

37.8 I.



II.

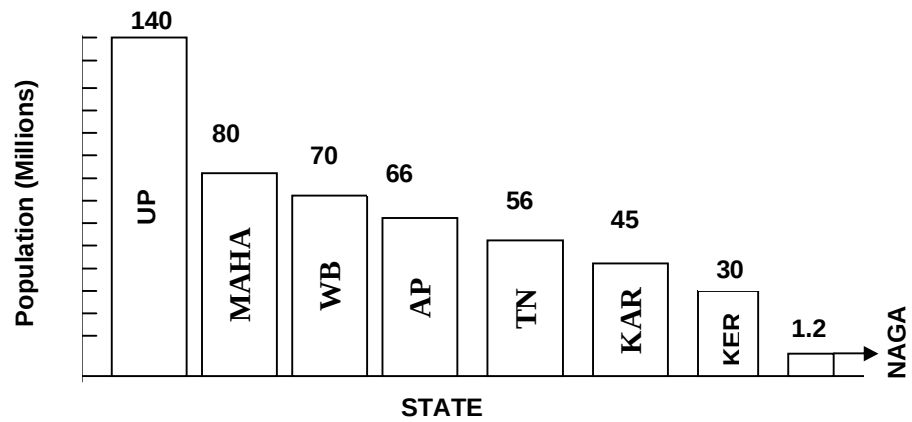


### Chapter – 38

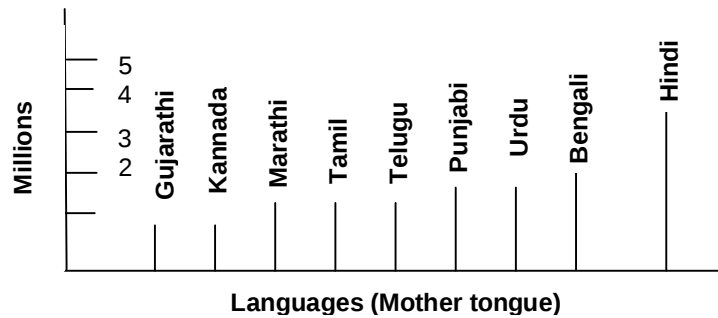
38.4 Activity to do.

38.5 Activity to do.

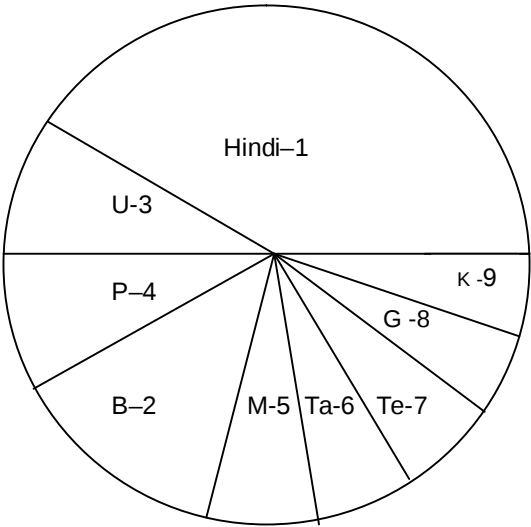
38.6 I.



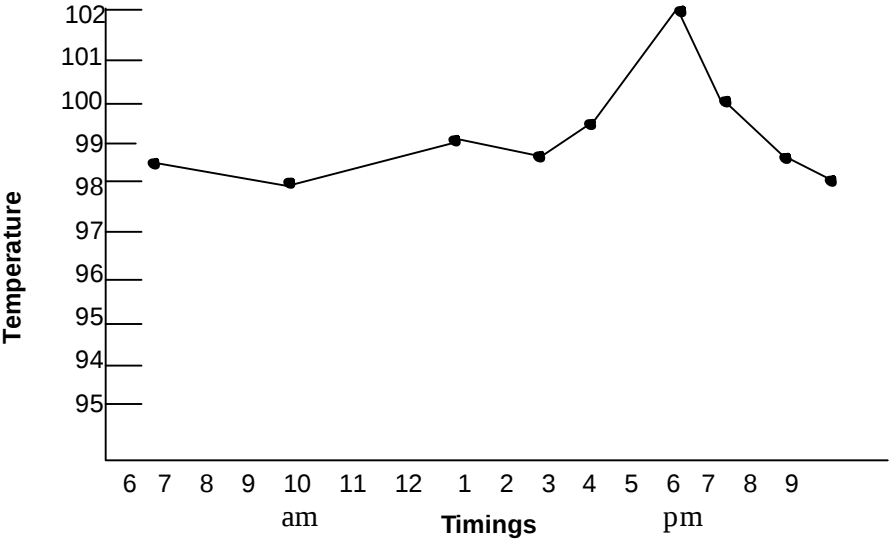
II.



