

B1E ~ 2081 (2025)

Lalitpur Metropolitan City

Answer Sheet

Q. N. 1. A115

Sol<sup>n</sup>.

- (a) Two sets are called overlapping sets if they have at least one common elements.

$$\text{Eg:- } A = \{a, b, c, d, e\}$$

$$B = \{a, e, i, o, u\}$$

- (b) Here,

$$B = \{\text{prime numbers upto } 15\}$$

$$= \{2, 3, 5, 7, 11, 13\}$$

Now,

Two proper subsets that can be made from set B are:-

$$\{2\}, \{2\}$$

- (c) Here,

$$A = \{2, 4, 6, 8, 10, 12, 14\}$$

$$B = \{2, 3, 5, 7, 11, 13\}$$

We should remove the common element '2' from set B, then the set A and B will be disjoint.

Q. N. 2 AnsSol<sup>n</sup>.

(a) Here,

Total no. of students = 60

The ratio of boys and girls = 5 : 7

Now,

Let 'x' be the common ratio. Then,

$$5x + 7x = 60$$

$$\text{or, } 12x = 60$$

$$\text{or, } x = \frac{60}{12}$$

$$\therefore x = 5$$

So,

$$\text{No. of girls} = 7x$$

$$= 7 \times 5$$

$$= 35$$

Thus, there are 35 girls.

(b) Here,

$$60 = (?)_2$$

2	60	-0	↑
2	30	-0	
2	15	-1	
2	7	-1	
2	3	-1	
2	1	-1	
	0		

$$\therefore 60 = 111100_2$$

(c) Here,  
The scientific notation of 350000 is  
 $= 3.5 \times 10^5$

(d) Here,  
 $1.\overline{24}$   
Let,  $x = 1.\overline{24}$   
or,  $x = 1.2424\dots$   
Multiplying both sides by 100,

$$100x = 124.24\dots$$

$$\text{or, } 100x = 123 + 1.24\dots$$

$$\text{or, } 100x = 123 + x$$

$$\text{or, } 100x - x = 123$$

$$\text{or, } 99x = 123$$

$$\text{or, } x = \frac{123}{99}$$

$$\therefore 1.\overline{24} = \frac{41}{33} \quad \underline{\text{ANS}}$$

**Q.N. 3 Ans:**

Sol<sup>n</sup>.

(a) Here,

Marked price (MP) = Rs. 4,65,000

Discount % = 15%

Now,

Discount amount = 15% of MP

$$= \frac{15}{100} \times 465000$$

$$= \text{Rs. } 69750 \text{ Ans}$$

(b) Here,

MP = Rs. 465000

Discount = Rs. 69750

∴ SP = MP - Discount

$$= 465000 - 69750$$

$$= \text{Rs. } 395250$$

profit % = 20%

CP = ?

We know,

$$\text{profit \%} = \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100\%$$

$$\text{or, } 20\% = \frac{395250 - \text{CP}}{\text{CP}} \times 100\%$$

$$\text{or, } (395250 - \text{CP}) \times 100 = 20 \times \text{CP}$$

$$\text{or, } 39525000 - 100 \text{ CP} = 20 \text{ CP}$$

$$\text{or, } 39525000 = 20cp + 100cp$$

$$\text{or, } 120cp = 39525000$$

$$\text{or, } cp = \frac{39525000}{120}$$

$$\therefore cp = \text{Rs. } 329375$$

Thus,  
the cost price of such machineries  
is Rs. 3,29,375.

(d) Here, Marked price (MP) = Rs. 4,65,000  
price of 1 printer = Rs. 75,000  
 $\therefore$  price of 5 printer =  $5 \times \text{Rs. } 75,000$   
= Rs. 3,75,000

Now,

The price of laptop is  
= Rs. 4,65,000 - Rs. 3,75,000  
= Rs. 90,000

Thus,  
the marked price of laptop is  
less than Rs. 95,000 by Rs. 5,000.

Sol<sup>n</sup>. Q.N. 4 Ans

(a) Here,

The formula to calculate simple interest is :-

$$SI = \frac{PTR}{100}$$

(b) Here,

Principal (P) = Rs. 1,20,000

Time (T) = 6 yrs.

Rate of interest (R) = 12%.

Simple interest (SI) = ?

We have,

$$SI = \frac{PTR}{100}$$

$$= \frac{120000 \times 6 \times 12}{100}$$

$$= \text{Rs. } 86,400$$

Thus,

Dilliram gets Rs. 86,400 simple interest after 6 years.

