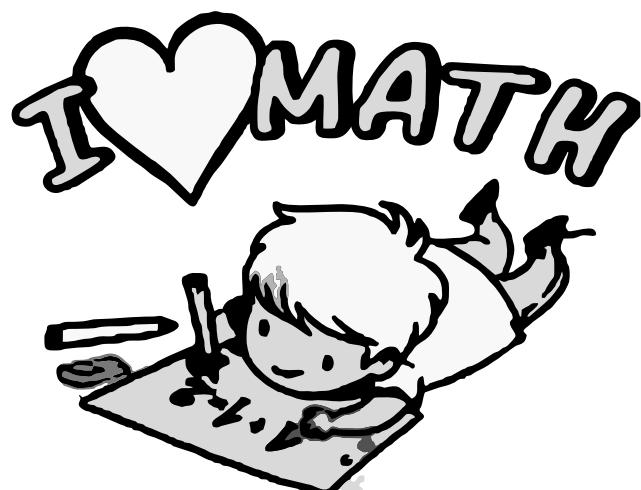


# **THE LEARNING STEPS**

## **MATHEMATICS**

### **CLASS - V**





## INDEX

- A. Fractions**
- B. Decimals**
- C. Lines and Rays**
- D. Circles**
- E. Simplification**
- F. Area and Perimeter**
- G. Profit and Loss**
- H. Percentage**
- I. Roman Numerals**
- J. 2D and 3D Shapes**
- K. Measurements**
- L. Data handling**



Date : \_\_\_\_\_

## **MULTIPLICATION OF FRACTIONS**

Multiplication of a fraction by a whole number

Example 1:  $\frac{3}{4} \times 15 = \frac{3 \times 15}{4} = \frac{45}{4} = 11\frac{1}{4}$

1. Find :

(a)  $\frac{4}{5} \times 25 =$  \_\_\_\_\_

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(b)  $14\frac{1}{2}$  of 8 = \_\_\_\_\_

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(c)  $6\frac{2}{7}$  of 42 = \_\_\_\_\_

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(d)  $17\frac{1}{2} \times 12 =$  \_\_\_\_\_

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(e)  $\frac{4}{9}$  of 63 = \_\_\_\_\_

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(f)  $2 \frac{1}{6} \times 72 =$  \_\_\_\_\_

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### Multiplication of a fraction by a fraction

Example 1:  $2\frac{1}{2} \times \frac{1}{3} = \frac{5}{2} \times \frac{1}{3} = \frac{5 \times 1}{6} = \frac{5}{6}$

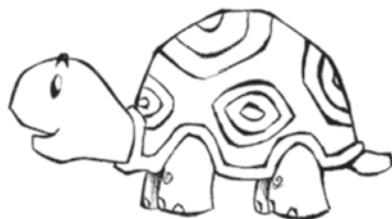
1. Find the product:

(a)  $\frac{5}{3} \times \frac{6}{7} =$  \_\_\_\_\_

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(b)  $5\frac{1}{3} \times \frac{2}{9} =$  \_\_\_\_\_

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(c)  $4\frac{1}{5} \times \frac{40}{9} =$  \_\_\_\_\_

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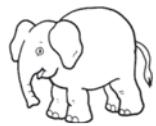
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(d)  $6\frac{3}{8} \times \frac{1}{2} =$  \_\_\_\_\_

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(e)  $33\frac{1}{3} \times \frac{30}{7} =$  \_\_\_\_\_

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2. Simplify:

(a)  $2\frac{1}{7} \times 10 \times 14 =$  \_\_\_\_\_

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(b)  $\frac{5}{3} \times \frac{1}{25} \times \frac{9}{11} =$  \_\_\_\_\_

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(c)  $\frac{69}{115} \times \frac{25}{23} =$  \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Fill in the blanks:

(a)  $\frac{1}{17} \times$  \_\_\_\_\_ = 1

(b) Reciprocal of  $\frac{7}{5}$  is \_\_\_\_\_

(c)  $\frac{18}{7} \times$  \_\_\_\_\_ = 1

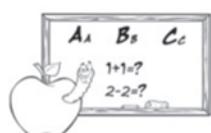
(d) Multiplicative Inverse of 42 is \_\_\_\_\_

(e) The Multiplicative Inverse of 0 is \_\_\_\_\_

(f) The reciprocal of \_\_\_\_\_ is equal to itself.

(g) The reciprocal of a whole number will always be a \_\_\_\_\_ fraction.

(h) The Multiplicative Inverse of a mixed number will always be a \_\_\_\_\_ fraction.



## DIVISION OF FRACTIONS

Division of a fraction by a whole number

Example 1:  $\frac{1}{3} \div 3$

$$= \frac{1}{3} \times \frac{1}{3}$$

$$= \frac{1}{9}$$

Example 2:  $\frac{4}{7} \div 9$

$$= \frac{4}{7} \times \frac{1}{9}$$

$$= \frac{4}{63}$$

Let's Remember

Replace ‘÷’ sign by ‘x’ sign.

Replace the whole number by its reciprocal.

1. Solve:

(a)  $\frac{3}{16} \div 16 = \underline{\hspace{2cm}}$

(b)  $\frac{2}{15} \div 6 = \underline{\hspace{2cm}}$

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(c)  $1\frac{2}{5} \div 2 =$  \_\_\_\_\_

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(d)  $5\frac{1}{3} \div 4 =$  \_\_\_\_\_

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(e)  $6\frac{3}{4} \div 3 =$  \_\_\_\_\_

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(f)  $\frac{49}{6} \div 35 =$  \_\_\_\_\_

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## Division of a fraction by a fraction

Example 1:  $\frac{1}{3} \div \frac{2}{5}$

$$= \frac{1}{3} \times \frac{5}{2}$$

$$= \frac{5}{6}$$

Example 2:  $\frac{6}{19} \div \frac{12}{38}$

$$= \frac{6}{19} \times \frac{38}{12}$$

$$= 1$$

## Division of a whole number by a fraction

Example 1:  $4 \div \frac{1}{3}$

$$= 4 \times 3$$

$$= 12$$

Example 1:  $16 \div \frac{2}{5}$

$$= 16 \times \frac{5}{2}$$

$$= 40$$

1. Solve:

(a)  $\frac{6}{10} \div \frac{3}{5} = \underline{\hspace{2cm}}$

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(b)  $\frac{14}{9} \div \frac{28}{2} = \underline{\hspace{2cm}}$

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(c)  $2\frac{1}{7} \div \frac{1}{7} = \underline{\hspace{2cm}}$

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(d)  $\frac{17}{23} \div \frac{51}{69} = \underline{\hspace{2cm}}$

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(e)  $2\frac{5}{8} \div 2\frac{1}{3} = \underline{\hspace{2cm}}$

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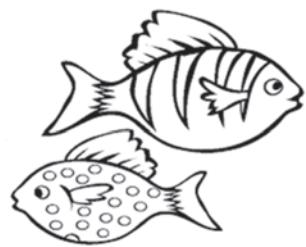
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(f)  $\frac{12}{11} \div \frac{144}{121} = \underline{\hspace{2cm}}$

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(g)  $18 \div \frac{1}{3} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(h)  $20 \div 1\frac{3}{13} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(i)  $10 \div \frac{5}{6} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(j)  $17 \div 1\frac{1}{2} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(k)  $25 \div \frac{5}{3} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(l)  $8\frac{1}{6} \div \frac{7}{12} = \underline{\hspace{2cm}}$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Story Sums

1. How many one-fourths are there in 100?
  2.  $\frac{3}{5}$  of a class of 35 are girls. Find the number of boys in the class.



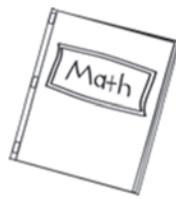
3. Raj drank some juice from a 500ml bottle. He found that  $\frac{2}{5}$  was left. How much did he drink?
  4. The distance between two bus stops is 75km. A bus covers 25km in 1hour. What fraction of the distance has been covered? What fraction has to be covered?



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## DECIMALS

Converting Decimals to Fractions



$7.1 =$

$0.40 =$

$9.4 =$

$81.2 =$

$0.10 =$

$7.06 =$

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### Multiplication of decimals with 10, 100 and 1000

8.24	×	10	=	82.4
62.95	×	10	=	
0.675	×	10	=	
36.32	×	10	=	
0.0453	×	100	=	4.53
1.645	×	100	=	
5.004	×	100	=	
70.068	×	100	=	
0.0398	×	100	=	
65.032	×	1000	=	65032
0.0071	×	1000	=	
2310.01	×	1000	=	
0.0002	×	1000	=	
46.91	×	1000	=	



## Division of decimals with 10, 100, 1000

123.45	$\div$	10	=	12.345
55.008	$\div$	10	=	
0.003	$\div$	10	=	
7737.02	$\div$	10	=	
762.1	$\div$	10	=	
75.03	$\div$	100	=	0.7503
0.004	$\div$	100	=	
886.14	$\div$	100	=	
98.119	$\div$	100	=	
8975.3	$\div$	1000	=	8.9753
0.032	$\div$	1000	=	
835.2	$\div$	1000	=	
1134.8	$\div$	1000	=	



## Like and Unlike Decimals

### Important points to remember:

- Before adding or subtracting decimals, convert unlike decimals into like decimals.
- Decimals which have the same number of digits after the decimal point are known as **like decimals**.
- Different numbers having different number of digits after the decimal point are known as **Unlike decimals**.



### Addition of like decimals:

$$\begin{array}{r} 12.56 \\ + \quad 3.98 \\ \hline \end{array}$$

$$\begin{array}{r} 304.2 \\ + \quad 95.7 \\ \hline \end{array}$$

$$\begin{array}{r} 778.05 \\ + \quad 160.03 \\ \hline \end{array}$$

$$\begin{array}{r} 899.45 \\ + \quad 234.07 \\ \hline \end{array}$$

$$\begin{array}{r} 304.2 \\ + \quad 289.9 \\ \hline \end{array}$$

$$\begin{array}{r} 1523.05 \\ + \quad 915.63 \\ \hline \end{array}$$

### Addition of unlike decimals:

$$\begin{array}{r} 4007.2\Box \\ + \quad 73.45 \\ \hline \end{array}$$

$$\begin{array}{r} 1779.21 \\ + 1635.9\Box \\ \hline \end{array}$$

$$\begin{array}{r} 2330.09\Box \\ + 2007.006 \\ \hline \end{array}$$



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### Subtracting like decimals

$$\begin{array}{r} 662.95 \\ - 83.87 \\ \hline \end{array}$$

$$\begin{array}{r} 738.04 \\ - 256.00 \\ \hline \end{array}$$

$$\begin{array}{r} 900.45 \\ - 423.98 \\ \hline \end{array}$$

$$\begin{array}{r} 4619.73 \\ - 738.92 \\ \hline \end{array}$$

### Subtracting unlike decimals

$$\begin{array}{r} 456.2 \\ - 390.07 \\ \hline \end{array}$$

$$\begin{array}{r} 784.05 \\ - 262.7 \\ \hline \end{array}$$

$$\begin{array}{r} 4321.08 \\ - 647.4 \\ \hline \end{array}$$

$$\begin{array}{r} 3654.34 \\ - 2439.1 \\ \hline \end{array}$$



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## Addition and Subtraction of Unlike decimals:

Q1. Add 54.09 and 33.1

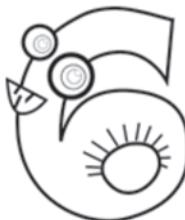


Q2. Subtract 900.54 and 214.8

Q3. Find the difference of 649.08 and 146.3

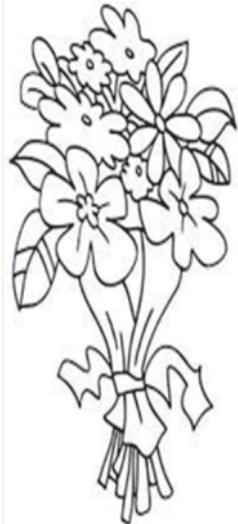


Q4. Find the sum of 164.89 and 79.005 and subtract the sum from 300



## Decimals: Real life applications

Sonia has a 500 rupee note and with that she bought a bunch of flowers for her mother for Rs. 255.75. How much money is left with Sonia?