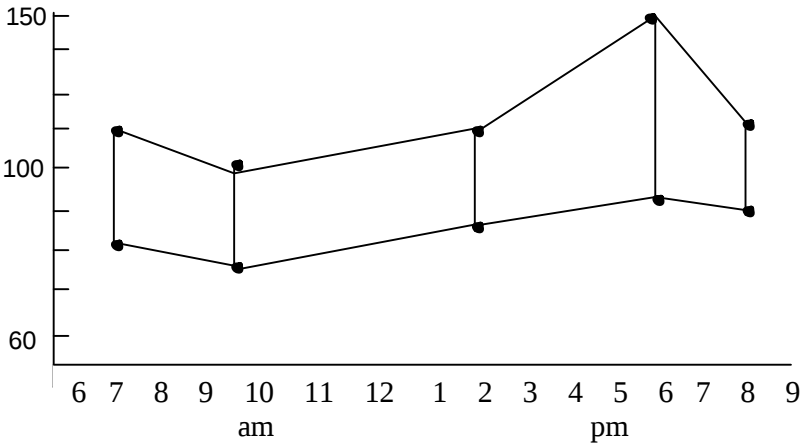
|       |                    |                     |
|-------|--------------------|---------------------|
| 1.    | 500                | 150                 |
| 2.    | 200                | 60                  |
| 3.    | 100                | 30                  |
| 4.    | 100                | 30                  |
| 5.    | 75                 | 22.5                |
| 6.    | 75                 | 22.5                |
| 7.    | 75                 | 22.5                |
| 8.    | 50                 | 15                  |
| 9.    | 50                 | 15                  |
| <hr/> |                    |                     |
|       | 1225               | 367.5 $\approx$ 360 |
|       | $\frac{360}{1225}$ | $= .294 \approx .3$ |



III.



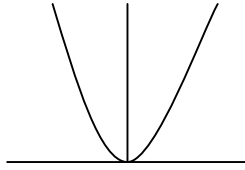
IV.



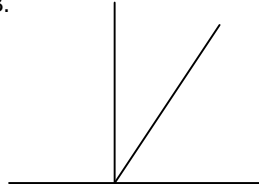
V. Own

38.7

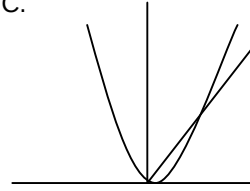
A.



B.



C.



E.  $x + y = 3$

$x - y = 1$

$y = 3 - x$

$y = x - 1$

(a)

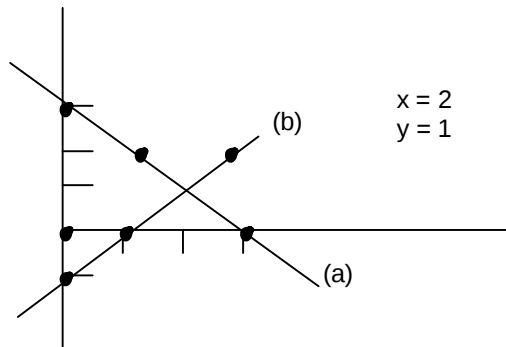
(b)

(a)  $y = 3 - x$

|        |       |       |       |
|--------|-------|-------|-------|
| x=     | 0     | 1     | 3     |
| y=     | 3     | 2     | 0     |
| (x, y) | (0,3) | (1,2) | (3,0) |

(b)  $y = x - 1$

|        |        |       |       |
|--------|--------|-------|-------|
| x=     | 0      | 1     | 3     |
| y=     | -1     | 0     | 2     |
| (x, y) | (0,-1) | (1,0) | (3,2) |