(c) Here,

Interest earned = RS. 86,400

Now,

He receives the amount after 5% TAX

pay = RS. 86400 - 5% of RS. 86400

$$= \text{RS. } 86400 - \frac{5}{100} \times \text{RS. } 86400$$

$$= \text{RS. } 86400 - \text{RS. } 4320$$

$$= \text{RS. } 82,080 \text{ ANS}$$

Sol<sup>n</sup>.

Q.N. 5 ANS

(a) Here,

The area of triangle having length of base 'b' cm and height 'h' cm is

$$A = \frac{1}{2} b \text{ cm} \times h \text{ cm}$$

$$= \frac{1}{2} bh \text{ cm}^2 \text{ ANS}$$

(b) Here,

Radius of circular fish pond ( $r$ ) = 14m

Now,

$$\text{Area of pond } (A_1) = \pi r^2$$

$$= \frac{22}{7} \times 14^2$$

$$= \frac{22}{7} \times 196$$

$$= 616 \text{ m}^2 \text{ Ans}$$

(c) Here,

$$\text{Length of garden (l)} = 56 \text{ m}$$

$$\text{Breadth of garden (b)} = ?$$

$$\text{Area of garden (A)} = 616 \text{ m}^2$$

Now,

$$b = \frac{A}{l}$$

$$= \frac{616}{56}$$

$$= 11 \text{ m}$$

Also,

$$\text{perimeter of garden (p)} = 2(l+b)$$

$$= 2(56 \text{ m} + 11 \text{ m})$$

$$= 2 \times 67 \text{ m}$$

$$= 134 \text{ m}$$

(d) Here,

$$\text{Circumference of fish pond (C)}$$

$$= 2\pi r$$

$$= 2 \times \frac{22}{7} \times 14^2$$

$$= 88 \text{ m}$$

Also,

perimeter of garden (P) = 134m

Thus,

The garden need more cost to fence at the same rate of cost.

### Q.1. 6 Ans

Sol<sup>n</sup>

(a) Zero (0) exponent of  $y$  will be equal to 1, i.e.  $y^0 = 1$ .

(b) Here,  $(x^{a-b})^{a+b} \times (x^{b-c})^{b+c} \times (x^{c-a})^{c+a} = 1$

L.H.S.

$$(x^{a-b})^{a+b} \times (x^{b-c})^{b+c} \times (x^{c-a})^{c+a}$$

$$= x^{a^2-b^2} \times x^{b^2-c^2} \times x^{c^2-a^2}$$

$$= x^{a^2-b^2+b^2-c^2+c^2-a^2}$$

$$= x^0$$

$$= 1$$

L.H.S = R.H.S

proved

Q.N. 7 AnsSol<sup>n</sup>.(a) Here,  
 $x^2 + 3x + 2$ ,  $x^2 - 1$ 

$$\begin{aligned}
 \text{1st expression} &= x^2 + 3x + 2 \\
 &= x^2 + (2+1)x + 2 \\
 &= x^2 + 2x + 1x + 2 \\
 &= x(x+2) + 1(x+2) \\
 &= (x+2)(x+1)
 \end{aligned}$$

$$\begin{aligned}
 \text{2nd expression} &= x^2 - 1 \\
 &= x^2 - 1^2 \\
 &= (x+1)(x-1)
 \end{aligned}$$

$$\therefore \text{LCM} = (x+1)(x-1)(x+2)$$

(b) Here,

$$\frac{x}{x^2 + 3x + 2} \div \frac{2}{x^2 - 1}$$

$$= \frac{x}{x^2 + 3x + 2} \times \frac{x^2 - 1}{2}$$

$$= \frac{x}{x^2 + (2+1)x + 2} \times \frac{x^2 - 1^2}{2}$$

$$= \frac{x}{x^2 + 2x + 1x + 2} \times \frac{(x+1)(x-1)}{2}$$

$$= \frac{x}{x(x+2)+1(x+2)} \times \frac{(x+1)(x-1)}{2}$$

$$= \frac{x}{(x+1)(x+2)} \times \frac{(x+1)(x-1)}{2}$$

$$= \frac{x(x-1)}{2(x+2)} \quad \underline{\text{Ans}}$$

Q.N. 8 Ans

Sol<sup>n</sup>.

(a) Here,

The required equations are:-

$$x+y = 8 \quad \text{and}$$

$$x-y = 4$$

(b) Here,

$$x+y = 8 \quad \longrightarrow (1)$$

$$x-y = 4 \quad \longrightarrow (2)$$

From eq<sup>n</sup>. (1),

$$x+y = 8$$

$$\therefore y = 8-x$$

x	0	1	2
y	8	7	6

From eq<sup>n</sup>. (2),

$$x-y = 4$$

$$\therefore y = x-4$$

$x$	0	1	2
$y$	-4	-3	-2

From the graph,  
 $(x, y) = (6, 2)$

Thus,  
 the required numbers are 6  
 and 2.