( )

In a shooting competition, team X scored 243.5 points and team Y scored 195.75 points. By how many points did the winning team win ?



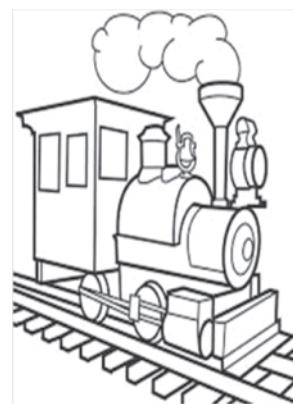
( )

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Sameer spent Rs.450.75 on clothes, Rs.104.25 on books and Rs. 255.65 on chocolates. How much did Sameer spend in total?



Kabir, Aayush and Vivaan are three friends. Each of them has plastic railway tracks that they want to join together and play. If Kabir's track is 3089.05 cms, Aayush's track is 1454.63 cms and Vivaan's track is 779.42 cms long, what is the total length of the railway track that they have joined together?



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## MULTIPLICATION OF DECIMALS

$$\begin{array}{r} 64.9 \\ \times \quad 3 \\ \hline \end{array}$$

$$\begin{array}{r} 107.4 \\ \times \quad 9 \\ \hline \end{array}$$



$$\begin{array}{r} 315.7 \\ \times \quad 5.5 \\ \hline \end{array}$$

$$\begin{array}{r} 85.6 \\ \times \quad 2.7 \\ \hline \end{array}$$

$$\begin{array}{r} 6603.7 \\ \times \quad 1.4 \\ \hline \end{array}$$

$$\begin{array}{r} 1506.9 \\ \times \quad 3.6 \\ \hline \end{array}$$



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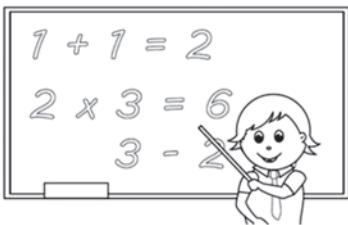
## DIVISION OF DECIMALS

(a) Divide 6.65 by 5

(c) Divide 67.24 by 4

(b) Solve:  $80.4 \div 2$

(d) Solve:  $22.77 \div 11$



## DECIMAL: WORD PROBLEMS

Q1. A child spends Rs. 10.50 every day in his school canteen. How much does he spend in a fortnight?



Q2. If Kalpana purchased 12.5 kg of sugar for Rs. 291.25, find the cost of 1 kg and hence find the cost of 3.5 kg



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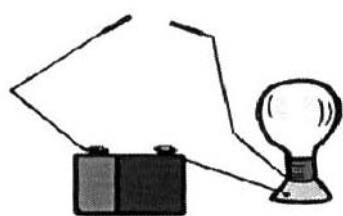
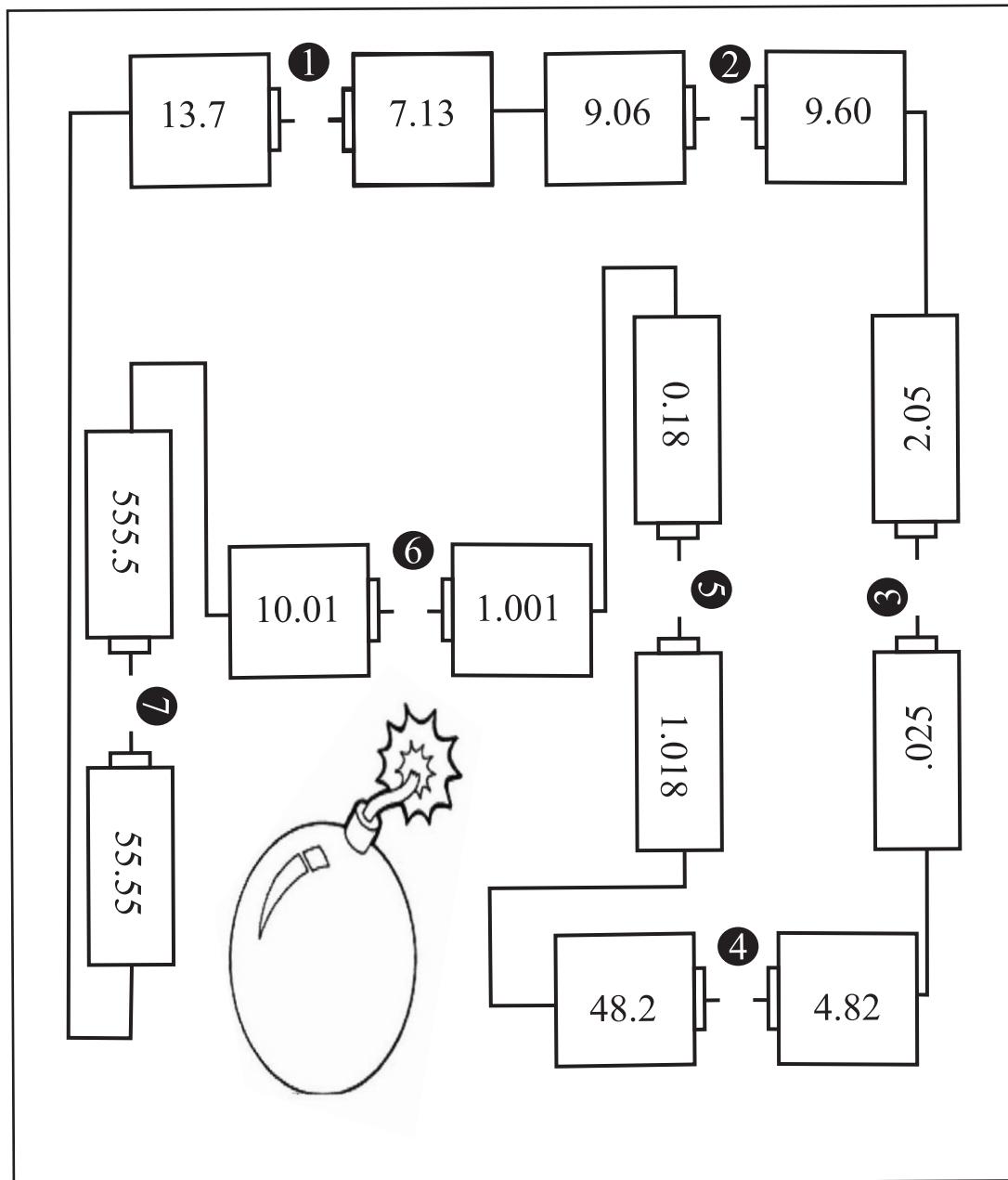
Q3. Sabrina drinks 2.85 litres of milk every day. How many litres of milk does she drink in a month? (Hint: Take 31 days in a month)



Q4. Rahul spent Rs.750.60 on 15 books. How much did he pay for each book?

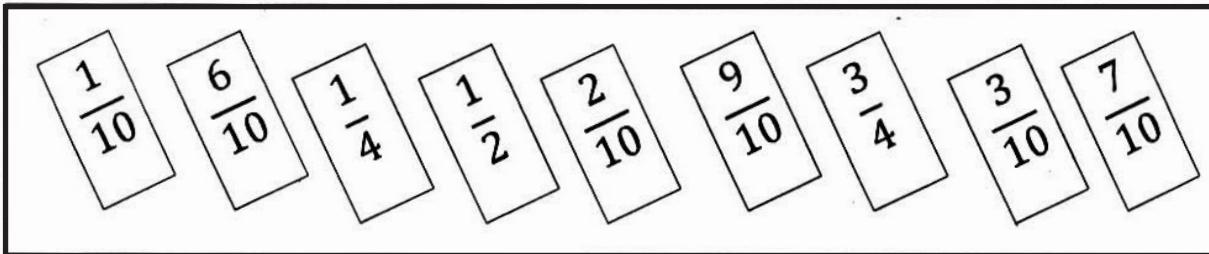
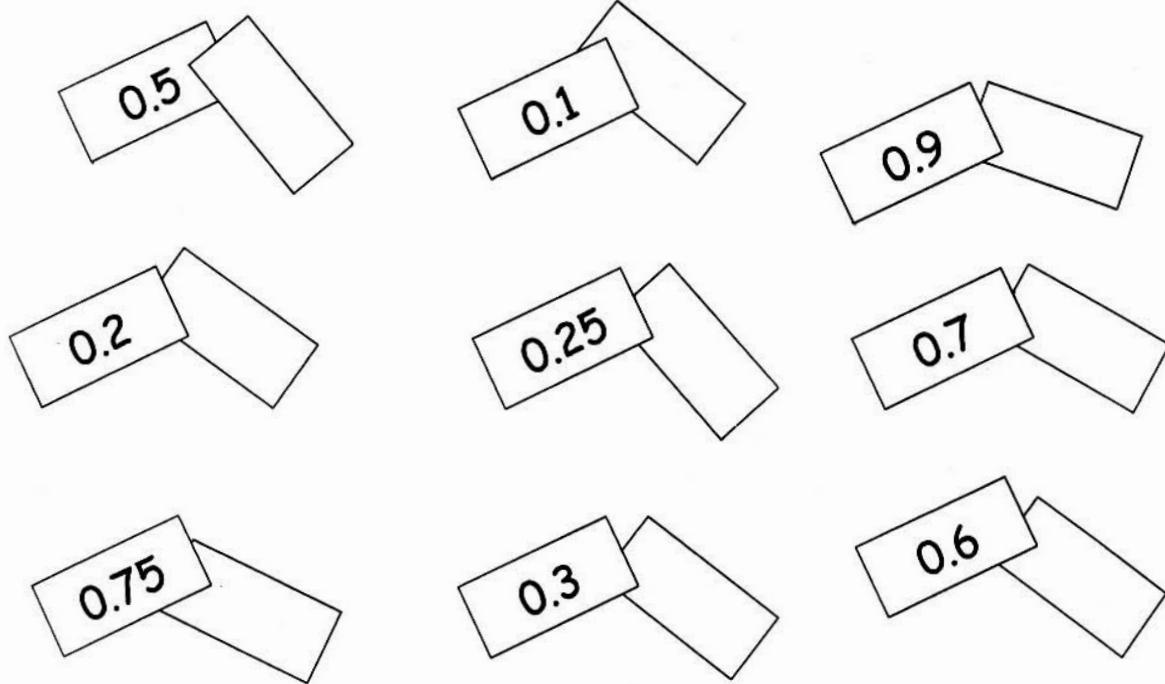
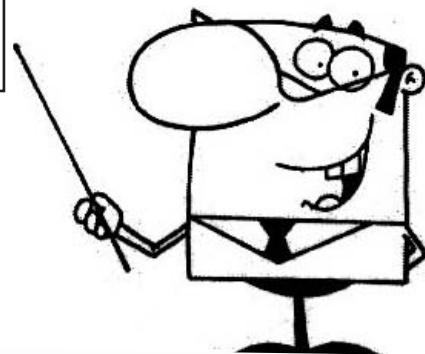


Comparing Decimals: Please complete the circuit by putting a  $>$  (greater than) or  $<$  (less than) sign, whenever you see a blank space between two batteries.



