Date 1
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Butwal Submetropolitan
BLE - 2081

Answer Sheet

by C.P. Sunar

Q.N. 1 Ans

Sol^n.

(a) Here,

$M = \{a, p, l, e\}$

$N = \{p, a, n\}$

$M \cap S = \{a, p\}$

Yes, the set M and N are overlapping because they have common elements.

(b) Here,

$M = \{a, p, l, e\}$

For M, $n = 4$

So, the no. of subsets is

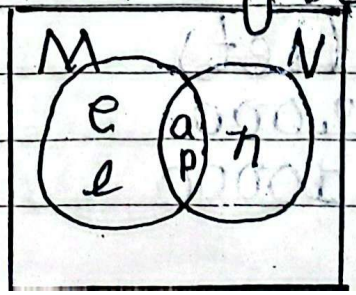
$= 2^n$

$= 2^4$

$= 16$ Ans

(c) Here,

Showing it in a Venn diagram,



Q.N-2 Ans
Soln.

(a) If profit percent = P%, cost price = CP, Selling price = SP, then

The formula of cost price is

$$CP = \frac{SP}{(1+P\%)}$$

(b) Here,
Marked price (MP) = Rs. 1,20,000
Discount = 15% of Rs. 1,20,000

$= \frac{15}{100} \times 120000$

= Rs. 18000

Now,
The price of laptop after discount
= Rs. 120000 − Rs. 18000 [∵ SP = MP − d]
= Rs. 102000

(c) Here,
CP = ?
SP = Rs. 102000
profit = Rs. 10000

Now,
profit = SP - CP
or, CP = SP - profit

= Rs. 102000 − Rs. 10000

= Rs. 92000 Ans

Thus, the cost price of laptop is Rs. 92000.

Q.N. 3 Ans
Sol^n.

(a) It means that for every Rs. 100 deposited in the bank, the interest earned in 1 year will be Rs. 10.

(b) Here,
Given,
principal (P) = Rs. 25000
Rate of interest (R) = 10% p.a.
Time (T) = 2 years
Interest (I) = ?
We know that,

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

$$= \frac{25000 \times 2 \times 10}{100}$$

$$= Rs.\ 5000 \quad \text{Ans}$$

(c) Here,
Total Amount (A) $= P + I$
$= Rs.\ 25000 + Rs.\ 5000$
$= Rs.\ 30000$

Now,
Divide Rs. 30000 in the ratio of 2:3.

Total parts $= 2 + 3 = 5$
Value of 1 part $= \frac{Rs.\ 30000}{5}$
$= Rs.\ 6000$

So,
First part $= 2 \times Rs.\ 6000$
$= Rs.\ 12000$

Also,
Second part $= 3 \times Rs.\ 6000$
$= Rs.\ 18000$

Thus, Rs. 30000 is divided into Rs. 12000 and Rs. 18000.

Q.N 4 Ans
Sol^{n}

(a) Here,
$2360000 = 2.36 \times 10^6$

So, the scientific notation of 2360000 is 2.36×10^6.

(b) Here,
2, 6, x, 27 are in proportion,
Then,
$2 : 6 :: x : 27$

or, $\frac{2}{6} = \frac{x}{27}$

or, $x \times 6 = 2 \times 27$

or, $x = \frac{2 \times 27}{6}$

$\therefore x = 9$

Thus, the value of x is 9.

(c) Here,
Let, $x = 0.\overline{34}$
or, $x = 0.3434.....$
Multiply both sides by 100,

$100 \times x = 0.3434... \times 100$

or, $100x = 34.34...$
or, $100x = 34 + 0.34...$
or, $100x = 34 + x$ [$\because x = 0.34...$]
or, $100x - x = 34$
or, $99x = 34$
or, $x = \frac{34}{99}$

$\therefore 0.\overline{34} = \frac{34}{99}$ Ans

(d) Here,
$(68)_{10} = (233)_5$ Ans

5	68	– 3
5	13	– 3
5	2	– 2
	0	

Q.N 5 Ans

Sol^n.