Q.N. 9 Ans,

Sol<sup>n</sup>

(a) Here,

In  $\Delta QTU$ ,

$$\angle QTU + \angle QUT + \angle TQU = 180^\circ$$

$$\therefore 3x + 6x + 90^\circ = 180^\circ$$

$$\therefore 9x = 180^\circ - 90^\circ$$

$$\therefore 9x = 90^\circ$$

$$\therefore x = \frac{90^\circ}{9}$$

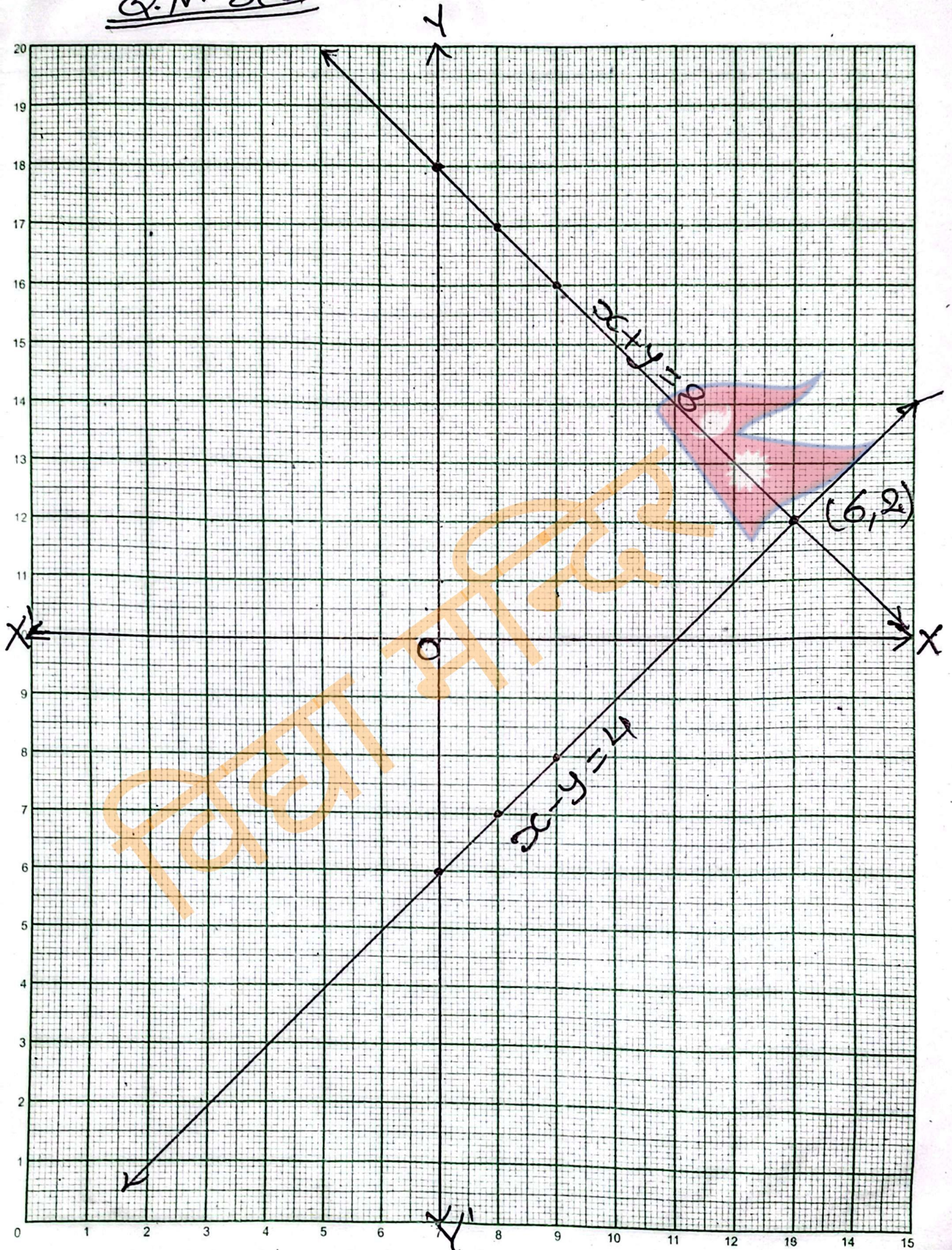
$$\therefore x = 10^\circ$$

Again,

$$\angle RQU = \angle QUT \quad [ \because \text{Alternate angle} ]$$



Q.N. 8(b) (Set-2)