Match the following fractions with the decimals

Help me find the  
missing card !



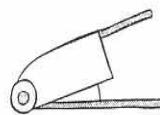
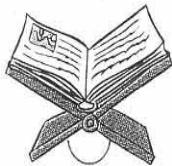
## Angles

### 1. Fill in the blanks

- (a) The common starting point of two rays which make an angle is the \_\_\_\_\_ of the angle.
- (b) The rays that form an angle are the \_\_\_\_\_ of that angle.
- (c) When two rays starting at the same point lie over each other, the angle between them is \_\_\_\_\_. If one ray makes a full turn around the other, it makes an angle of \_\_\_\_\_.
- (d) An acute angle is less than \_\_\_\_\_.
- (e) An obtuse angle is greater than \_\_\_\_\_ and less than \_\_\_\_\_.
- (f) A \_\_\_\_\_ angle looks like the letter 'L'.
- (g) The angle between \_\_\_\_\_ lines is  $90^\circ$

### 2. Write the type (acute, obtuse, etc.) of the angle.

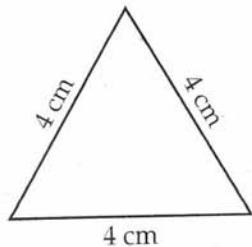
- |                                       |                                       |                                       |                                       |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| (a) <input type="text" value="90°"/>  | (b) <input type="text" value="6°"/>   | (c) <input type="text" value="105°"/> | (d) <input type="text" value="99°"/>  |
| (e) <input type="text" value="180°"/> | (f) <input type="text" value="75°"/>  | (g) <input type="text" value="170°"/> | (h) <input type="text" value="360°"/> |
| (i) <input type="text" value="25°"/>  | (j) <input type="text" value="136°"/> | (k) <input type="text" value="10°"/>  | (l) <input type="text" value="100°"/> |
| (m)                                   | (n)                                   | (o)                                   | (p)                                   |



## Triangles

1. Tick the correct option.

(a)



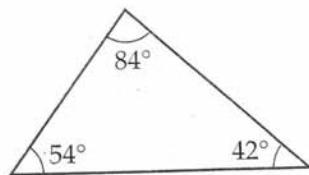
equilateral

isosceles

scalene

right-angled

(b)



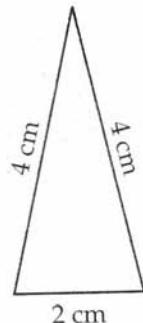
equilateral

isosceles

right-angled

acute-angled

(c)



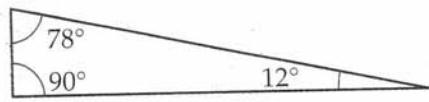
equilateral

scalene

isosceles

obtuse-angled

(d)



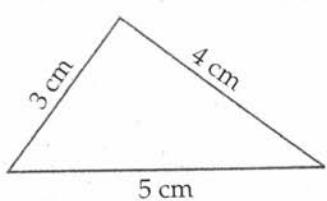
isosceles

acute-angled

obtuse-angled

right-angled

(e)



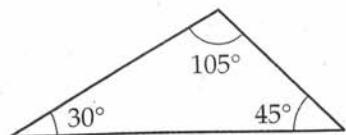
obtuse-angled

scalene

isosceles

equilateral

(f)



acute-angled

obtuse-angled

equilateral

right-angled

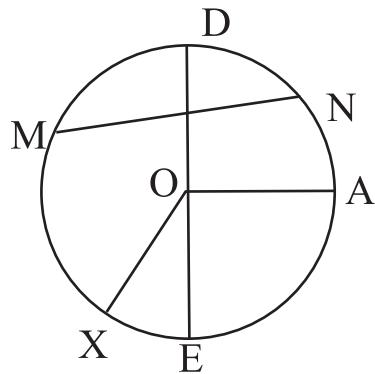
## CIRCLES

**Q1.** Fill in the blanks:

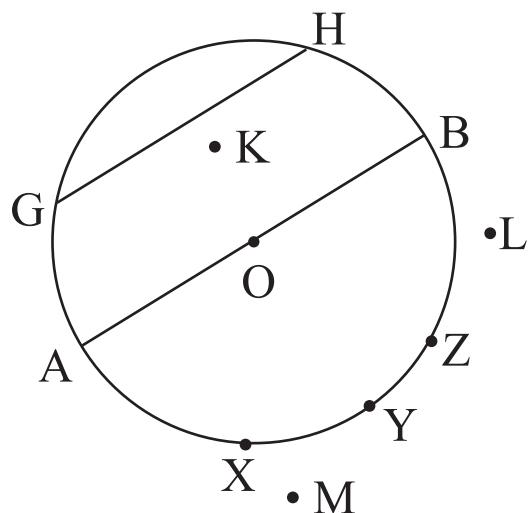
- A line segment from the center of a circle to any point on the boundary of the circle is called \_\_\_\_\_.
- The line segment from one point on the circle to any other point on the circle is called \_\_\_\_\_.
- The \_\_\_\_\_ is the longest chord of the circle, which passes through the center of the circle.
- The radius is \_\_\_\_\_ of the diameter.
- A circle with diameter 9 cm will have radius of \_\_\_\_\_ cm.
- A circle with radius 6.5 cm will have diameter of \_\_\_\_\_ cm.
- An ARC is written with \_\_\_\_\_ capital letters on the boundary of the circle.
- The boundary of the circle is also called the \_\_\_\_\_ of the circle, which tells us the perimeter of the circle.

**Q2.** Complete the table:

Parts of a circle	Number	Label
Radii		
Diameter		
Chords		



Parts of the circle	Number	Label
Radii		
Diameter		
Arc		
Interior points		
Exterior points		
Chords		



Q4. Construct a circle of radius 3.5cm. On the circle, mark:

- 1) Radius OA
- 2) Diameter LM
- 3) Chords PQ, RS
- 4) Interior points D, W
- 5) Exterior points F, T

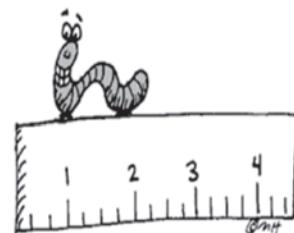


Q5. Construct a circle of radius 2.5cm. On the circle, mark:

- 1) Diameters PQ, RS
- 2) Chords PM, ST
- 3) Arc XYZ
- 4) Radius OV

Q6. Construct a circle of diameter 6 cm. On the circle, mark:

- 1) Arc PQR
- 2) Diameter LM
- 3) Chords HJ, MN
- 4) Interior point: X
- 5) Radii OS, OF



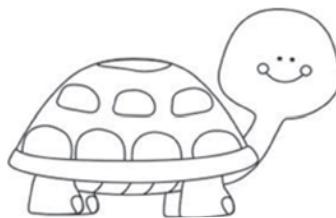
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## SIMPLIFICATION

Simplify using DMAS rule:

a)  $10 + 8 \times 2 - 12 + 27 \div 9 - 16 \div 2$

b)  $8 + 4 \times 3 - 3 + 1 - 16 \div 4 - 6$



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c)  $75 \times 3 + 48 \div 4 - 108$

d)  $102 - 12 \times 6 + 12 \div 2$

e)  $24 \div 8 + 3 \times 3$



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2. Fill in the blanks using ( $\div$ ,  $\times$ ,  $+$ ,  $-$ ):

a)  $3 \times 4 \underline{\quad} 2 = 10$

b)  $6 \div 3 \underline{\quad} 6 = 12$

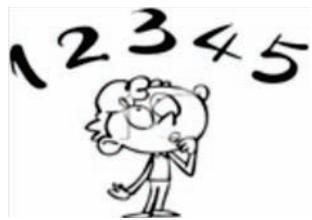
c)  $21 \underline{\quad} 3 + 11 = 18$

d)  $63 \div 3 \underline{\quad} 21 = 0$

e)  $27 \underline{\quad} 3 - 8 = 1$

3. Simplify using BODMAS rule:

a)  $17 + [11 - \left\{ 8 + 3 - \left( \frac{1}{2} \text{ of } 6 + 7 - 2 \times 4 \right) \right\}]$



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b)  $4[100 - \{80 \div (20 \times 2)\}] + 3$

c)  $30 \div [4 + \{5 + 7(12 \div 4)\}]$



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d)  $23 - [23 - \{23 - (23 - 23 + 23)\}]$

e)  $20 + 4 [ 3 \{16 \div 2 (12 - 4 \times 2)\}]$



**MENTAL MATHS CORNER**

1. Tick the correct answer:

a)  $30 \times 8 \div 2 + 60 - 22 =$  \_\_\_\_\_

- i. 158
- ii. 168
- iii. 185
- iv. 142

b)  $95 - 75 \div 5 + 60 =$  \_\_\_\_\_

- i. 150
- ii. 70
- iii. 140
- iv. 80

c)  $5 + 10 \div 5 \times 3 - 6 =$  \_\_\_\_\_

- i. 6
- ii. 5
- iii. 4
- iv. 2

d)  $[4 \{(88+2) \div 9\}] - 25 =$  \_\_\_\_\_

- i. 10
- ii. 15
- iii. 20
- iv. 25



2. Fill in the blanks:

a)  $100 \div 10 + 2 - 10 =$  \_\_\_\_\_

b)  $105 - 45 \div 3 + 15 \times 2 =$  \_\_\_\_\_

c)  $8 \div 8 \times 8 + 8 - 8 =$  \_\_\_\_\_

d)  $5 - 20 + 3 \times 10 \div 2 =$  \_\_\_\_\_

3. Write true (T) or false (F):

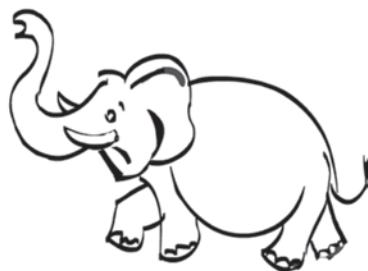
a) In simplification, division is done after multiplication.

b)  $6 + 63 \div 3 - 3 \times 6 = 9$

c)  $\{6 \times (7 - 2)\} \div 3 = 10$

d)  $15 \times 2 + 120 \div 20 - 6 = 36$

e) We solve curly brackets first.



## AREA AND PERIMETER

### TERMS TO REMEMBER:

Perimeter: Perimeter is the sum of all the sides.

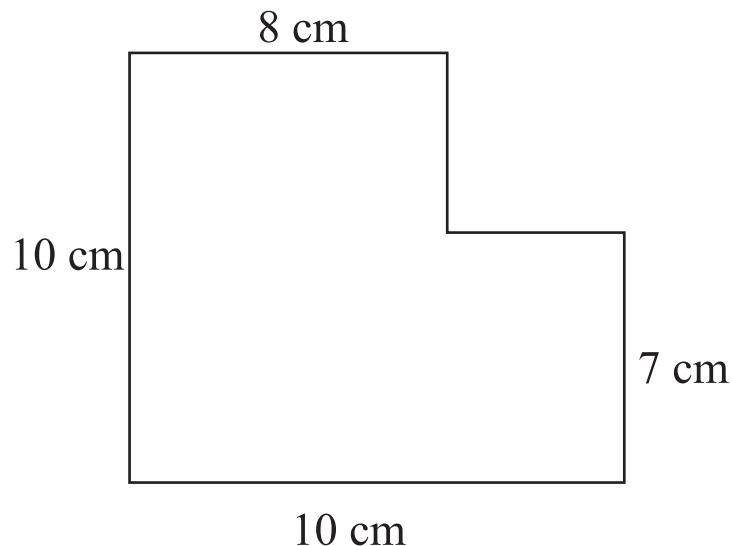
Area: The amount of area enclosed by a closed figure is called its area.]