(a) The formula to find area of circle is

$= \pi r^2$

Where, r = radius

$\pi = \frac{22}{7}$

(b) Here,

Radius of garden $(r) = \frac{\text{diameter}}{2}$

$= \frac{21}{2}$

$= 10.5\text{m}$

Now,

The area of garden $(A) = \pi r^2$

$= \frac{22}{7} \times (10.5)^2$

$= \frac{22}{7} \times 10.5 \times 10.5$

$= \frac{2425.5}{7}$

$= 346.5\text{ m}^2$ Ans

(b) Next Method

Here,
diameter of garden (d) = 21m
Now,
The area of garden (A) = $\frac{1}{4}\pi d^2$

$= \frac{1}{4} \times \frac{22}{7} \times (21)^2$

$= \frac{1}{4} \times \frac{22}{7} \times 21 \times 21$

$= \frac{1386}{4}$

$= 346.5 m^2$ Ans

(c) Here,
Length of a side of land (l) = 40m
Now,
Area of square land (A) = l^2

$= (40m)^2$

$= 40m \times 40m$

$= 1600 m^2$

The area of land excluding the area of circle is

$= 1600 m^2 - 346.5 m^2$

$= 1253.5 m^2$ Ans

(d) Here,
Length of a side of equilateral triangle (a) = 20m
Now,
Area of the garden (A) = $\frac{\sqrt{3}}{4}a^2$

$= \frac{\sqrt{3}}{\cancel{4}_1} \times \cancel{20}^5 \times 20$

$= 100\sqrt{3}$

$= 173.21 m^2$

So,
The area of remaining land is
$= 1600m^2 - 173.21m^2$

$= 1426.79m^2$ Ans

Q.N. 6 Ans

Solⁿ

(a) Here,

$a^3 \times a^5$

$= a^{3+5}$

$= a^8$ Ans

(b) Here,

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

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

$= x^0$

$= 1$ Ans

Q.N. 7 Ans

Solⁿ

(a) Here,

$\frac{1}{x} + \frac{1}{x+1} = \frac{2}{x-1}$

or, $\frac{x+1+x}{x(x+1)} - \frac{2}{x-1} = 0$

$$\text{or, } \frac{2x+1}{x(x+1)} - \frac{2}{(x-1)} = 0$$

$$\text{or, } \frac{(2x+1)\times(x-1) - 2\times x(x+1)}{x(x+1)(x-1)} = 0$$

$$\text{or, } \frac{2x^2 - 2x + x - 1 - 2x^2 - 2x}{x(x+1)(x-1)} = 0$$

$$\text{or, } -3x - 1 = 0 \quad [\text{Cross multiply गर्दा 0 भयो}]$$

$$\text{or, } x = -\frac{1}{3}$$

$$\boxed{\therefore x = -\frac{1}{3}}$$

(b) Here,

1^{st} expression $= x^2 - 9$
$= x^2 - 3^2$
$= (x+3)(x-3)$

2^{nd} expression $= x^2 - 5x + 6$
$= x^2 - (2+3)x + 6$
$= x^2 - 2x - 3x + 6$
$= x(x-2) - 3(x-2)$

$= (x-2)(x-3)$

$\therefore$ HCF $= (x-3)$ Ans

Q.N. 8 Ans

Sol^n.