$$\text{or, } y = 6x$$

$$\text{or, } y = 6 \times 10^\circ$$

$$\therefore y = 60^\circ$$

Thus,  $x = 10^\circ$  and  $y = 60^\circ$

(b) Here,

$$x = 10^\circ$$

$$y = 60^\circ$$

The required ratio is

$$= 10 : 60$$

$$= \frac{10}{60}$$

$$= \frac{1}{6}$$

$$= 1 : 6 \quad \underline{\underline{\text{ANS}}}$$

OR

Here,

$$x = 10^\circ$$

$$y = 60^\circ$$

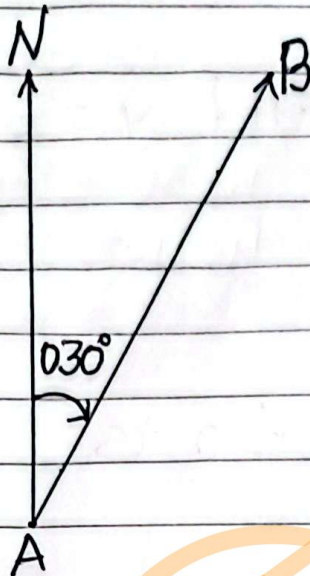
Thus,

the angle  $y$  is more than the angle  $x$  by

$$= 60^\circ - 10^\circ$$

$$= 50^\circ$$

(c) Here,  
The bearing of  $030^\circ$  is given as;

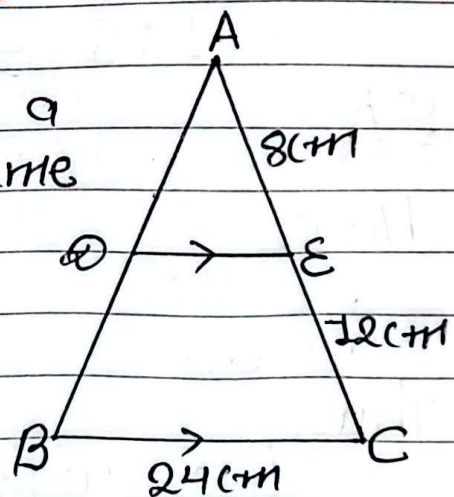


Bearing of B from A.

Q.N. 10 Ans

Sol<sup>n</sup>

(a) A congruent figure is a figure that has the same shape and size as another figure.



(b) Here,  
 $\triangle ADE \sim \triangle ABC$

$$AE = 8\text{cm}$$

$$CE = 12\text{cm}$$

$$BC = 24\text{cm}$$

$$DE = ?$$

Now,

$$AC = AE + CE = 8\text{cm} + 12\text{cm} = 20\text{cm}$$

Then,

The required ratio is

$$\frac{DE}{BC} = \frac{AE}{AC} = \frac{8}{20} = \frac{2}{5}$$

$$\text{So, } DE = \frac{2}{5} \times BC$$

$$= \frac{2}{5} \times 24$$

$$= \frac{48}{5}$$

$$= 9.6 \text{ cm}$$

Thus, the length of  $DE$  is 9.6 cm

(c) Here,

In a regular polyhedron,

No. of Vertices = 8

No. of Edge = 12

No. of Face = ?

By using Euler's formula,

$$V - E + F = 2$$

$$\text{or, } 8 - 12 + F = 2$$

$$\text{or, } F - 4 = 2$$

$$\text{or, } F = 2 + 4$$

$$\therefore F = 6$$

Thus,

the required no. of faces = 6.

Q.N. 11 AnsSol<sup>n</sup>.

(a) Here,

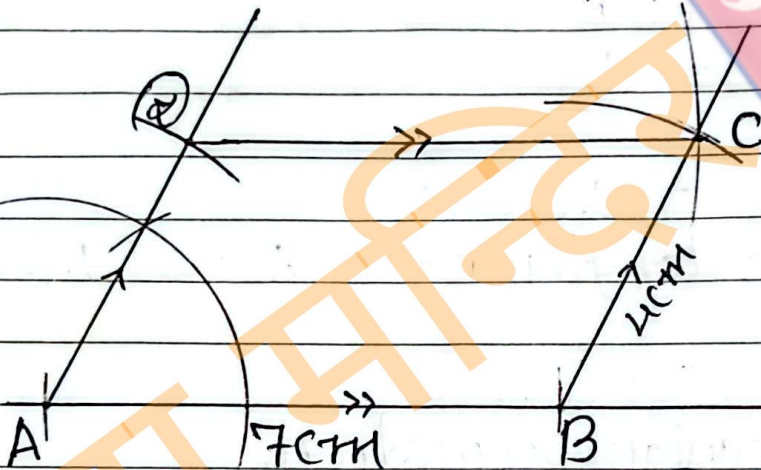
Let  $ABCD$  is a parallelogram.