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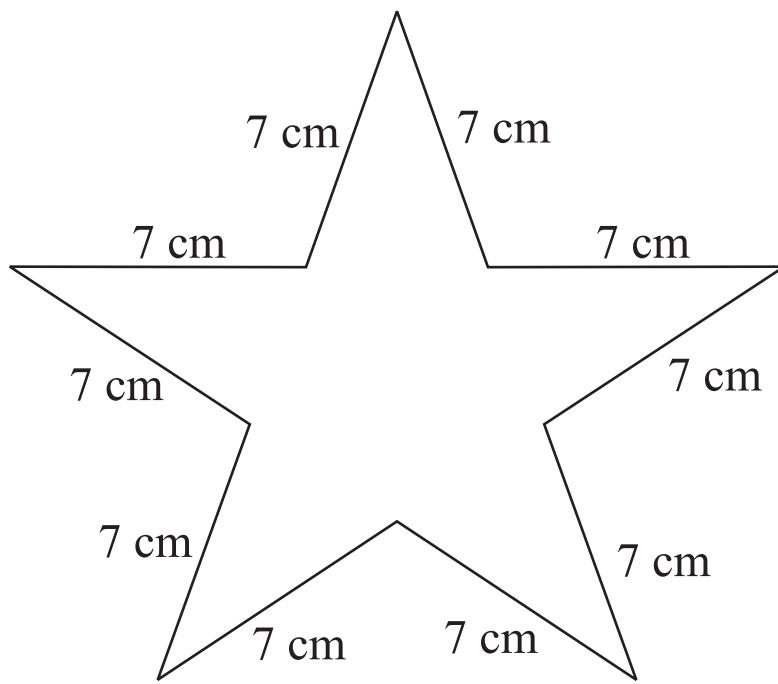
### Let's Practice

1. Find perimeter of the following:

(a)

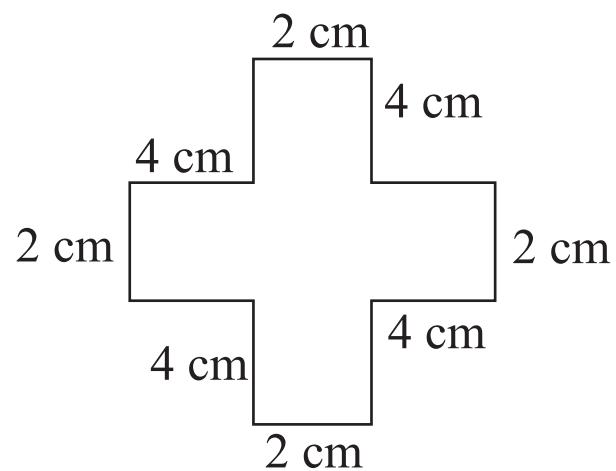


(b)

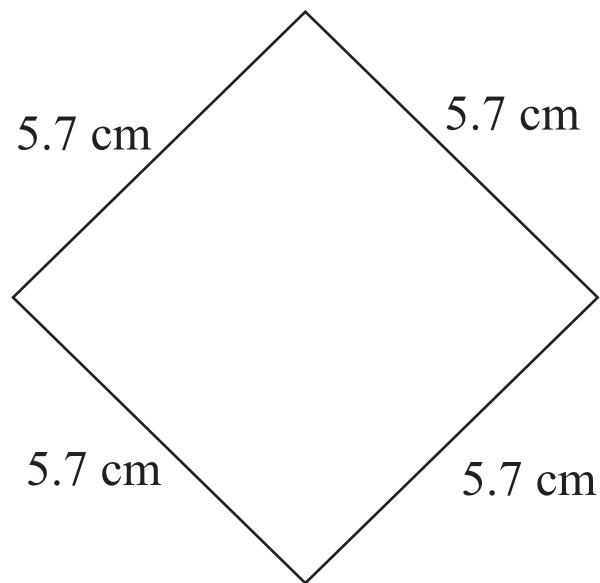


Date : \_\_\_\_\_

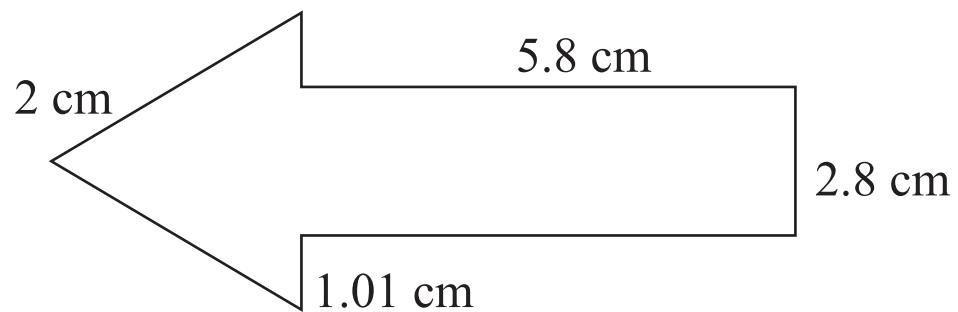
(c)



(d)



(e)

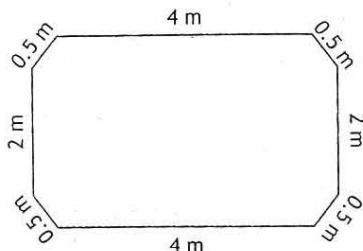


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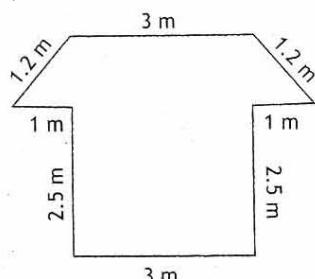
## EXERCISE-105

1. Find the perimeter.

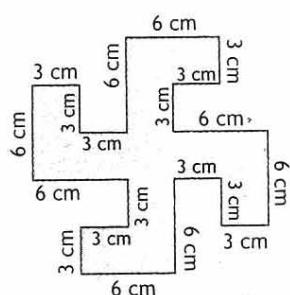
(a)



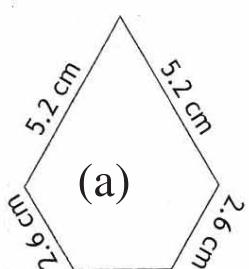
(b)



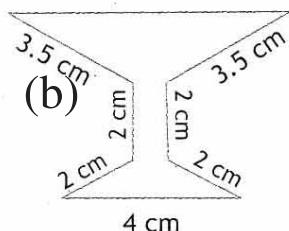
(c)



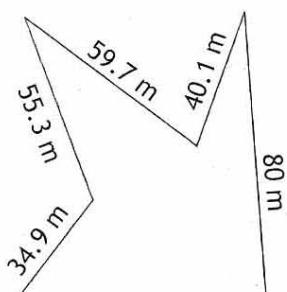
2. Fill in the missing measurement.



.....  
Perimeter = 18 cm



.....  
Perimeter = 26 cm



.....  
Perimeter = 340 m

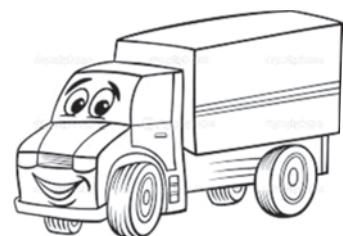
Date : \_\_\_\_\_

2. Find the area of a square with sides:

a) Side = 40.7 m

b) Side = 6.4 cm

c) Side = 14.6 m



Date : \_\_\_\_\_

3. Find the area of rectangle with sides :

(a) Length = 13.7 cm      Breadth = 4.5 cm

(b) Length = 5.6 cm      Breadth = 2.9 cm

(c) Length = 30.9 m      Breadth = 9.35 m



Date : \_\_\_\_\_

4. Read the following statements carefully and write whether you will find the area or the perimeter to find the answer:
- a) To put tiles on the floor of a room. \_\_\_\_\_
  - b) To jog around a park. \_\_\_\_\_
  - c) To put lace along the sides of a tablecloth. \_\_\_\_\_
  - d) To cover a wall with wallpaper. \_\_\_\_\_
5. I want to put lace around a rectangular tablecloth of length 4.5 m and breadth 3 m. How many metres of lace will I need ?



6. A rectangular park has length 30m and breadth 22m. How much distance does Rahul cover to complete 3 rounds of the parks

7. A rectangle has length 50cm and breadth 45cm. A square has each side 48 cm. Which has more area and by how much?

## PROFIT AND LOSS

### TERMS TO REMEMBER:

**Cost Price:** The cost at which an item is bought is called its Cost Price. Overhead charges like transportation costs, labour costs, repairing costs, repairing costs are added to the Cost Price (CP).

**Selling Price:** The cost at which an item is sold is called its Selling Price.

**Profit:** When the Selling Price (SP) of an item is more than the Cost Price (CP) of the item, the shopkeeper makes a profit or gain.

**Loss:** When the Cost Price (CP) of an item is more than that of the Selling Price (SP), the shopkeeper makes a loss.

---

1. Find the Profit or Loss in the following:

- a) Mr. Sharma bought a laptop for Rs 36,250 and sold it for Rs 32,500.  
\_\_\_\_\_
- b) A shopkeeper bought a shirt for Rs 700 and sold it for Rs 670.  
\_\_\_\_\_
- c) Rajni bought a necklace for Rs 9,999 and sold it for Rs 9,000.  
\_\_\_\_\_
- d) Pankaj bought a fan for Rs 1,250 and later sold it for Rs 1,070.  
\_\_\_\_\_



2. Find the profit and loss:

Item	Cost Price (Rs)	Selling Price (Rs)	Profit (Rs)	Loss (Rs)
Toy	190	183		
Fruits	92	99		
Pen	23	21		
Jam Bottle	78	84.50		
Oil	103	112		

3. Fill in the blanks:

a) Profit = SP \_\_\_\_\_

b) If SP = Rs. 670 and loss = Rs. 50, then CP = \_\_\_\_\_

\_\_\_\_\_

c) If CP = Rs 6070, SP = Rs 7060, then profit = \_\_\_\_\_

\_\_\_\_\_

d) If CP = Rs 900 and profit is Rs 150, then SP = \_\_\_\_\_

\_\_\_\_\_



Date : \_\_\_\_\_

4. Find the SP:

- a) CP = Rs 985, Profit = Rs 25

---

---

- b) CP = Rs 828, Loss = Rs 50

---

- c) CP = Rs 805, Profit = Rs 5

---

---

5. Find the CP:

- a) SP = Rs 2725, Profit = Rs 550

---

- b) SP = Rs 4475, Loss = Rs 25

---

- c) SP = Rs 6874, Loss = Rs 576

---

---

6. Ramesh bought 40m rope for his shop at Rs 30 per meter and sold it for Rs 35 per meter. What is his gain or loss?

7. Murali bought a motorbike for Rs 35,400. He spent Rs 1200 on its accessories. He later sold the motorbike at a loss of Rs 6588. Find the SP of the motorbike.



8. A man bought a second hand scooter for Rs 8000. He spent Rs 700 on repairing and Rs 350 on re-painting. He then sold it for Rs 9500. How much did he gain or lose?

9. Vicky bought 20 pens and sold them at Rs 5 each. If he had paid Rs 85 for the pens, what was his profit or loss?

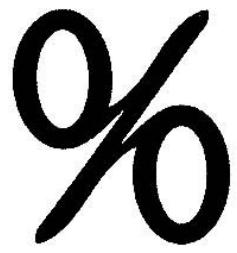


10. Mahesh bought a bicycle for Rs 2290. He sold it for Rs 1600. Find his profit or loss.

11. Mrs. Goswami bought a calculator for Rs 538. She spent Rs 90 on its repairs. She later sold it for Rs 640. Did she make a profit or loss and by how much?