(a) The equation of x-axis is

$y = 0$

(b) Here,

$x + y = 7 \longrightarrow (1)$

$x - y = 1 \longrightarrow (2)$

From eq^n. (1),

$y = 7 - x$

x	0	1	2	3
y	7	6	5	4

From eq^n. (2),

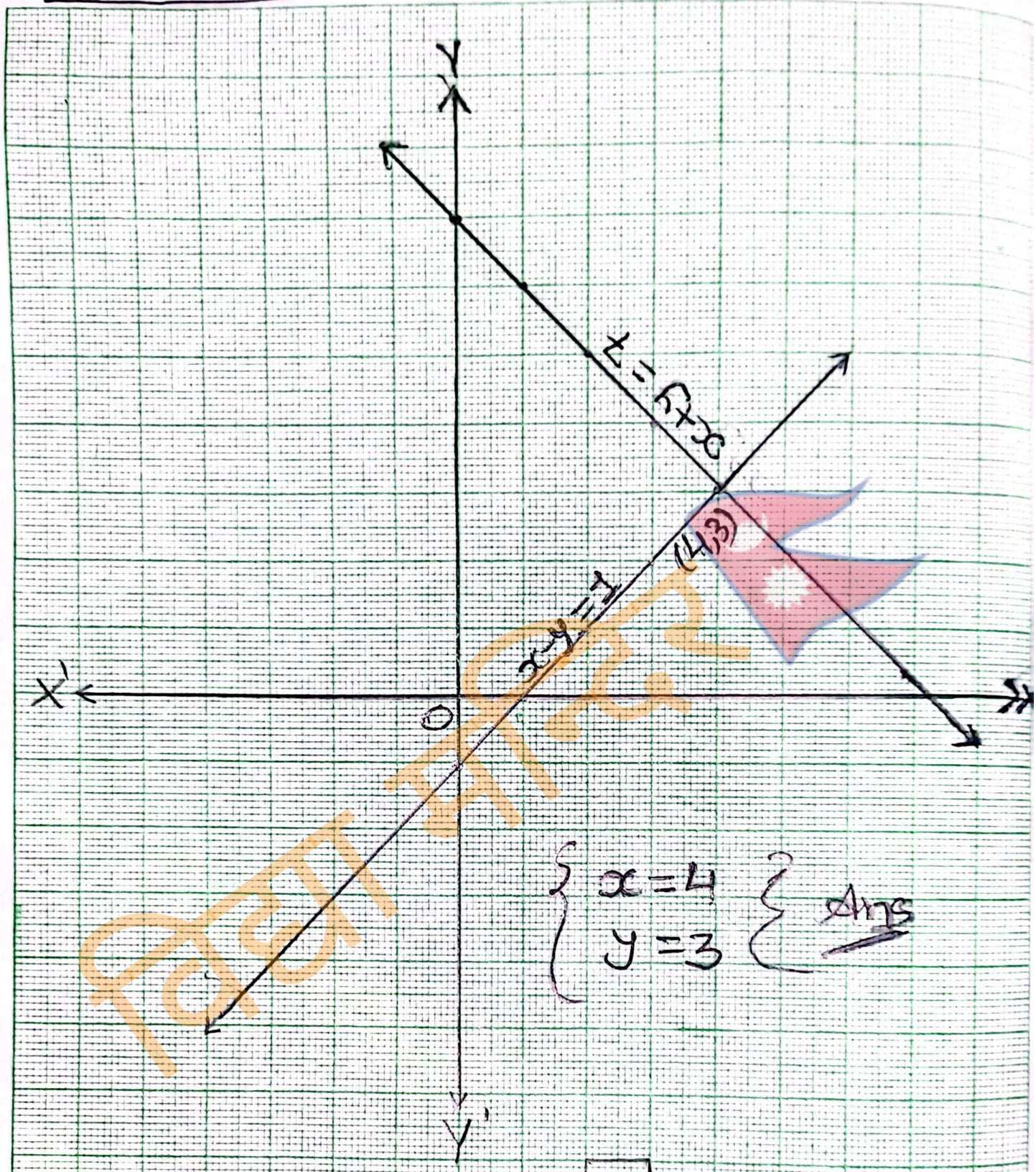
$y = x - 1$

x	0	1	2	3
y	-1	0	1	2

From graph,

The value of x and y are 4 & 3 resp.

Q. N. 8 (b)



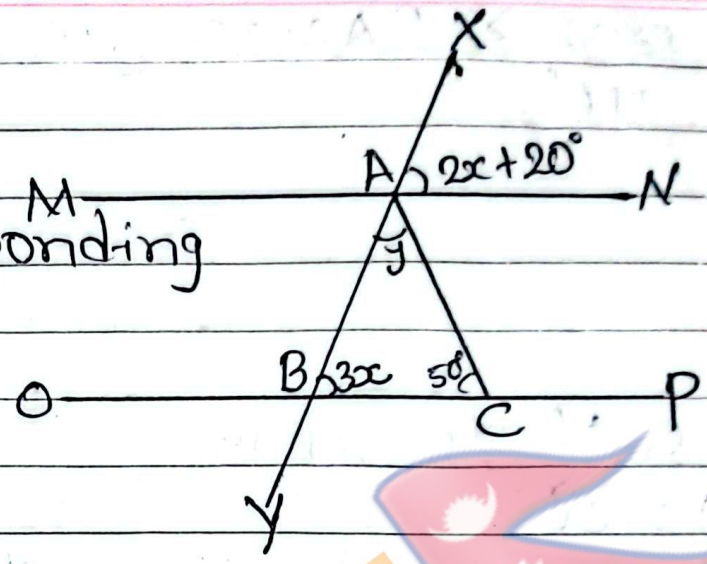
$$\begin{cases} x = 4 \\ y = 3 \end{cases}$$ Ans

□ = 1 unit

Q.N.9 Ans

Sol"

(a) Here,
A pair of corresponding angle is
∠XAN & ∠ABP



(b) Here,
∠XAN = ∠ABP [∵ Corresponding angles are equal]
or, $2x+20^\circ = 3x$
or, $3x-2x = 20^\circ$
or, $1x = 20^\circ$
$\therefore x = 20^\circ$ Ans
Thus, the value of x is 20°.