F. a

a.  $x = y = 5$

and

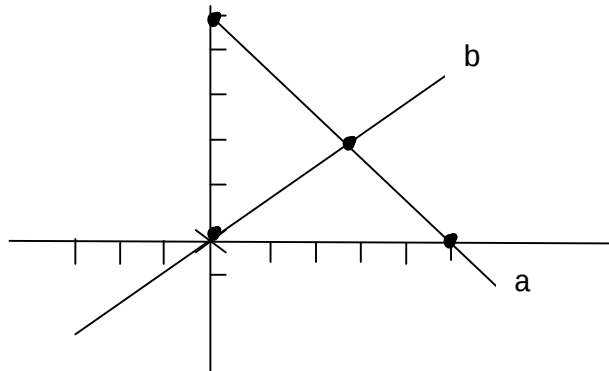
$2x - 3y = 0$

$y = 5 - x$  (a)

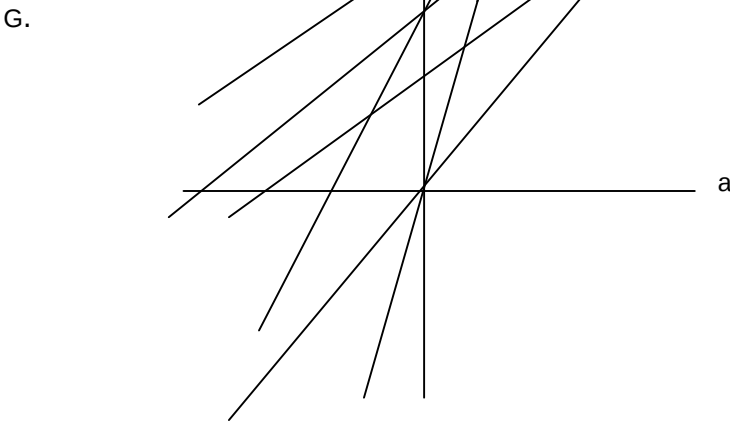
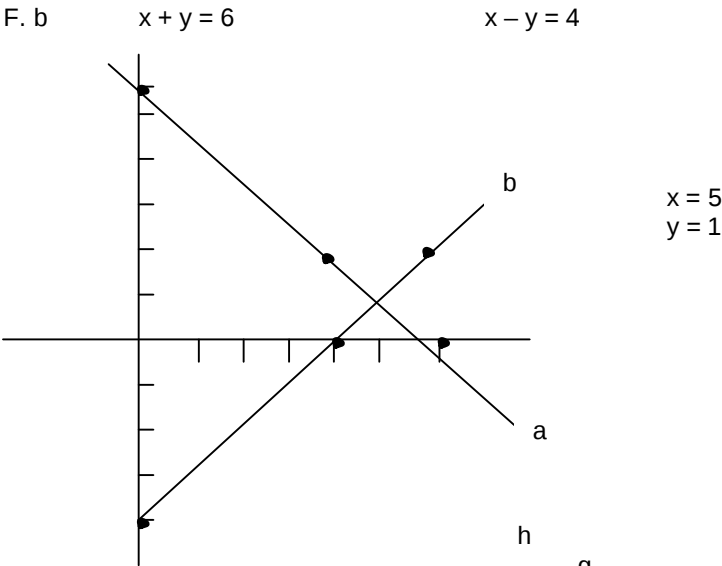
$y = \frac{2}{3}x$  (b)

|        |       |       |
|--------|-------|-------|
| x=     | 0     | 5     |
| y=     | 5     | 0     |
| (x, y) | (0,5) | (5,0) |

|        |       |       |         |
|--------|-------|-------|---------|
| x=     | 3     | 0     | -3      |
| y=     | 2     | 0     | -2      |
| (x, y) | (3,2) | (0,0) | (-3,-2) |

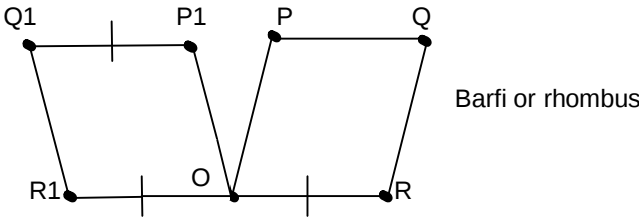


$x = 3$   
 $y = 2$

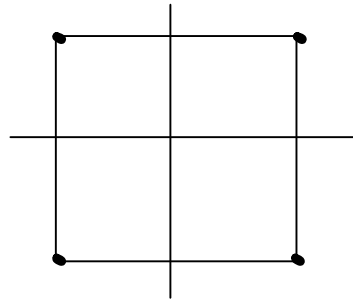


- h.
1. x axis is  $y = 0$
  2. y axis is  $x = 0$
  3.  $y = 10$

- 38.8
1. Work
  2. Work
  3. A and B:



C:

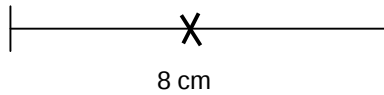


Square

D: Areas of all equal!