## PERCENTAGES



A. Convert the given fractions into percentage:

a)  $\frac{2}{5} = \frac{2}{5} \times 100 = 40\%$

b)  $\frac{7}{8}$

c)  $\frac{3}{20}$

d)  $\frac{18}{25}$

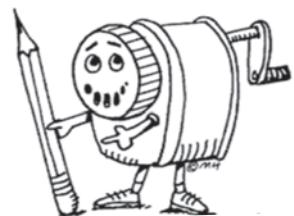
e)  $\frac{1}{4}$

f)  $\frac{11}{10}$



B. Convert decimals into percentages:

$$3.5 = 3.5 \times 100\% = 350\%$$



Sharpen Your Skills

- a) 55.7
- b) 6.09
- c) 0.075
- d) 14.16
- e) 0.001
- f) 8.5
- g) 133.46
- h) 0.078
- i) 5.125



C. Convert percent into decimals

$$5\% = \frac{5}{100} = 0.05$$

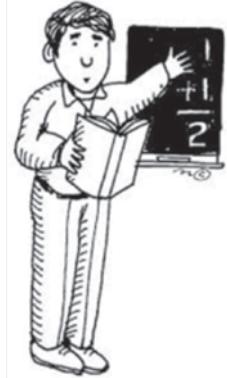
- a) 1%
- b) 8%
- c) 14%
- d) 15%
- e) 35%
- f) 40%
- g) 0.73%
- h) 0.0667%
- i) 0.48%



D. Convert percent into fractions and reduce the fraction to the lowest form:

$$11\% = \frac{11}{100}$$

a)  $5\%$



b)  $16\%$

c)  $18\%$

d)  $46\%$

e)  $50\%$

f)  $75\%$



E. What is the percentage of a given number?

a)  $25\% \text{ of } 50 = \frac{25}{100} \times 50 = 12.5$

b)  $12\% \text{ of } 40$

c)  $10\% \text{ of } 75$

d)  $16\% \text{ of } 100$

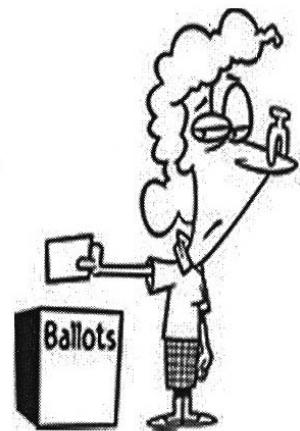
e)  $70\% \text{ of } 200$

f)  $25\% \text{ of } 600$

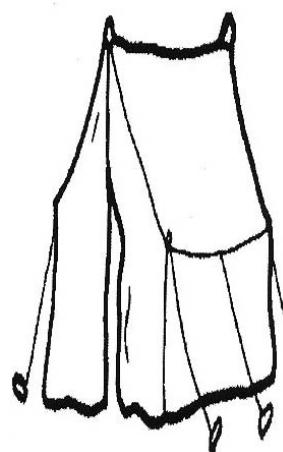


## Word problems in percentages:

- a) In a club election, 72% of the members voted. If there are 200 members in the club, what is the number of members who voted in the elections?

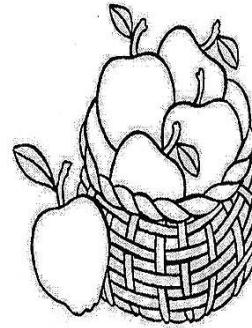


- b) Mr Gupta has filled 12 l of petrol in his car. If 25% of the petrol is consumed how much petrol still remains?



Date : \_\_\_\_\_

- c) Radha brought 90 apples from the market. 30% of the apples were rotten. Find the number of rotten and fresh apples. Also find the % of fresh apples.

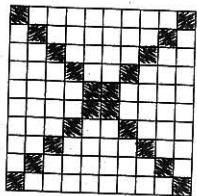


- d) Sumesh got 285 marks in his first term examination out of a total of 300 marks. Calculate his percentage marks in the first term examinations.

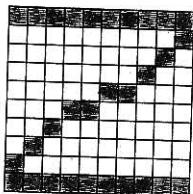


1. What percentage is shaded?

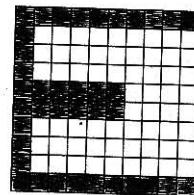
(a)



(b)

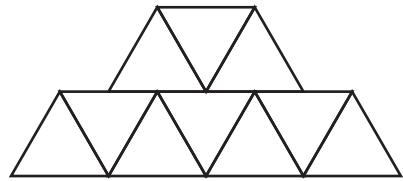


(c)



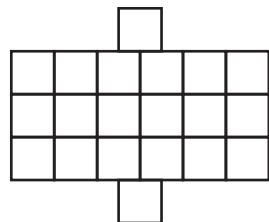
2. Colour the given percentage.

(a)



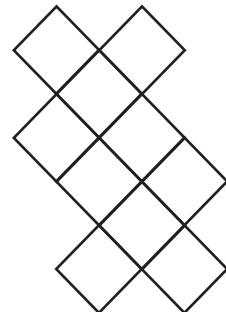
60%

(b)



40%

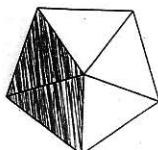
(c)



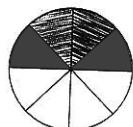
80%

3. What percentage is shaded?

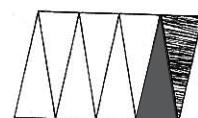
(a)



(b)



(c)



$$\frac{2}{5} = \frac{2}{5} \times \frac{100}{100}$$

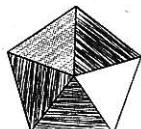
$$= \frac{2 \times 100}{5} \times \frac{1}{100}$$

$$= 40 \times \frac{1}{100} = 40\%$$

(d)



(e)



(f)



## Measurement

1. Encircle the correct answer from the given alternative answers:

(a) 38 g when expressed in kg is

- (i) 0.38 kg
- (ii) 0.038 kg
- (iii) 3.8 kg
- (iv) 0.380 kg

(b) Weight of 1 apple is 250 g. Weight of such 5 apples will be

- (i) 2.5 kg
- (ii) 12.5 kg
- (iii) 1.250 kg
- (iv) 50 g

2. Convert:

(a) 5328 g into kg and g ..... kg .....

(b) 3.025 kg into kg and g ..... kg .....

3. A woman weighs 59.350 kg. She reduces her weight by 9.870 kg.  
What is her reduced weight? ..... kg

4. Shruti bought 1.05 kg tomatoes. She told her mother that she bought 150 g tomatoes was she right? If not what should be the correct answer? .....

5. Which of these could be the correct weight? Write yes or no against each statement:

(a) Weight of an apple is 7 kg. ....

(b) Weight of your textbook is 0.2 kg. ....

(c) Weight of mobile phone is 97.5 g. ....

(d) Weight of a spoonful of sugar is 5 g. ....

1. Fill in the blanks:
  - (a) Distance between two cities is measured in .....
  - (b) Length of a playground is measured in .....
  - (c) Length of the cover of mathematics book is measured in .....
  - (d) Length of a pencil sharpener is measured in .....
2. Arushi bought 10 m 45 cm cloth for her dress and 6 m 95 cm cloth for her brother's dress. How much cloth did she buy? \_\_\_\_\_
3. Rohit lives at a distance of 15 km from his school. He travels 12 km 350 m by bus and the remaining distance by car. How much distance does he travel by car? \_\_\_\_\_
4. Express as required:
  - (a)  $\frac{1}{2}$  km = \_\_\_\_\_ metres
  - (b) 5 m 15 cm = \_\_\_\_\_ cm
  - (c)  $\frac{3}{4}$  m = \_\_\_\_\_ cm
  - (d) 2500 m = \_\_\_\_\_ km \_\_\_\_\_ m
5. Encircle the correct answer from the given alternative answers.
  - (a) Length of a cricket bat is approximately
    - (i) 1 m
    - (ii) 5 km
    - (iii) 20 m
    - (iv) 50 cm
  - (b) The height of a neem tree is
    - (i) 14 mm
    - (ii) 14 m
    - (iii) 14 cm
    - (iv) 14 km

1. Tick the correct measure:



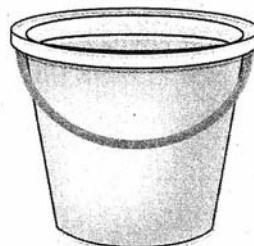
5 ml  
100 ml



20l



250 ml  
50 l



25 l  
250 l

## 2. Answer the following:

- (a) How many times  $500\text{ ml}$  container will be used to measure  $1l$   $500\text{ ml}$  petrol?
  - (b) How many times  $200\text{ ml}$  and  $50\text{ ml}$  containers will be used to measure  $700\text{ ml}$  milk?

3. Kavita put 45 litre petrol in her car.

She used 33 l and 300 ml petrol.

Hovv much petrol is in her car now?

l              ml

4. Add: 29 l 400 ml and 31 l 800 ml.

l ml

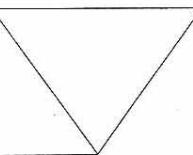
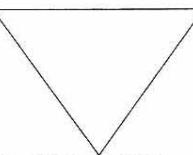
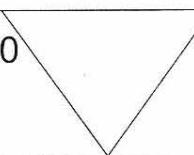
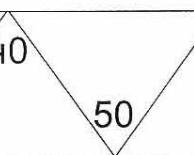
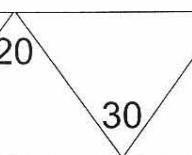
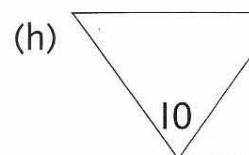
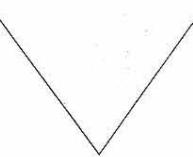
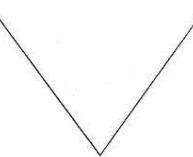
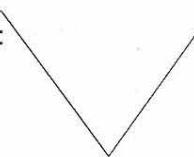
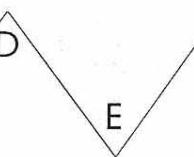
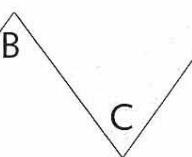
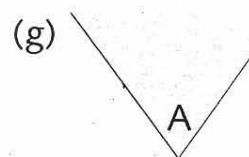
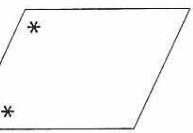
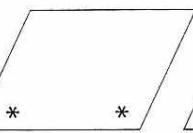
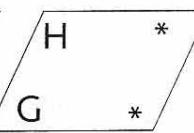
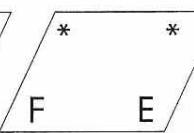
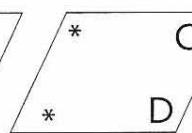
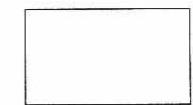
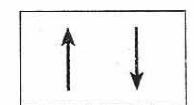
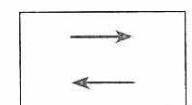
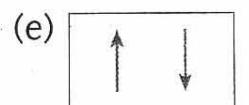
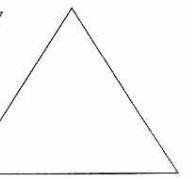
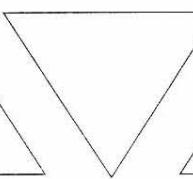
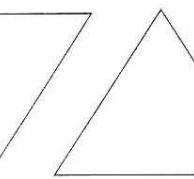
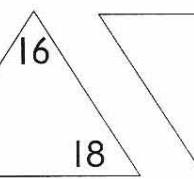
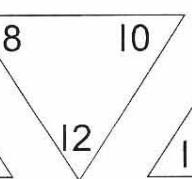
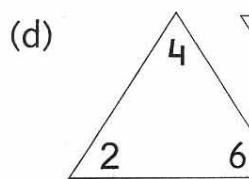
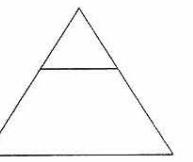
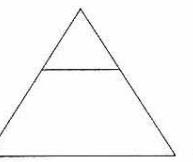
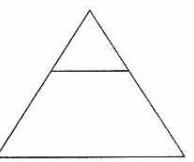
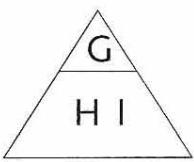
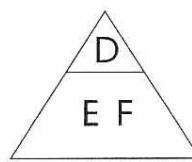
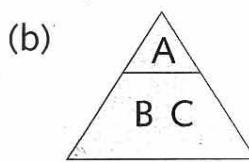
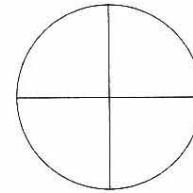
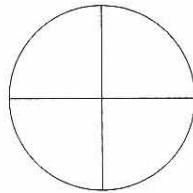
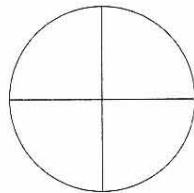
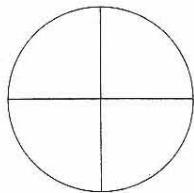
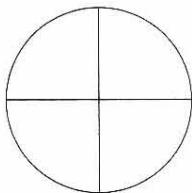
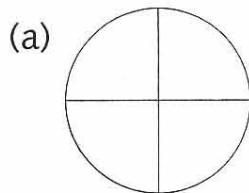
5. Encircle the correct answer from the given alternative answers.