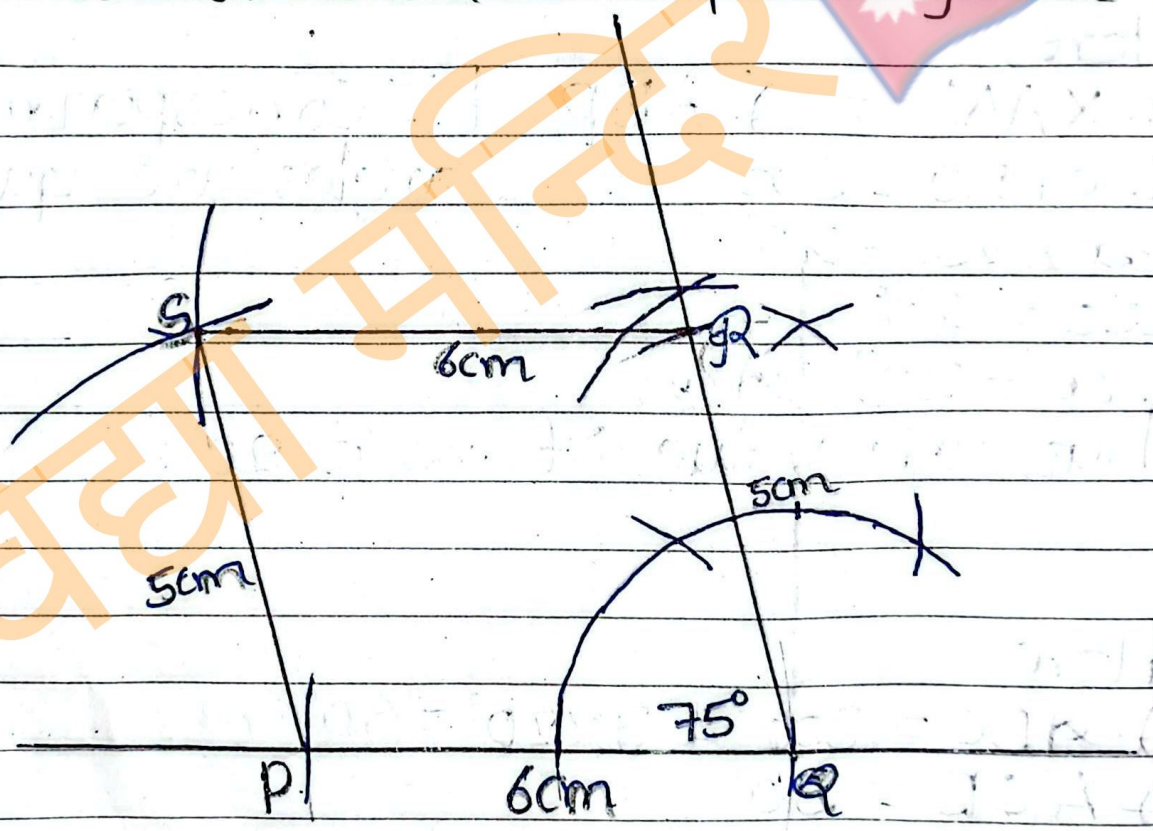
(c) Here,
$\angle ABC = 3x = 3\times 20^\circ = 60^\circ$
$\angle ACB = 50^\circ$
$\angle BAC = y$
Now,
$y+50^\circ+60^\circ = 180^\circ$ [∵ Sum of three angles of a triangle]
or, $y = 180^\circ - 110^\circ$
or, $y = 70^\circ$
$\therefore \angle BAC = 70^\circ$

So, $\angle BAC$ is greater than $\angle ABC$ by 10°.

Q.N. 10 Ans

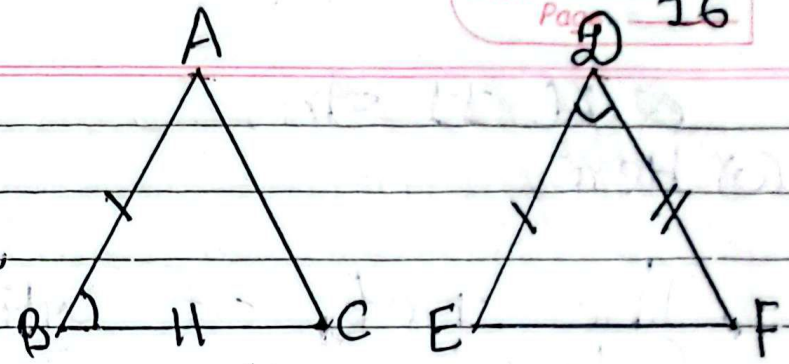
(a) Soln.

Construction of a parallelogram



We construct □PQRS.

(b) Soln.



Here,
In $\triangle ABC$ & $\triangle DEF$,

$AB = DE$ (Side)
$BC = DF$ (Side)
$\angle B = \angle D$ (Angle)

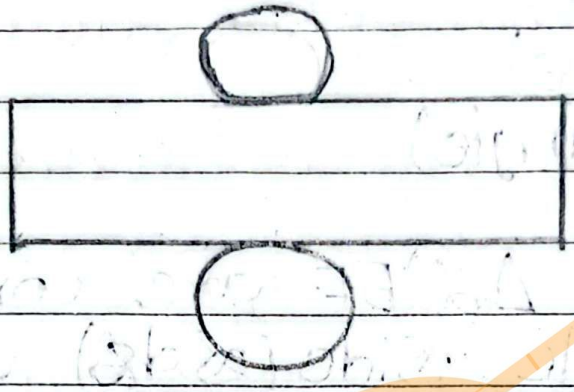
So, $\triangle ABC$ & $\triangle DEF$ are congruent by the Side-Angle-Side (SAS) congruence rule.