So,

$$AB = CD = 7\text{cm}$$

$$BC = AD = 4\text{cm}$$

$$\angle BAD = 60^\circ$$



We construct a parallelogram  $ABCD$  of given measurement.

(b) Here,

Given,

$$A(-3, 2), B(5, 3), C(1, 6)$$

Now,

Reflect in x-axis

$$P(x, y) \longrightarrow P'(x, -y)$$

So,

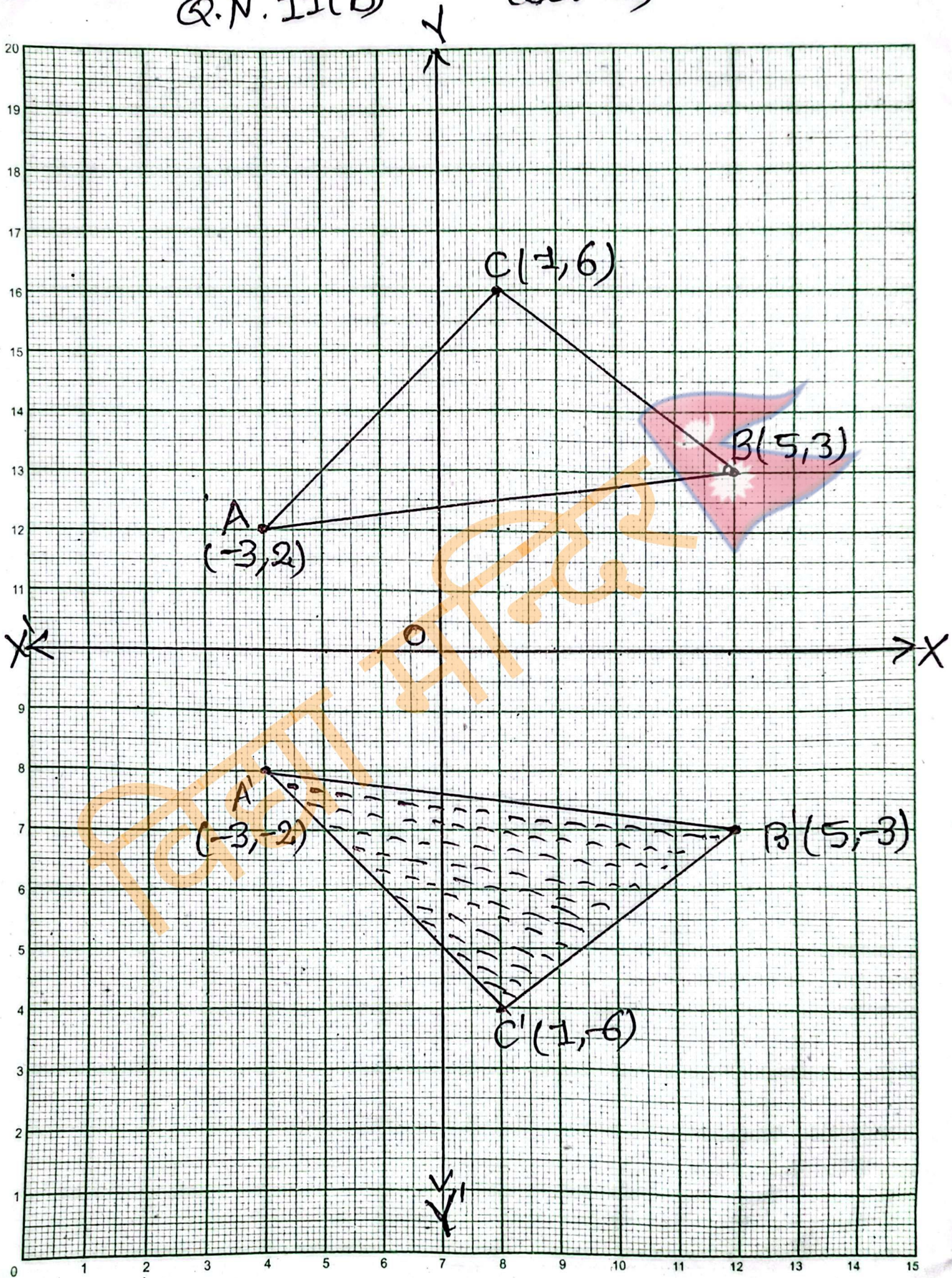
$$A(-3, 2) \longrightarrow A'(-3, -2)$$

$$B(5, 3) \longrightarrow B'(5, -3)$$

$$C(1, 6) \longrightarrow C'(1, -6)$$

Q.N. 11(b)

(Set-2)