- (a)  $25 l$   $30 ml$  is equivalent to

(i) $25300 ml$	(ii) $25003 ml$
(iii) $25030 ml$	(iv) $2530 ml$

# Activity-1

Complete the given patterns.



## Activity-2

### 1. Secret Messages

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Example: 19, 3, 8, 15, 15, 12 = SCHOOL

### 2. Read the secret messages.

(a) 9    21, 14, 4, 5, 18, 19, 20, 1, 14, 4

= \_\_\_\_\_

(b) 20, 15, 4, 1, 25    9, 19    8, 15, 12, 9, 4, 1, 25

= \_\_\_\_\_

(c) 20, 5, 1, 3, 8, 5, 18    9, 19    3, 15, 13, 9, 14, 7

= \_\_\_\_\_

### 3. Write the secret messages.

(a) ASSEMBLY IS OVER =

(b) GOOD MORNING =

(c) PRINCIPAL IS COMING =

(d) HE IS READING =

Date : \_\_\_\_\_

## Activity-3

Let us take a calendar (of any month and of any year).

Mon	Tue	Wed	Thu	Fri	Sat	Sun
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Let us make a  $3 \times 3$  box (9 dates) on the calendar.

[The sum of all the numbers in the box] =  $9 \times$  [middle number]

Here, we have:

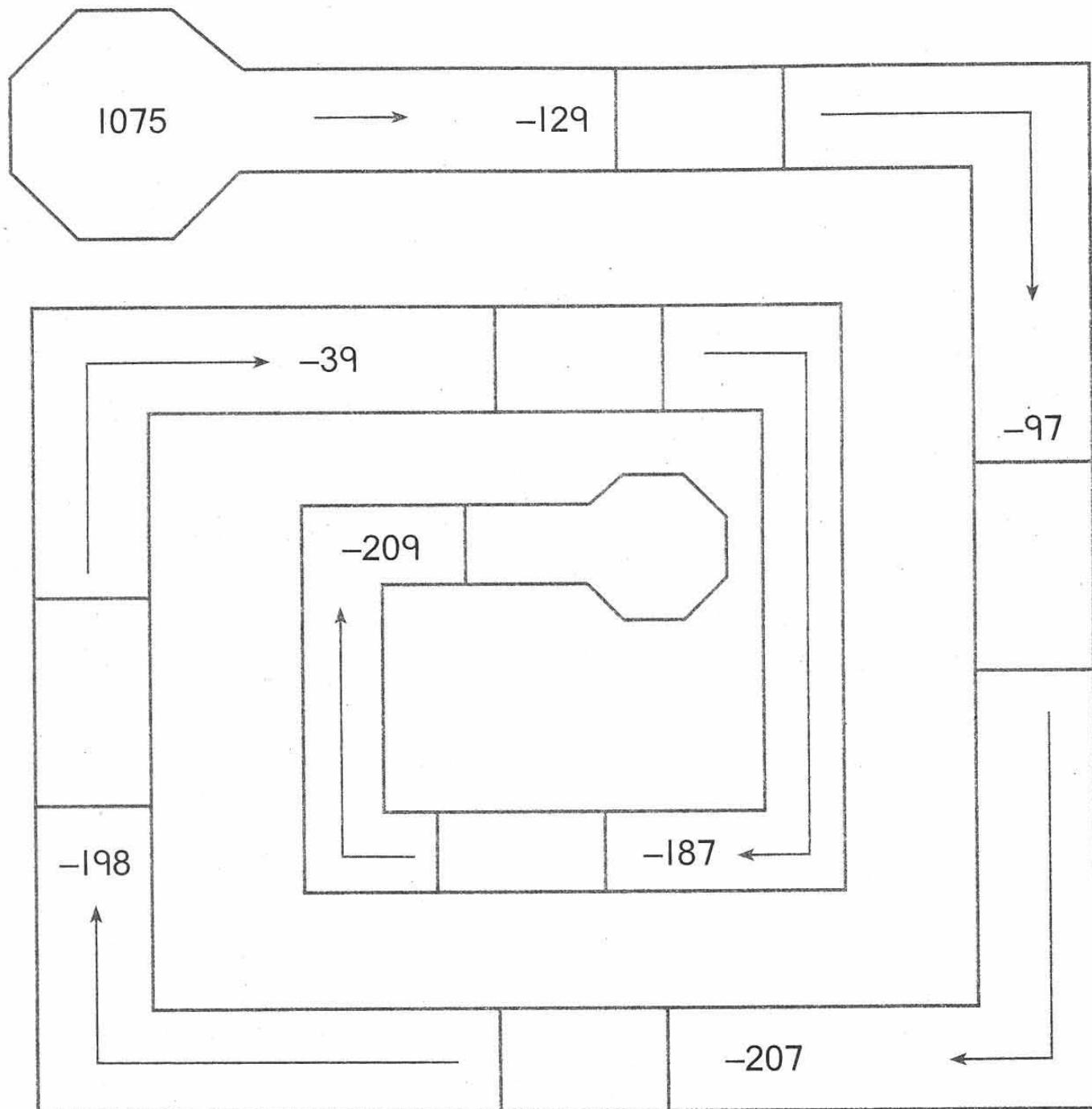
$$\begin{aligned}[10 + 11 + 12 + 17 + 18 + 19 + 24 + 25 + 26] &= 9 \times [18] \\ &= 162 = 162\end{aligned}$$

We can choose any  $3 \times 3$  box from a calendar and find the total in the same way. Play it with your friends.

Date : \_\_\_\_\_

## Fun with Numbers

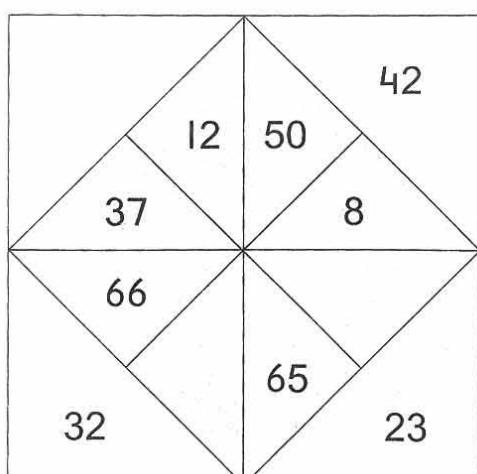
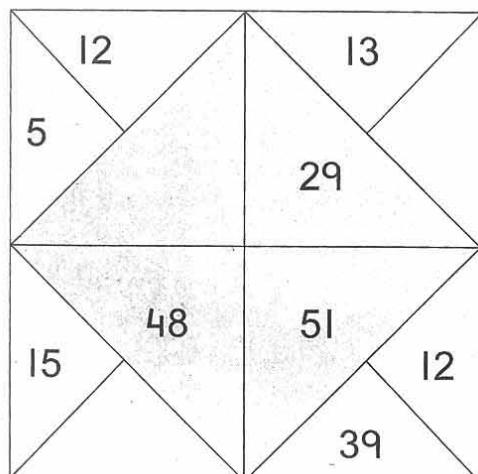
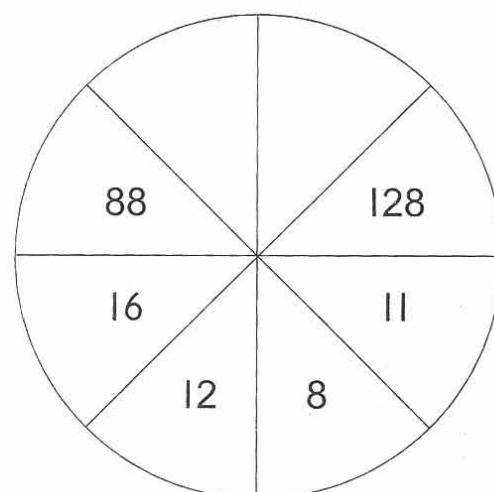
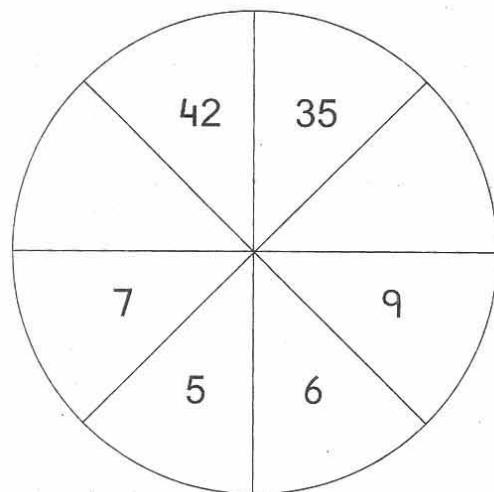
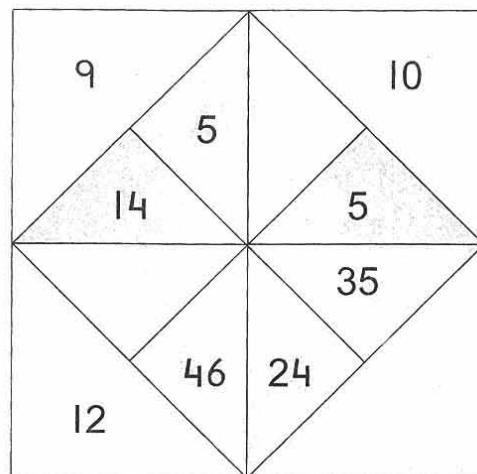
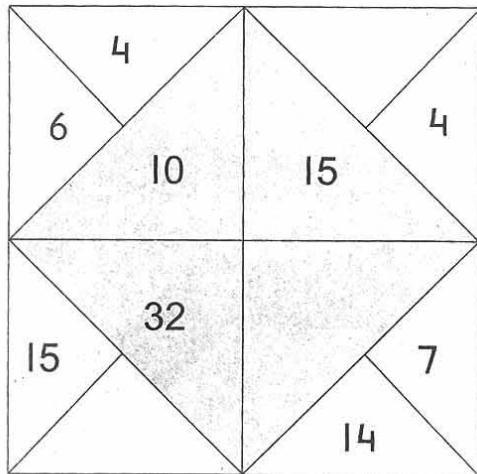
Move along the arrow ( $\rightarrow$ ). Subtract each time and reach the centre.  
Complete all the boxes in your path.