Also,
A pair of a corresponding angles is $\angle ABC$ and $\angle DEF$.

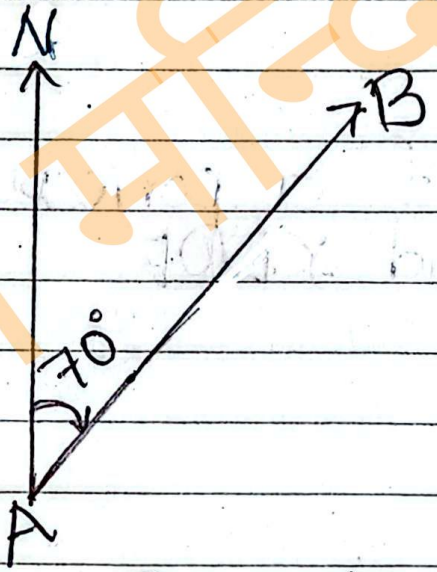
Q.N. 11 Ans

(a) Here,

∴ The net of cylinder are given below:



(b) Here,



The bearing of point B from A is 070°.

Q.N. 11 (c) Ans

Sol^n:

Here,

Given coordinates,

$A(3,4)$, $B(2,-3)$, $C(6,0)$

Reflection on y-axis,

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

Now,

$A(3,4) \longrightarrow A'(-3,4)$

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

$C(6,0) \longrightarrow C'(-6,0)$

Showing it in graph,

[In graph]

Q.N. 12. Ans

Sol^n.

(a) Here,

Total expenditure = Rs.(8000+6000+4000+12000+6000)