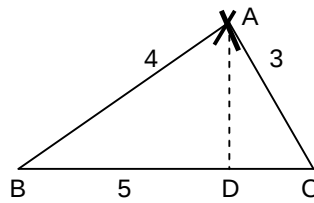
### Chapter – 39

39.1.1



No triangle is possible

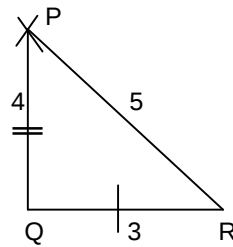
39.1.2



$$\text{Area} = \frac{1}{2} \text{BC} \times \text{AD}$$

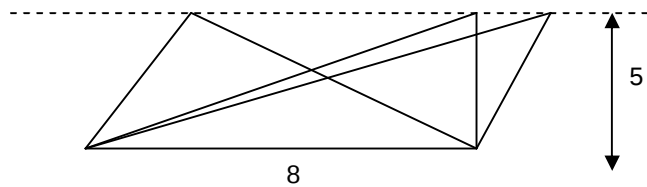
$$= \frac{1}{2} \times 5 \times \text{AD}$$

↓  
(to be measured)

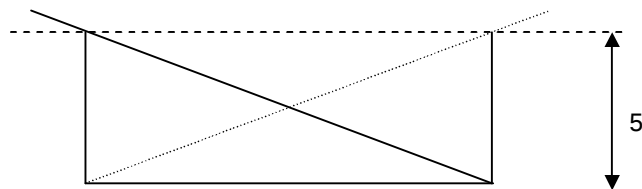


$$\text{Area} = \frac{1}{2} \times 3 \times 4 = 6 \text{ Sq. Units}$$

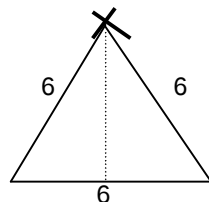
39.1.3



39.1.4



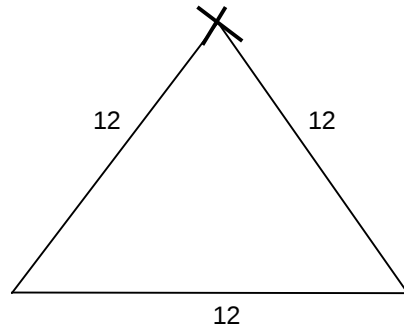
39.1.5



$$(\text{Area})_1 = \frac{1}{2} \times 6 \times 6 \times \frac{\sqrt{3}}{2}$$

$$= 9\sqrt{3}$$

$$(\text{Area})_2 = 4 \times (\text{Area})_1$$

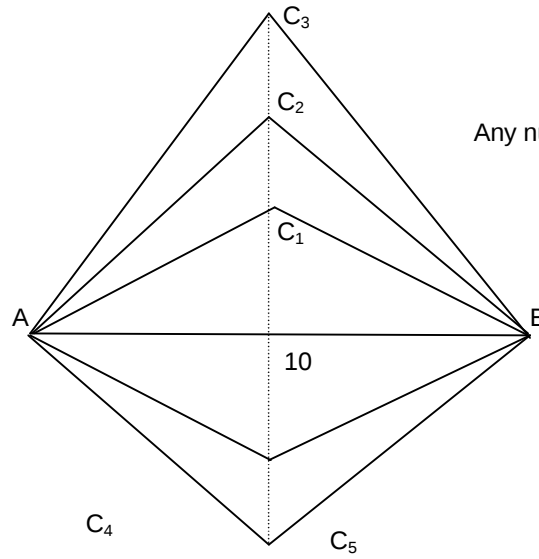


$$\begin{aligned} (\text{Area})_2 &= \frac{1}{2} \times 12 \times 12 \times \frac{\sqrt{3}}{2} \\ &= 36\sqrt{3} \end{aligned}$$

[Can show this by drawing on graph sheet]