Q. N-12. AHSSol<sup>n</sup>

(a) Here,  
Total expenditure = RS. 36000

Now,  
 $360^\circ = \text{RS. } 36000$

$$1^\circ = \frac{\text{RS. } 36000}{360}$$

$$= \text{RS. } 100$$

Then,

The expenditure on Baishakh is

$$= \text{RS. } 100 \times 90$$

$$= \text{RS. } 9000$$

The expenditure on Jetha is

$$= \text{RS. } 100 \times 60$$

$$= \text{RS. } 6000$$

The expenditure on Asar is

$$= \text{RS. } 100 \times 75$$

$$= \text{RS. } 7500$$

The expenditure on Shrawan is

$$= \text{RS. } 100 \times 175$$

$$= \text{RS. } 17500$$

(b) Here,

Total expenditure,  $\sum x = 36000$

No. of items,  $N = 4$

Average expenditure,  $\bar{x} = ?$

We have,

$$\bar{x} = \frac{\sum fxc}{N}$$

$$= \frac{36000}{4}$$

$$= \text{RS. } 9000$$

Thus,

the average expenditure of such family in one month = RS. 9000.

❀ The End ❀

© Bidhya Mandir

## LALITPUR METROPOLITAN CITY

Final Examination-2081

Class: 8

Full Marks: 50

Subject: Compulsory Mathematics

Time: 2 hrs.

Candidates are required to give their own words as far as practicable.

सबै प्रश्नहरू अनिवार्य छन् । (All questions are compulsory.)

1. यदि समूह  $A = \{15 \text{ सम्मका जोर संख्याहरू र समूह}\}$   $B = \{15 \text{ सम्मका रुढ संख्याहरू}\}$  भए, (If set  $A = \{\text{Even numbers up to 15}\}$  and set  $B = \{\text{Prime numbers up to 15}\}$  then,)
  - (a) खाँटएका समूहहरूलाई परिभाषित गर्नुहोस् । (Define overlapping sets.) [1]
  - (b) समूह  $B$  बाट कुनै दुईवटा उपयुक्त उपसमूहहरूको निर्माण गर्नुहोस् । (Make any two proper subsets from set  $B$ .) [1]
  - (c) समूह  $B$  का परिणामहरूमा के परिवर्तन गरियो भने दुई समूहहरू  $A$  र  $B$  अलगैएका समूह हुन्छन् ? (What change in the outcome of set  $B$  makes the two sets  $A$  and  $B$  disjoint.) [1]
2. ललितपुरको एउटा विद्यालयको कक्षा आठमा भएको छात्र र छात्राको अनुपात क्रमशः 5:7 छ । यदि जम्मा विद्यार्थी संख्या 60 जना भए, (The ratio of boys and girls of class eight of a school is 5:7 respectively. If the total number of students is 60 then,)
  - (a) कति जना छात्राहरू रहेछन् ? पत्ता लगाउनुहोस् । (How many girls are there? Find.) [1]
  - (b) जम्मा विद्यार्थी संख्यालाई दुईआधार संख्या पद्धतीमा परिवर्तन गर्नुहोस् । (Change the total number of students in binary number system.) [1]
  - (c) 350000 लाई वैज्ञानिक संकेतमा लेख्नुहोस् । (Write 350000 in scientific notation.) [1]
  - (d)  $1.\overline{24}$  लाई भिन्नमा परिवर्तन गर्नुहोस् । (Convert  $1.\overline{24}$  into fraction.) [2]
3. राजु लामा 5 वटा प्रिन्टर र एउटा ल्यापटप किन्न पसलमा जानुभयो । त्यहाँ उनले 5 वटा प्रिन्टर र एउटा ल्यापटको जम्मा मूल्य रु.4,65,000 तोकिएको रहेछ भने, (Raju Lama Visited a computer store to get 5 printers and a laptop. A set of 5 printers and a laptop is available for Rs.4,65,000 then,)
  - (a) यदि उक्त सामानमा 15% छुट दिइएको भए छुट रकम पत्ता लगाउनुहोस् । (If 15% discount is allowed to those machineries, find the discount amount.) [2]
  - (b) यदि 15% छुटमा बेच्दा पनि पसलेलाई 20% नाफा भएछ भने पसलेले उक्त सामानहरू कतिमा किनेको रहेछ ? (If the shopkeeper earned 20% profit even after allowing 15% discount, at what price did the shopkeeper purchase such machineries.) [2]
  - (c) यदि एउटा प्रिन्टरको मूल्य रु.75,000 भए एउटा ल्यापटको मूल्य रु.95,000 भन्दा कति बढी वा कम होला ? (By how much is the marked price of a laptop less or more than Rs.95,000, If the price of a printer is Rs.75,000?) [1]