= Rs. 36000

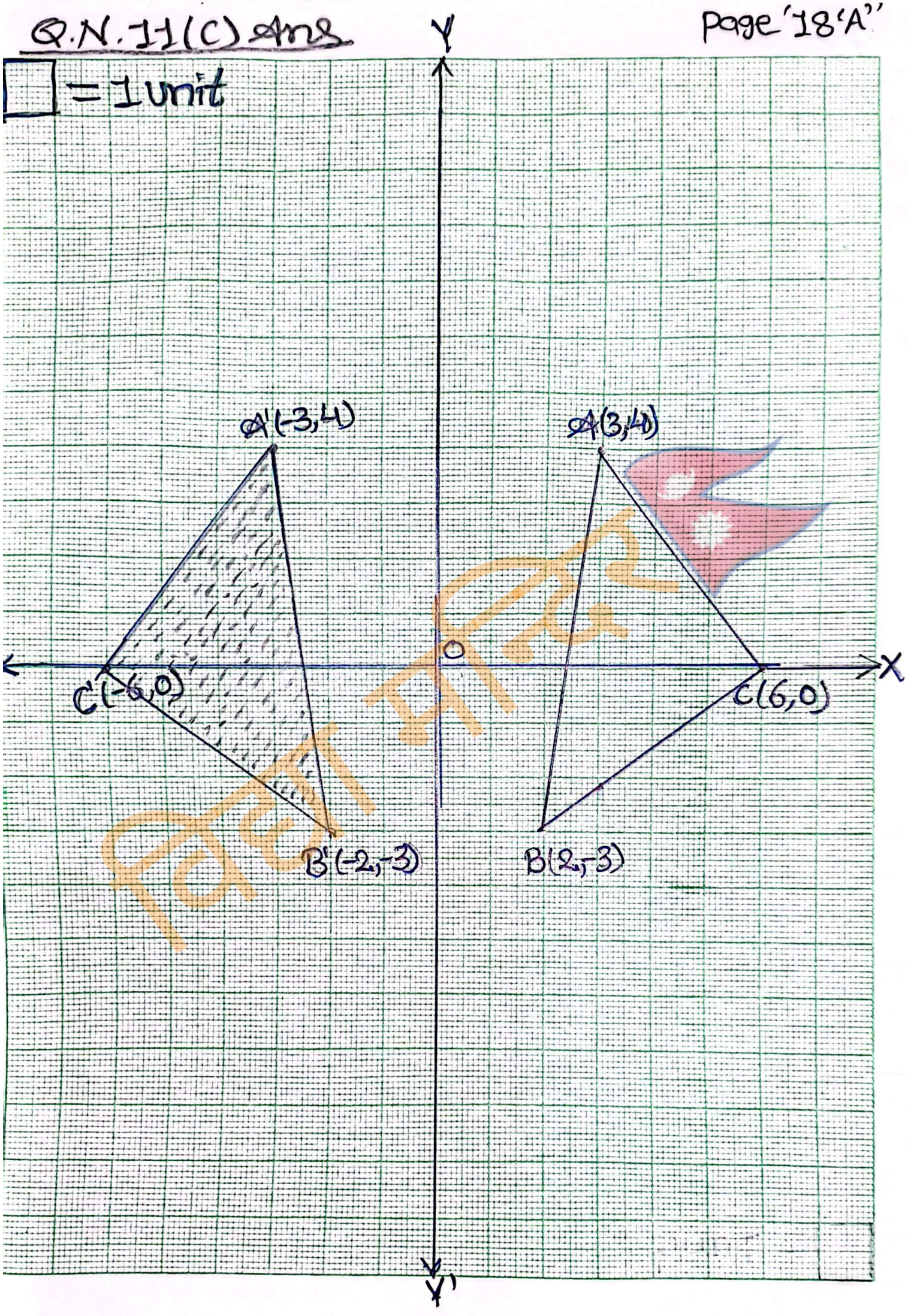
Rs. 36000 = 360°

Rs. 1 = $\left(\frac{360}{36000}\right)^\circ$ = 0.01°

Now,

Q.N. 11(c) Ans.

= 1 unit



Expenditure on food = Rs. 8000 × 0.01°
= 80°

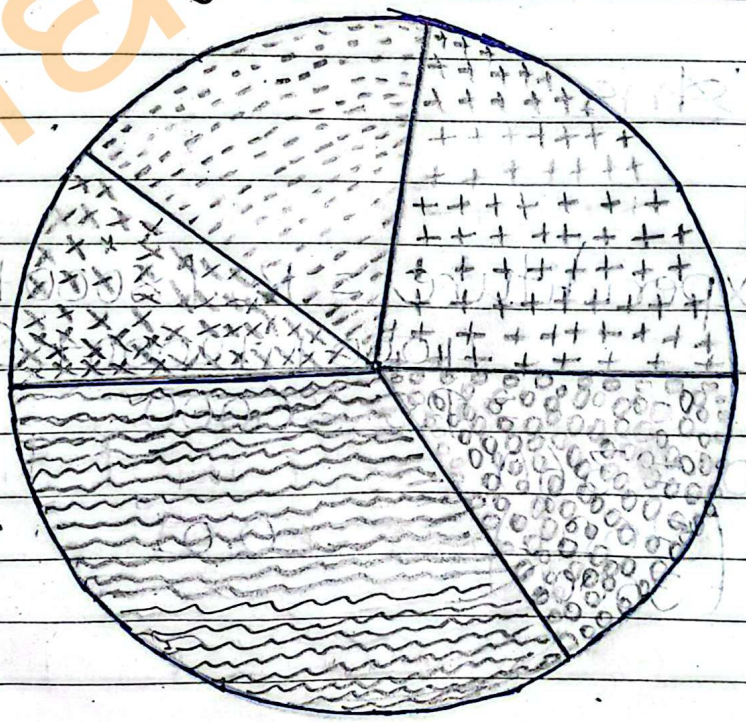
Expenditure on health = Rs. 6000 × 0.01°
= 60°

Expenditure on House rent
= Rs. 4000 × 0.01°
= 40°

Expenditure on Education = Rs. 12000 × 0.01°
= 120°

Expenditure on others = Rs. 6000 × 0.01°
= 60°

Pie-Chart



b) Here,
Total expenditure = Rs. 36000
$N = 5$
Now,
The Average expenditure is

$$= \text{Rs. } \frac{36000}{5}$$

$$= \text{Rs. } 7200 \text{ Ans}$$

Thank you

[Set 9]

Butwal Submetropolitan City

Basic Level Examination-2081

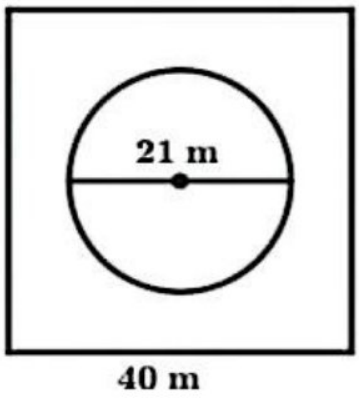
Class: 8 | Full Marks: 50

Subject: Mathematics | Time: 2 hrs.

सबै प्रश्नहरु अनिवार्य छन् । (All the questions are compulsory.)