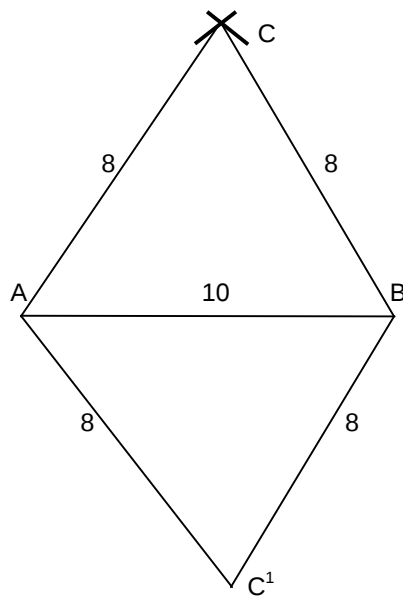
39.1.6

a.

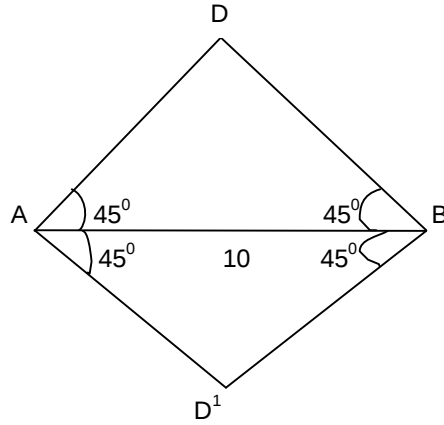


Any number of Isosceles Triangles!

b.

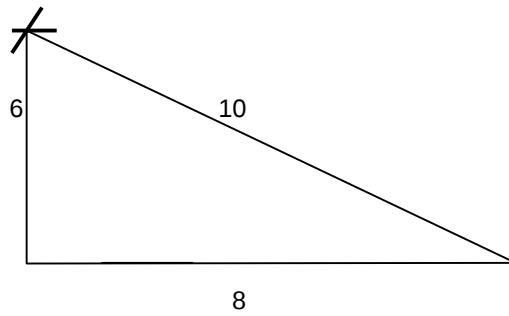


c.

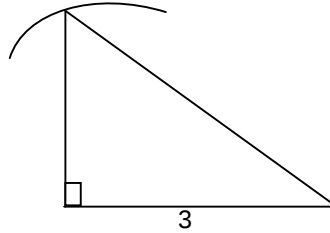


39.1.7

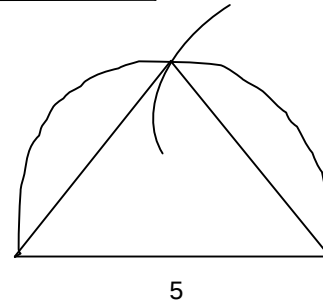
a.



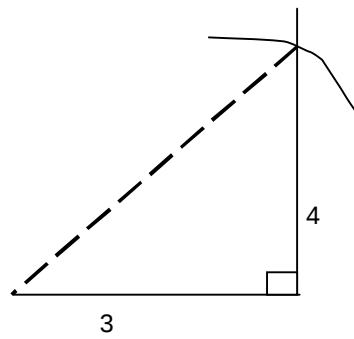
b.



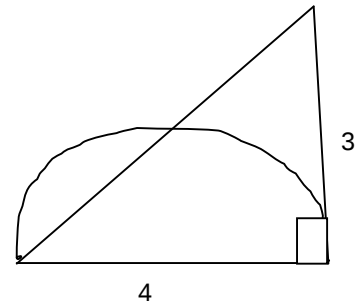
or



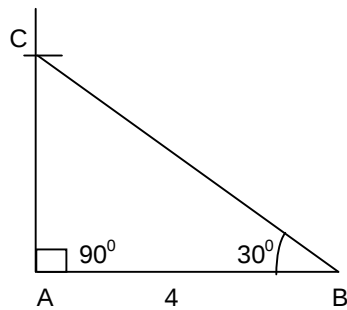
c.