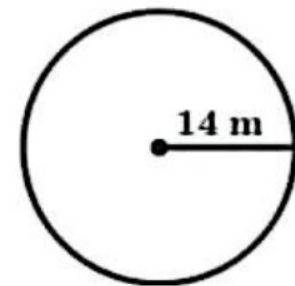
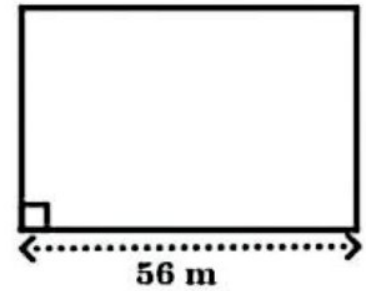
4. डिल्लीरामले वार्षिक 12% व्याजका दरले रू.1,20,000 एउटा बैंकमा जम्मा गर्छन् भने, (Dilliram deposits Rs.1,20,000 in a bank at the rate of 12% per annum then,)

(a) साधारण व्याज निकाल्ने सूत्र लेख्नुहोस् । (Write a formula to calculate simple interest.) [1]

(b) डिल्लीरामले 6 वर्षको अन्तमा कति रकम व्याज पाउँछ ? पत्ता लगाउनुहोस् । (How much interest does Dilliram get after 6 year?) [1]

(c) यदि प्राप्त हुने व्याजको 5% आयकर तिर्नुपर्छ भने 6 वर्षपछि उनलाई जम्मा कति रकम प्राप्त होला ? (If he has to pay 5% of interest as income tax how much amount will he receive after 6 years?) [2]

5. मोहनले आफ्नो घरको आँगनमा बराबर क्षेत्रफल भएका एउटा आयताकार बगैचा र एउटा वृत्ताकार माछा पोखरीको निर्माण गरेको छ भने, (Mohan constructed a rectangular garden and a circular fish pond in the garden of his house with equal areas.)



(a) आधारको लम्बाई 'b' से.मी. र उचाई 'h' से. मी. भएको त्रिभुजको क्षेत्रफल पत्ता लगाउनुहोस् । (Find the area of triangle having length of base is 'b'.cm and height is 'h' cm.) [1]

(b) वृत्ताकार माछा पोखरीको क्षेत्रफल पत्ता लगाउनुहोस् । (Find the area of circular fish pond.) [1]

(c) आयताकार बगैचाको परिमिती निकाल्नुहोस् । (Find the perimeter of rectangular garden.) [2]

(d) बगैचा वा माछा पोखरीलाई एउटै दरले तारवारले घेर्न कसलाई धेरै खर्च लाग्ला ? (Which of the garden or fish pond need more cost to fence at the same rate of cost.) [1]

6. (a)  $y$  को घाताङ्क कति हुँदा सो को मान 1 सँग बराबर हुन्छ ? (What exponent of  $y$  will be equal to 1.) [1]

(b) प्रमाणित गर्नुहोस् । (Prove that): [2]

$$(x^{a-b})^{a+b} \times (x^{b-c})^{b+c} \times (x^{c-a})^{c+a} = 1$$

7. बीजगणतीय भिन्न  $\frac{x}{x^2+3x+2} \div \frac{2}{x^2-1}$  दिइएको छ । (Algebraic fraction

$\frac{x}{x^2+3x+2} \div \frac{2}{x^2-1}$  is given,)

(a) हरहरूको ल.स. निकाल्नुहोस् । (Find the LCM of denominators.) [2]

(b) दिइएको भिन्नलाई सरल गरी लघुतम पदमा लैजानुहोस् । (Simplify the given fraction and reduce into the lowest term.) [2]

8. दुईवटा संख्याहरू  $x$  र  $y$  यस्ता छन् कि यिनीहरूको योगफल 8 र अन्तर 4 छ भने, (There are two numbers  $x$  and  $y$ , such that their sum is 8 and difference is 4.)

(a) दिइएको भनाईको आधारमा युगपतरेख्य समिकरणहरू निर्माण गर्नुहोस् । (Construct the simultaneous equations based on the given statements.) [1]

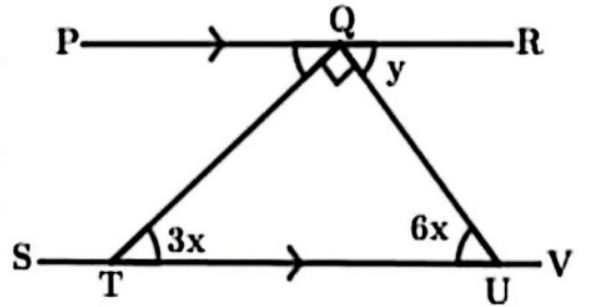
(b) ती संख्याहरू कति कति होलान् ? लेखाचित्र विधिबाट पत्ता लगाउनुहोस् । (What are the numbers? Calculate by using graphical method.) [2]

9. दिइएको चित्रको अध्ययन गरी तलका प्रश्नहरूको उत्तर दिनुहोस् । (Study the given figure and answer the following questions.)