1. दुईवटा समूहहरु M र N लाई तल प्रस्तुत गरिएको छ । (Two sets M and N are presented below) M = {a, p, l, e}, N = {p, a, n}
   (a) के समूह M र N खप्टिएका समूहहरु हुन् ? कारण दिनुहोस् । (Are the sets M and N overlapping sets? Give Reason.) [1]
   (b) समूह M बाट कतिवटा उपसमूह बनाउन सकिन्छ ?(How many subsets can be made from set M?) [1]
   (c) दिइएका समूहहरु M र N लाई भेनचित्रमा देखाउनुहोस् । (Represent the given sets M and N in Venn diagram.) [1]
2. कृपाले एउटा ल्यापटपको मूल्य रू 1,20,000 तोकिन् । (Kreepa marks a Laptop with a Price of Rs.1,20,000.)
   (a) यदि नाफा प्रतिशत, क्रयमूल्य, र विक्रयमूल्यलाई क्रमशः P%, C.P. र S.P. ले जनाउने हो भने क्रय मूल्य (C.P.) निकाल्ने सुत्र लेख्नुहोस् । (If profit percent, cost price and selling price are denoted by P%, C.P. and S.P. respectively. Write the formula to find cost price (C.P.).) [1]
   (b) यदि 15% छुट दिइयो भने उक्त ल्यापटपलाई कति पर्ला ?(What will be the price of laptop, if 15% discount is given?) [2]
   (c) यदि नाफा रू. 10,000 भए क्रय मूल्य पत्ता लगाउनुहोस् । (Find the cost price, if profit amount is Rs.10,000.) [1]
3. श्रीयांशले 2 वर्षको लागि 10% वार्षिक साधारण ब्याजदरमा रू 25,000 बैंकमा जम्मा गरेछन् । (Shriyansh deposited Rs.25,000 in a bank at the rate of 10% p.a. simple interest for 2 years.)
   (a) वार्षिक ब्याजदर 10% भन्नाले के बुझिन्छ ? (What do you mean by rate of interest 10% p.a.?) [1]
   (b) 2 वर्षको ब्याज पत्ता लगाउनुहोस् । (Find the interest for 2 years.) [1]
   (c) मिश्रधनलाई 2:3 को अनुपातमा विभाजन गर्नुहोस् । (Divide the amount into two parts in the ratio 2:3.) [2]
4. (a) वैज्ञानिक संकेतमा लेख्नुहोस् । (Write in scientific notation.): 2360000 [1]
   (b) यदि 2, 6, x, 27 समानुपातमा छन् भने x को मान पत्ता लगाउनुहोस् । (If 2, 6, x, 27 are in proportion, find the value of x.) [2]
   (c) $0.\overline{34}$ लाई भिन्नमा रुपान्तरण गर्नुहोस् । (Convert $0.\overline{34}$ into fraction.) [2]
   (d) पञ्चआधार संख्या पद्धतिमा रुपान्तरण गर्नुहोस् । (Express in quinary number system.):$(68)_{10}$ [1]

5. 40 मि. लम्बाइ भएको वर्गाकार जग्गाभित्र 21 मि. व्यास भएको वृत्ताकार बगैचा बनाइएको छ । (A circular garden having diameter 21 m is made inside the plot which is in the shape of square of length 40 m.)



(a) वृत्तको क्षेत्रफल निकाल्ने सुत्र लेख्नुहोस् । (Write the formula to find area of circle.) [1]

(b) वृत्ताकार बगैंचाको क्षेत्रफल पत्ता लगाउनुहोस् । (Find the area of circular garden.) [1]

(c) वृत्त बाहेकको जग्गाको क्षेत्रफल पत्ता लगाउनुहोस् । (Find the area of land excluding the area of circle.) [2]

(d) यदि उक्त बगैंचा 20 मि. भुजा भएको समबाहु त्रिभुजाकार भएको भए कति जग्गा बाँकी रहन्थ्यो ? (If the garden be equilateral triangle having a side 20 m how much plot could be remained ?) [1]

6. (a) $a^3 \times a^5$ लाई a को घातांकको रुपमा व्यक्त गर्नुहोस् । (Express $a^3 \times a^5$ as power of a.) [1]

(b) सरल गर्नुहोस् । (Simplify): $x^{a^2-b^2} \times x^{b^2-c^2} \times x^{c^2-a^2}$ [2]

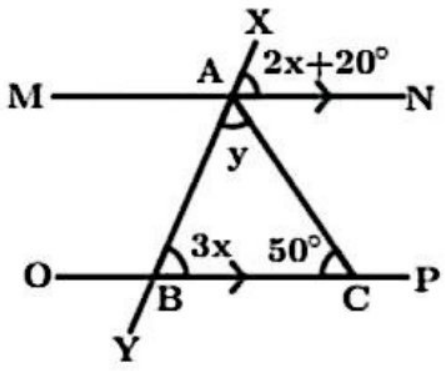
7. (a) हल गर्नुहोस् । (Solve.): $\frac{1}{x} + \frac{1}{x+1} = \frac{2}{x-1}$ [2]