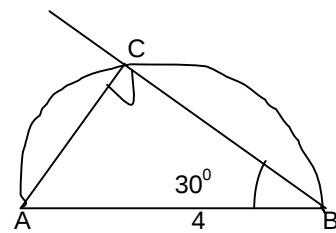
or

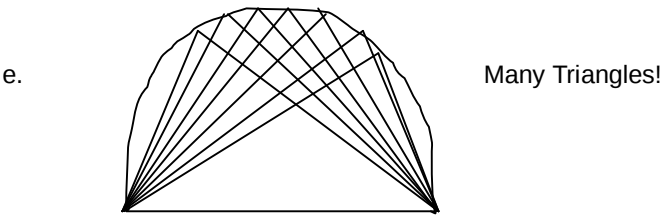


d.



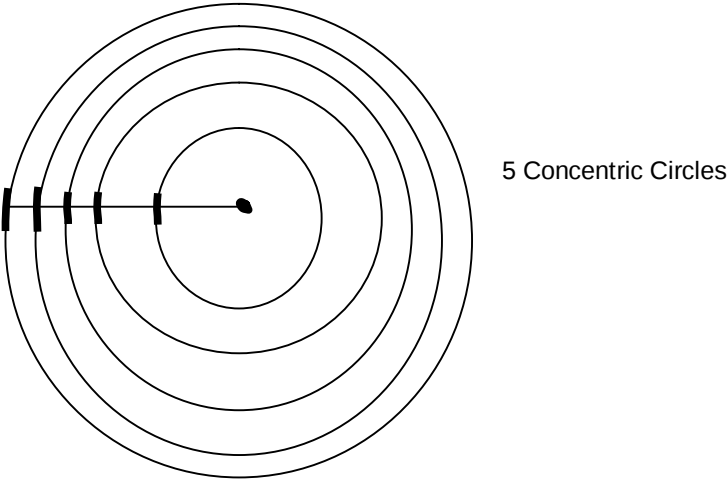
or



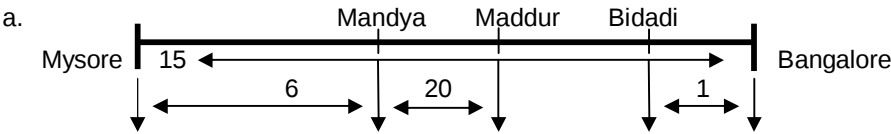


39.2.2 a. Yes b. Many c. Only one

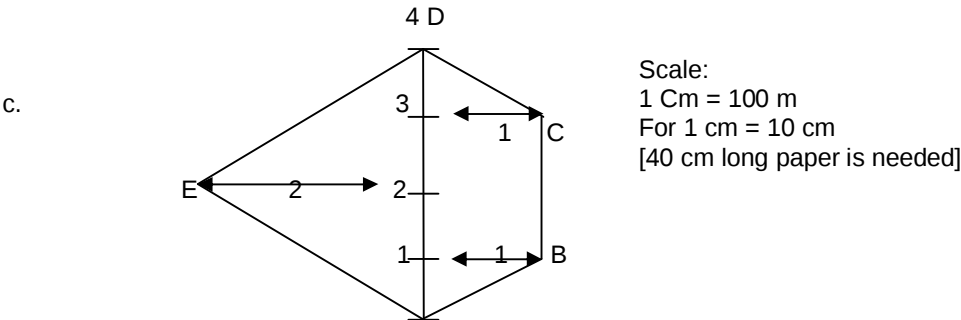
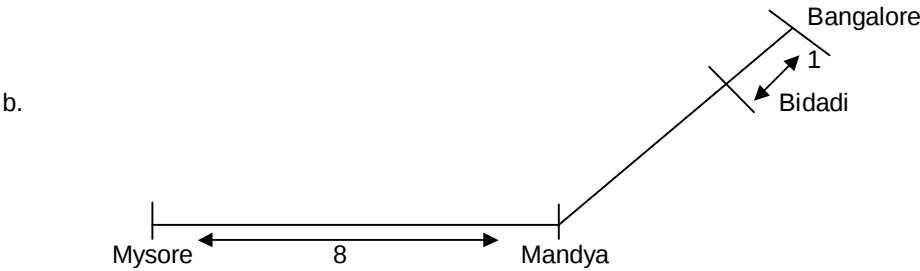
39.2.3



39.3.1



Scale: 1 cm = 10 km



0 A

$$\text{Area} = \frac{1}{2} \times 1 \times 1 + 1 \times 2 + \frac{1}{2} \times 1 \times 1 + \frac{1}{2} \times 4 \times 2$$