(a)  $x$  र  $y$  को मान पत्ता लगाउनुहोस् । (Find the value of  $x$  and  $y$ .) [2]

(b) कोणहरू  $x$  र  $y$  को तुलना गर्नुहोस् । (Compare the angles  $x$  and  $y$ .) [1]

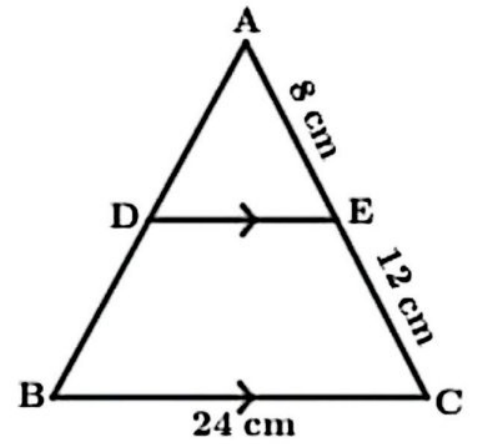
(c)  $030^\circ$  को दिशास्थिति जनाउने कोण खिच्नुहोस् । (Draw a bearing angle of  $030^\circ$ .) [1]



10. दिइएको चित्रको अध्ययन गरी सोधिएका प्रश्नहरूको उत्तर दिनुहोस् । (Study the given figure and answer the following questions.)

(a) अनुरूप चित्रहरूलाई परिभाषित गर्नुहोस् । (Define congruent figures.) [1]

(b) यदि  $\triangle ADE \sim \triangle ABC$  भए भूजा DE को लम्बाई पत्ता लगाउनुहोस् । (If  $\triangle ADE \sim \triangle ABC$ , Find the length DE.) [2]

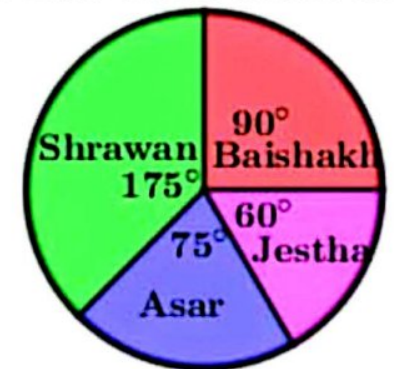


(c) एउटा नियमित पोलिहेड्रनमा शीर्षको संख्या 8 र किनाराको संख्या 12 भए युरको सूत्र प्रयोग गरी मोहडाको संख्या पत्ता लगाउनुहोस् । (In a regular polyhedron, the number of vertices is 8 and the number of edge is 12, Calculate the number of faces by using Euler's formula.) [2]

11. (a) आसन्न भूजाहरू 7 से.मी. र 4 से.मी. तथा तिनीहरू बीचको कोण  $60^\circ$  भएको एउटा समानान्तर चर्तुभुजको रचना गर्नुहोस् । (Construct a parallelogram having adjacent sides 7 cm and 4 cm and angle between them is  $60^\circ$ .) [3]

(b)  $\triangle ABC$  का शीर्षबिन्दुहरू A  $(-3, 2)$ , B  $(5, 3)$  र C  $(1, 6)$  छन् । यसलाई लेखाचित्रमा खिच्नुहोस् र X-अक्षमा परिवर्तन गरी प्रतिबिम्बको शीर्षबिन्दुहरूका निर्देशांकहरू पत्ता लगाउनुहोस् । (The vertices of  $\triangle ABC$  are A  $(-3, 2)$ , B  $(5, 3)$  and C  $(1, 6)$ . Sketch it on a graph paper and reflect in X-axis. Write down the coordinates of the image.) [3]

12. एउटा परिवारको चार महिनाको कुल खर्च रु.36,000 छ । प्रत्येक महिनाको खर्चलाई संगैको वृत्तचित्रमा देखाइएको छ । (The total expenditure of a family is Rs.36,000 for four months. Expenditure of each month are shown in the adjoining pie-chart.)



- (a) प्रत्येक महिनामा भएको खर्चलाई पत्ता लगाउनुहोस् । (Find the expenditure in each month.) [2]
- (b) उक्त परिवारको एक महिनामा औषत कति खर्च भएको रहेछ ? पत्ता लगाउनुहोस् । (How much is average expenditure of such family in one month. Calculate.) [1]

**The End**