Date : \_\_\_\_\_

## Fun with Numbers

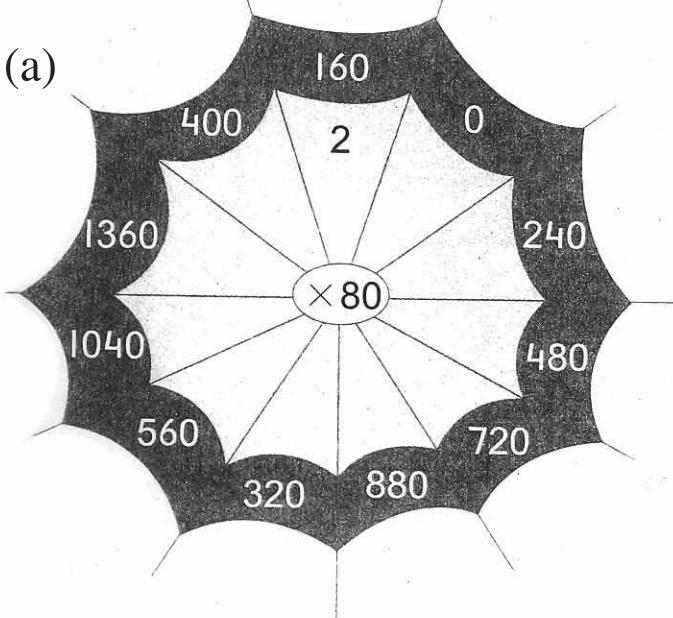
Observe and find the missing number carefully in each of the following.



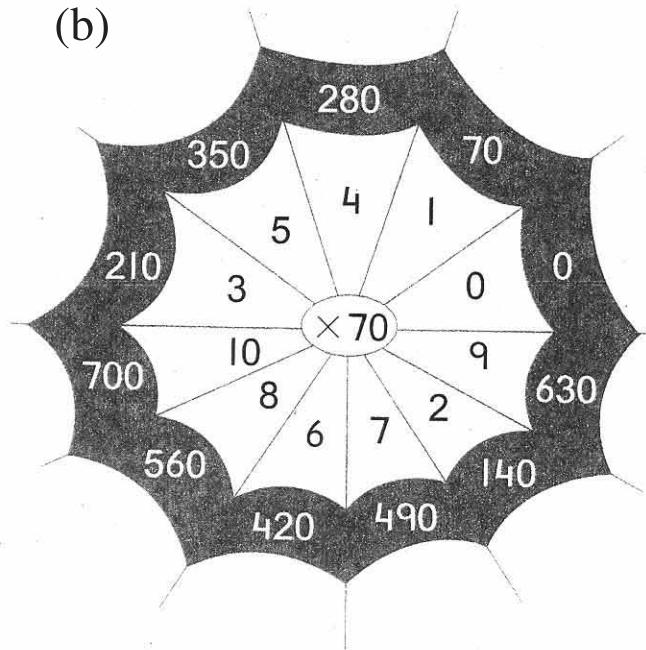
## Fun with Numbers

Complete the webs.

(a)



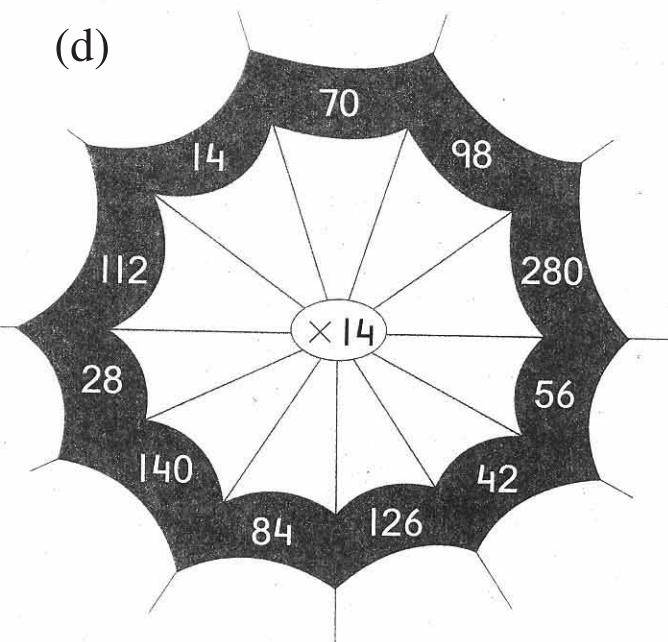
(b)



(c)

 $\times 9$ 

(d)



## Fun with Numbers

Look at the  $3\times 3$  box on the following calendars and fill in the blanks.

(a)

S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
Th	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

Since,  $18 \times 9 = 162$ ,  
Therefore, sum of all the  
numbers in the  $3\times 3$  box  
= \_\_\_\_\_

(b)

S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
Th	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

Since,  $23 \times 9 = 207$ ,  
Therefore, sum of all the  
numbers in the  $3\times 3$  box  
= \_\_\_\_\_

(c)

S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
Th	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

Since,  $19 \times 9 = 171$ ,  
Therefore, sum of all the  
numbers in the  $3\times 3$  box  
= \_\_\_\_\_

(d)

S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
Th	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

Since,  $20 \times 9 = 180$ ,  
Therefore, sum of all the  
numbers in the  $3\times 3$  box  
= \_\_\_\_\_

## Data Handling

1. Look at the table and answer.

<b>Transport to school</b>	<b>Boys</b>	<b>Girls</b>
	240	180
	90	95
	175	200
	171	33
	124	92

- (a) How many children go to school by car? \_\_\_\_\_
- (b) How many less girls walk to school than boys? \_\_\_\_\_
- (c) How many more boys go by bicycle than girls? \_\_\_\_\_
- (d) What is the most-used form of transport? \_\_\_\_\_
- (e) What percentage of the children use it? \_\_\_\_\_

2. The chart shows the number of wickets taken by a bowler in twenty one-day matches. Fill the table and answer the questions.

Number of wickets 0, 1, 3, 1, 5, 4, 7, 3, 0, 1, 4, 3, 3, 1, 2, 5, 3, 6, 2, 3

Number of wickets	Number of times
0	
1	
2	
3	
4	
5	
6	
7	

- (a) What was the highest number of wickets taken in a match? \_\_\_\_\_
- (b) How many wickets did he get most often? \_\_\_\_\_
- (c) In how many matches did he get five or more wickets? \_\_\_\_\_
- (d) In what percentage of the matches did he not get wickets? \_\_\_\_\_

## Pictorial Representation of Data

Data can be defined as a 'collection of information in the form of numerical figures'.

### Pictographs

Where we give information (data) about a quantity through pictures, it is called a pictograph. These pictographs can be graphs, carts or tables. They simplify a large group of data.

**Example 1: A group of 120 children gave their preference of shapes. The data is given below. Represent this information using a pictograph.**

Smiley design = 40

Sun design = 30

Star design = 50

Smiley	Sun	Star
		

Here, each picture = 10 units

- How many more children like the star design as compared to the sun design?
- Which design do the least number of children like?
- Which design do the most number of children like?
- Are more children happy with a smiley design or a sun design?

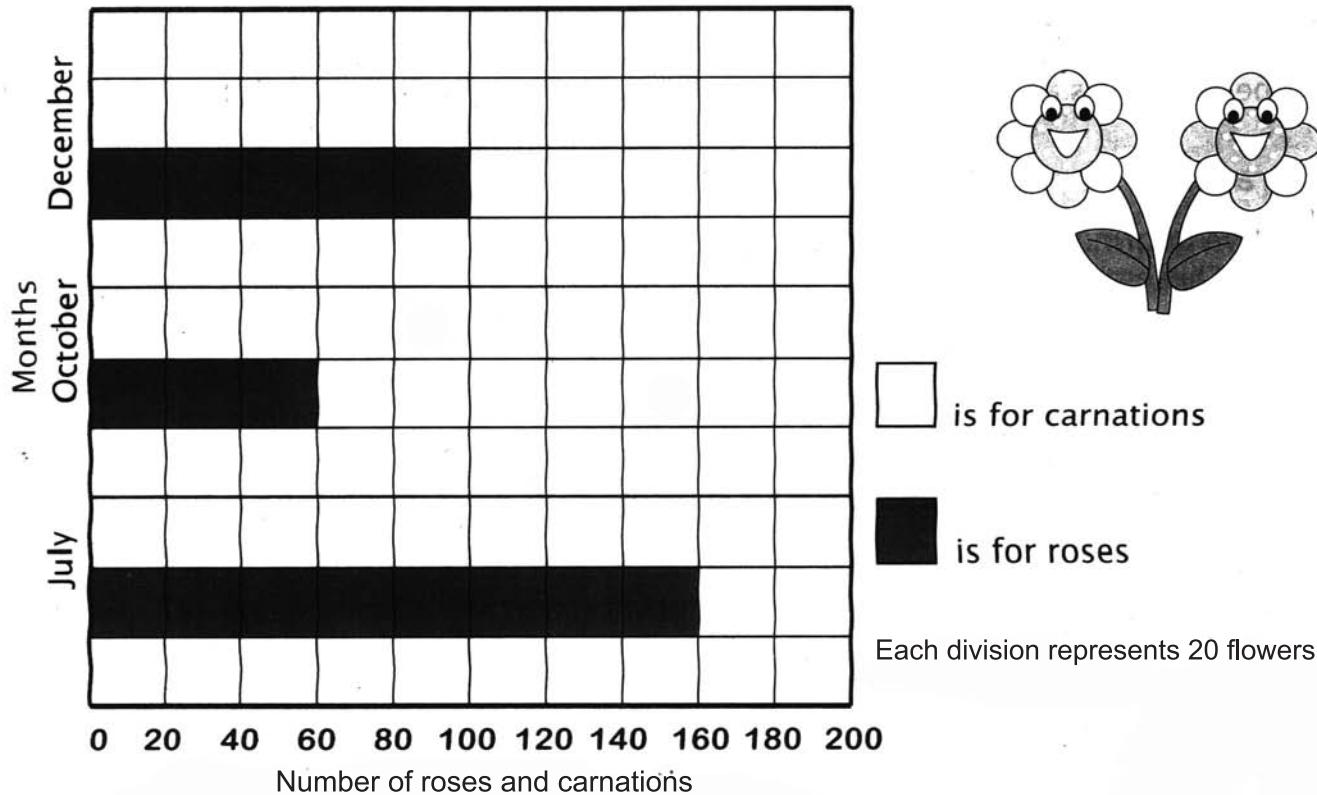


### Bar and Column Graphs

When we give information (data) about a quantity through horizontal bars or vertical columns the graph is called a bar graph or a column graph respectively. They help us to understand the number or quantity being talked about. A bar graph and column graph can show more than one set of data.

**Look at the example below.**

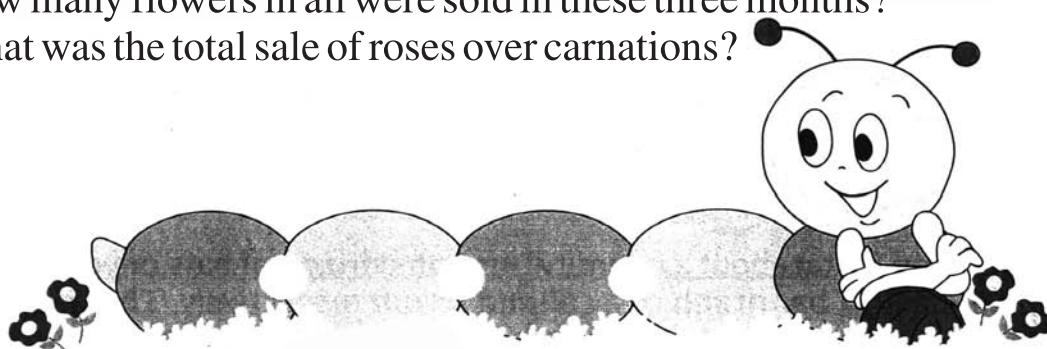
**Example 2:** This is a bar graph to show the total sale of roses and carnations at a florist's shop in the months of July, October and December.