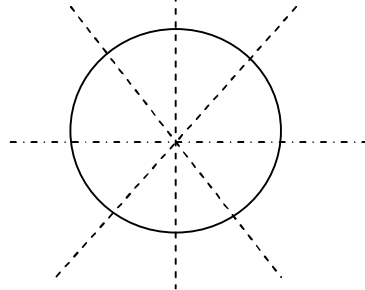
$$= \frac{1}{2} + 2 + \frac{1}{2} + 4 = 7 \text{ cm}^2 = 7 \times (100)^2 = 7 \times 10^4 \text{ m}^2$$

$$\text{Cost} = 7 \times 1000 \times 10^4 = 7 \times 10^7 = 7 \text{ crores}$$

39.4

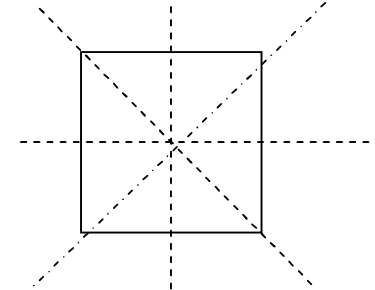
A.

Circle

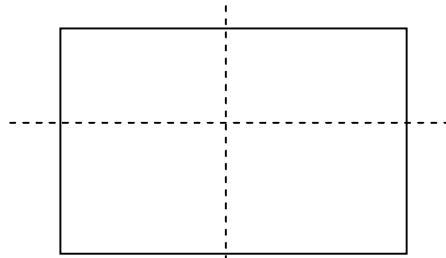


Any diameter

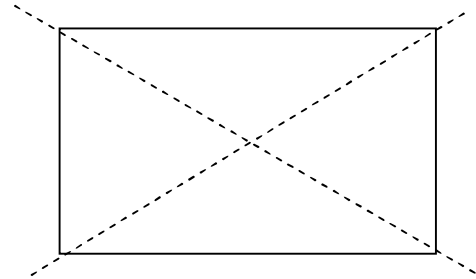
Square



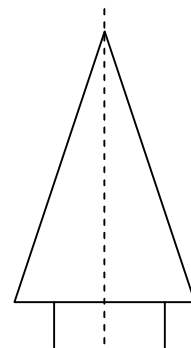
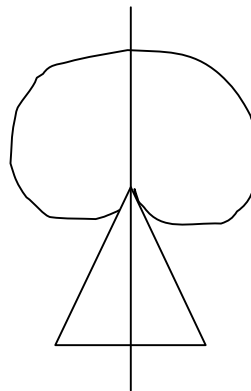
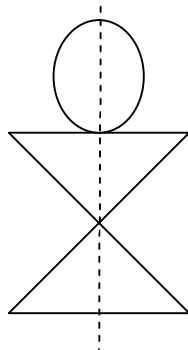
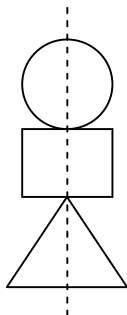
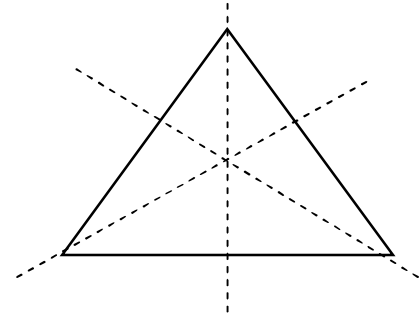
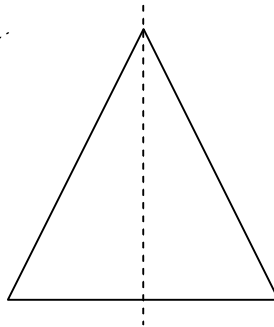
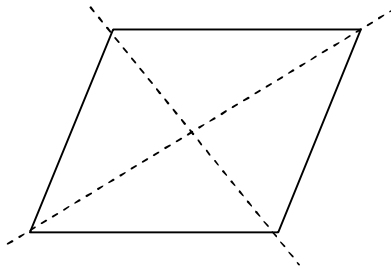
4 Lines



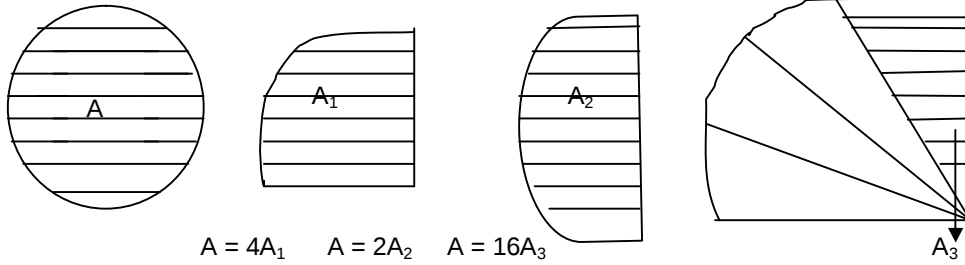
Strictly 2



These also if separable



B.