(b) म.स. पत्ता लगाउनुहोस् । (Find H.C.F.): $x^2 - 9$ and $x^2 - 5x + 6$ [2]

8. (a) x-अक्षको समिकरण लेख्नुहोस् । (Write the equation of x-axis.) [1]

(b) लेखाचित्रको प्रयोग गरि हल गर्नुहोस् । (Solve graphically): $x + y = 7, x - y = 1$ [2]

9. सँगै दिइएको चित्रमा दुईवटा समानान्तर रेखाहरु MN र OP लाई एउटा सिधा रेखा XY ले विन्दु A र B मा काटेको छ । (In the adjoining figure, two parallel lines MN and OP are intersected by a straight line XY at the points A and B respectively.)



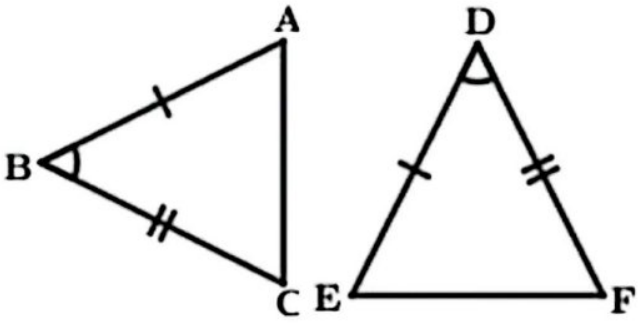
(a) एक जोडी संगत कोणको नाम लेख्नुहोस् । (Write a pair of corresponding angles.) [1]

(b) x को मान पत्ता लगाउनुहोस् । (Find the value of x.) [2]

(c) कोणहरुको ∠CAB र ∠ABC बीच तुलना गर्नुहोस् । (Compare the angles ∠CAB and ∠ABC.) [1]

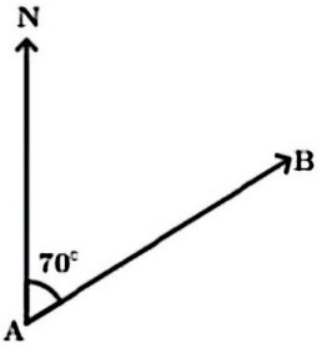
10. (a) PQ = 6 से.मी., QR = 5 से.मी. र ∠PQR = 75° भएको एउटा समानान्तर चतुर्भुज PQRS रचना गर्नुहोस् । (Construct a parallelogram PQRS having PQ = 6 cm, QR = 5 cm and ∠PQR = 75°.) [3]

(b) कुन तथ्यका आधारमा ΔABC र ΔDEF अनुरुप छन् ? एकजोडी सङ्गत कोणको नाम पनि लेख्नुहोस् । (By which axiom ΔABC and ΔDEF are congruent? Also write a pair of corresponding angles.) [3]



11. (a) एउटा बेलनाको जाली बनाउनुहोस् । (Draw the net of a cylinder.) [1]

(b) दिइएको चित्रको आधारमा विन्दु A बाट विन्दु B को दिशा स्थिति लेख्नुहोस् । (Write the bearing of a point B from point A). [1]



(c) त्रिभुज ABC का शीर्षविन्दुहरु A (3, 4), B (2, −3) र C (6, 0) छन् । उक्त त्रिभुजलाई y-अक्षमा परावर्तन गर्दा बन्ने प्रतिबिम्बका निर्देशाङ्कहरु पत्ता लगाई त्रिभुज ABC र यसको प्रतिबिम्बलाई लेखाचित्रमा देखाउनुहोस् । (A (3, 4), B (2, −3) and C (6, 0) are the vertices of triangle ABC, Find the co-ordinates of image under the reflection on y-axis, also represent triangle ABC and its image on graph paper.) [3]

12. तल दिइएको तालिकामा एउटा परिवारको मासिक खर्चको विवरण दिइएको छ । (In the table below, The monthly expenditure of a family is given.)

खर्च (Expenditure)	खाना (Food)	स्वास्थ्य (Health)	घरभाडा (House Rent)	शिक्षा (Education)	अन्य (Others)
रकम (रू.) (Amount) (Rs.)	8000	6000	4000	12000	6000

(a) माथिको तथ्याङ्कलाई वृत्तचित्रमा प्रस्तुत गर्नुहोस् । (Represent the above information in Pie-chart.) [2]

(b) औसत खर्च पत्ता लगाउनुहोस् । (Find average expenditure.) [1]

The End