It is very important to note that when large quantities are being talked about, then one column or square or unit of a graph may be used to represent a certain quantity and not just one. Like, in the above example, each division represents 20 flowers.

**By reading the above graph, we can easily answer questions like:**

- How many more roses than carnations were sold in July?
- How many carnations were sold in October?
- In which month were the most roses sold?
- How many flowers in all were sold in these three months?
- What was the total sale of roses over carnations?



## Data Handling

The government collects data or information and presents it in the form of bar graphs, circle graphs and line graphs.

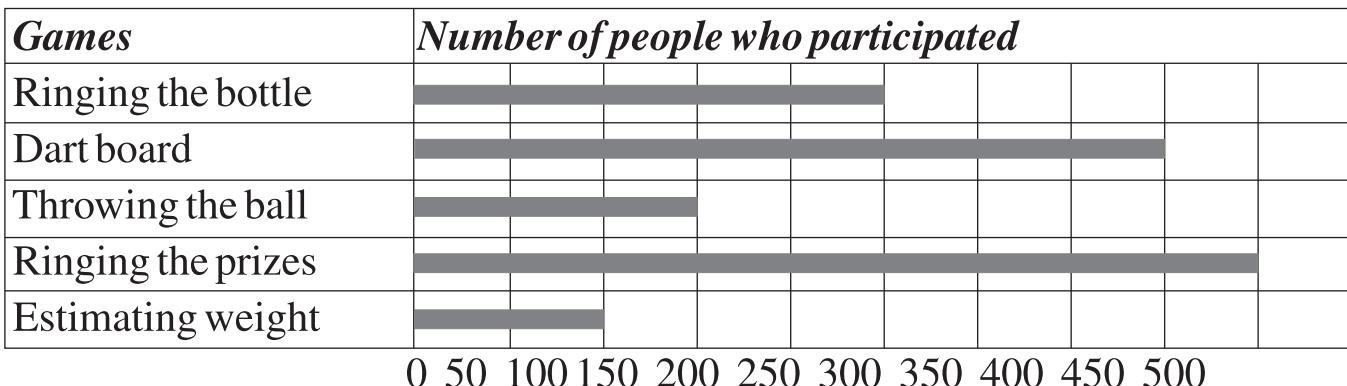
You too, can learn to read data, record it and present it through pictographs, bar graphs and line graphs.

**Examples:** At the Annual Diwali Mela, Class V was incharge of the games section. This is how they recorded data in the from of a pictograph.

<b><i>Games</i></b>	<b><i>Number of people who participated</i></b>
Ringing the bottle	● ● ● ● ●
Dart board	● ● ● ● ● ● ● ●
Throwing the ball	● ● ●
Ringing the prizes	● ● ● ● ● ● ● ● ●
Estimating weight	● ●

● Stands for 50 people.

Horizontal graph of number of people who participated.

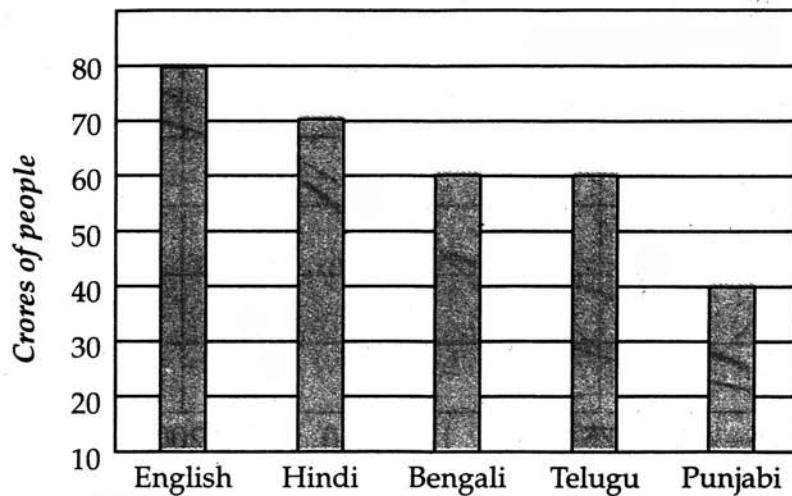


- How many people took part in the game ringing the prizes? \_\_\_\_\_
- Which game was least popular? \_\_\_\_\_.
- Which game was most popular? \_\_\_\_\_.
- How many people tried the dart board? \_\_\_\_\_.
- Ringing the bottle, was more popular than 'throwing the ball' by approx \_\_\_\_\_ people.

## READING GRAPHS

### Vertical bar graphs

Most spoken Languages in India



**Study the bar graph and answer the questions.**

1. Which is the most spoken language in India? \_\_\_\_\_
2. About how many people speak Punjabi? \_\_\_\_\_
3. Is Hindi more popular than English? \_\_\_\_\_
4. About how many people speak Bengali and Telugu? \_\_\_\_\_
5. What is the approximate number of people who speak English? \_\_\_\_\_



# ROMAN NUMERALS

There are seven basic Roman numerals. These are: I V X L C D M

The ten basic Indo-Arabic numerals are: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0

All other numerals are formed using these basic numerals.

Some basic Roman numerals and their Indo-Arabic equivalents are:

<b>Roman Numerals</b>	<b>I</b>	<b>V</b>	<b>X</b>	<b>L</b>	<b>C</b>	<b>D</b>	<b>M</b>
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<b>Indo-Arabic values</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>50</b>	<b>100</b>	<b>500</b>	<b>1000</b>
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**Rules for Writing Roman Numerals**



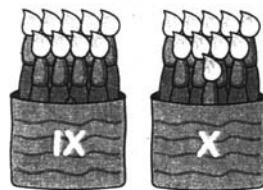
We follow some basic rules for writing Roman numerals. These are:

**Rule1: The 7 basic symbols can be used in different combinations involving addition or subtraction to form numbers.**

Example 1: II =  $1 + 1 = 2$

XX =  $10 + 10 = 20$

IV =  $5 - 1 = 4$



**Rule2: Symbols I, X, C, M can be repeated 3 times at any one given time.**

**Symbols V, L, D can be used only once at any one instance.**

Example 2: III =  $1 + 1 + 1 = 3$

XXX =  $10 + 10 + 10 = 30$

CCC =  $100 + 100 + 100 = 300$

MMM =  $1000 + 1000 + 1000 = 3000$



Only I, X, C are used for both addition and subtraction.

**Rule 3:** When the smaller symbol is placed on the right of the bigger symbol, then we add the symbols.

Example 3: XI =  $10 + 1 = 11$   
 CX =  $100 + 10 = 110$   
 MC =  $1000 + 100 = 1100$

**Rule 4:** When the smaller symbol is placed on left of the bigger symbol, then we subtract.

Example 4: IX =  $10 - 1 = 9$   
 XC =  $100 - 10 = 90$   
 MC =  $1000 - 100 = 900$

**Rule 5:** Symbol I can be added or subtracted from the next two symbols V, X only.

Example 5: IV =  $5 - 1 = 4$   
 VI =  $5 + 1 = 6$   
 IX =  $10 - 1 = 9$   
 XI =  $10 + 1 = 11$

**Rule 6:** Symbol X can be added or subtracted from the next two symbols L, C only.

Example 6: XL =  $50 - 1 = 40$   
 LX =  $50 + 10 = 60$   
 XC =  $100 - 10 = 90$   
 CX =  $100 + 10 = 110$

**Rule 7:** Symbol C can be added or subtracted from the next two symbols D, M only.

Example 7: CD =  $500 - 100 = 400$   
 DC =  $500 + 100 = 600$   
 CM =  $1000 - 100 = 900$   
 MC =  $1000 + 100 = 1100$

Date : \_\_\_\_\_

A. Write the Roman numerals for the following.

1.  $30 =$

2.  $45 =$

3.  $200 =$

4.  $310 =$

5.  $11 =$

6.  $71 =$

7.  $500 =$

8.  $24 =$

9.  $55 =$

10.  $49 =$

11.  $1200 =$

12.  $350 =$

B. Write the Indo-Arabic numerals for the following.

1.  $DCL =$

2.  $XXII =$

3.  $XLI =$

4.  $LXXV =$

5.  $XC =$

6.  $XXXIV =$

7.  $XCIX =$

8.  $MMMD =$

9.  $CCCIX =$

10.  $LVI =$

11.  $MCCIV =$

12.  $CDXXII =$

### Reading Larger Roman Numerals



To understand bigger Roman numerals, we follow the rules and break the number up like this:

Example 8: Write in Indo-Arabic numerals.

CMLXXXII

Step 1:  $CM + LXXX + II$

Step 2:  $CM = 1000 - 100 = 900$

Step 3:  $LXXX = 50 + 10 + 10 + 10 = 80$

Step 4:  $II = 1 + 1 = 2$

Therefore

$CMLXXXII = 900 + 80 + 2 = 982$



Date : \_\_\_\_\_

A. Write the Indo-Arabic numerals for the following.

1. MCMXLIV

2. MMCDXX

3. LXXIX

4. MCMV

5. CCXCIX

6. MMCDXX

7. DCCLXVI

8. MDXXV

9. MMCDLIX

B. Write the Roman numerals for the following.

1. 2010

2. 2534

3. 3250

4. 1971

5. 1603

6. 2006

7. 1954

8. 1320

9. 2919

C. Cross out the wrongly written Roman numerals.

1. VVV

2. XI

3. LLIV

4. XM

5. CCCL

6. DDD

7. XXII

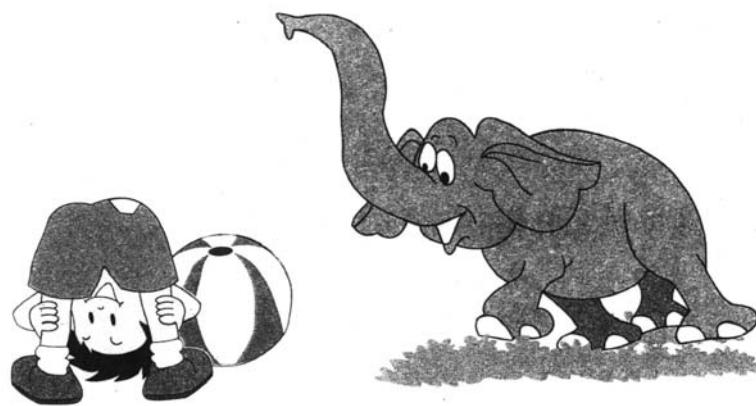
8. LC

9. ICC

10. CCCVI

11. MCCCCIX

12. XLIX



Date : \_\_\_\_\_



Match the following Roman numerals with the Indo-Arabic numerals.

- |              |      |
|--------------|------|
| 1. XXXIX     | 1344 |
| 2. DCCLXVIII | 1250 |
| 3. CIX       | 642  |
| 4. CCCL      | 34   |
| 5. MCCL      | 2322 |
| 6. CDXLIX    | 978  |
| 7. MMCCCXXII | 768  |
| 8. CMLXXVIII | 109  |
| 9. MCCCXLIV  | 350  |
| 10. DCXLII   | 449  |