39.5

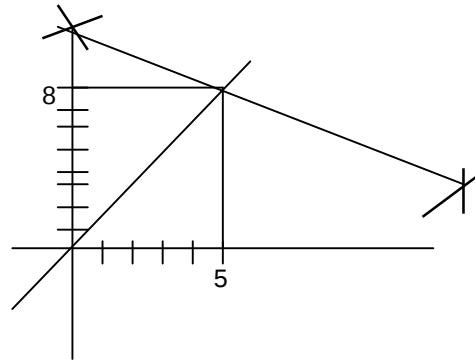
$$B. 2X - Y = 2$$

$$X + 2y = 21$$

$$Y = 2X - 2$$

$$Y = \frac{21 - X}{2}$$

$$X = 5 \quad Y = 8$$



C.

$$X + 10 = X^2 - 10$$

$$X^2 - X - 20 = 0$$

$$(X - 5)(X + 4) = 0$$

$$X - 5 = 0 \text{ therefore } X = 5$$

$$X + 4 = 0 \text{ therefore } X = -4$$

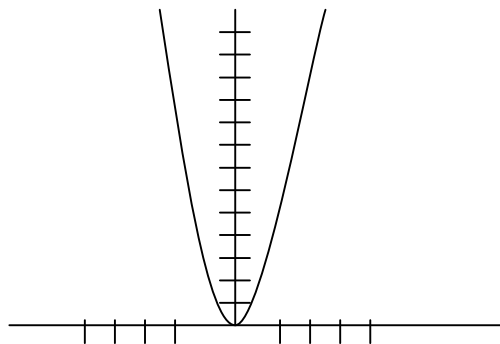
For Graph:

$$X + 10 = X^2 - 10$$

$$X + 20 = X^2$$

$$\text{Draw } y = X^2$$

$$\text{And Draw } Y = X + 20$$



Therefore make it number plus 1 is equal to square of the number minus 1. find the number.

$$X + 1 = X^2 - 1$$

$$X + 2 = X^2$$

$$Y = X^2$$

$$Y = X + 2$$

$$X = 2$$

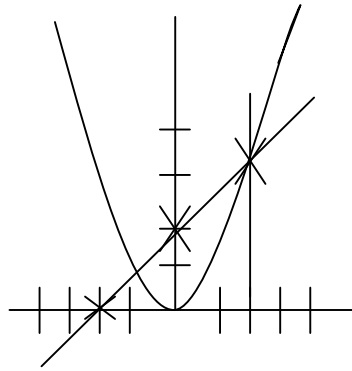
$$4 - 1 = 2 + 1$$

and

$$X = -1$$

$$(-1)^2 - 1 = (-1) + 1$$

$$0 = 0$$



39.6 A. North East B. South West (-4, -4) C. (-4, 4)

39.8 A.  $8\text{m}^3$ ; just enough for 1m height – one lorry Ok  
 B.  $1\text{m}^3 = 1000$  liters – 5 days  
 C.  $\approx .9\text{m}^3$   
 D. B is bigger

39.9 A. 2.4 m for 3m-dia cone B.  $\approx 1.8$  m

$$C. V_1 = \pi \frac{d^2}{4} \times 2d + \frac{1}{3} \pi \frac{d^2}{4} \times \frac{d}{2}$$

$$V_1 = (\text{only}) \quad V^2 - V^1 = \frac{1}{3} \frac{\pi d^2}{8} = \frac{\pi d^3}{24}$$

$$V^2 - V^1 = \frac{\pi d^3}{24} / \frac{2}{\pi d^3} = \frac{1}{12}$$

He makes 8% profits

## Chapter – 40

This is an example of a final test. Solutions are not attached to this book. Students should ask if they need it.

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