

Sub:- Maths

BLE ~ 2081(2025)

Jharkpurdhari Sub-Metropolitan

Answer Sheet

Q.N.1 Ans:

Solⁿ.

(a) If the set B is made by taking some elements of set A, then set B is called the proper subset of A. Symbolically, $B \subset A$ and $A \supset B$.

(b) The improper subset of A is $\{a, b, c\}$

(c) If e, i, o, u are the only members of set B then the set A and B will be disjoint.

Q.N.2 Ans

Solⁿ.

(a) If marked price of a book represented by 'M' and discount by \mathcal{D} , then the formula of discount percent is

$$\mathcal{D}\% = \frac{\mathcal{D}}{M} \times 100\%$$

(b) Here,

Marked price (M) = Rs. 3900

Discount % ($\mathcal{D}\%$) = 7%

Discount amount (\mathcal{D}) = ?

Now,

$$\mathcal{D}\% = \frac{\mathcal{D}}{M} \times 100\%$$

$$\text{or, } 7 = \frac{\mathcal{D}}{3900} \times 100$$

$$\text{or, } \mathcal{D} = 7 \times 39$$

$$\therefore \mathcal{D} = \text{Rs. } 273$$

Thus,

the discount is Rs. 273.

* Next Method

Discount amount = $\mathcal{D}\%$ of MP

$$= 7\% \text{ of Rs. } 3900$$

$$= \frac{7}{100} \times 3900$$

$$= \text{Rs. } 273$$

(c) Here,

$$\begin{aligned}\text{Selling price (SP)} &= M - \text{D} \\ &= \text{RS. } 3900 - \text{RS. } 273 \\ &= \text{RS. } 3627\end{aligned}$$

$$\text{profit \%} = 17\%$$

$$\text{cost price (CP)} = ?$$

Now,

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

$$\text{or } 17 = \frac{3627 - \text{CP}}{\text{CP}} \times 100$$

$$\text{or } 17\text{CP} = 362700 - 100\text{CP}$$

$$\text{or } 17\text{CP} + 100\text{CP} = 362700$$

$$\text{or } 117\text{CP} = 362700$$

$$\text{or } \text{CP} = \frac{362700}{117}$$

$$\therefore \text{CP} = \text{RS. } 3100$$

Thus,

the cost price of a book is
RS. 3100.

Alternative Method

$$\begin{aligned} \text{Selling price (SP)} &= \text{MP} - \text{D} \\ &= 3900 - 273 \\ &= \text{RS. } 3627 \end{aligned}$$

$$\begin{aligned} \text{profit \%} &= 17\% \\ \text{Cost price (CP)} &= ? \\ \text{We have,} \end{aligned}$$

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

$$= \frac{100 \times 3627}{100 + 17}$$

~~$$= \frac{100}{117} \times 3627$$~~

$$= \frac{362700}{117}$$

$$= \text{RS. } 3100$$

Thus,
the cost price of a book is
RS. 3100

Q.N. 3 Ans

Solⁿ.

(a) Here,

$$\text{Principal (P)} = \text{RS. } 6000$$

$$\text{Time (T)} = 10 \text{ months}$$

$$= \frac{10}{12} \text{ yrs.}$$

$$= \frac{5}{6} \text{ yrs.}$$

$$\text{Rate of interest (R)} = 12\frac{1}{2} \%$$

$$= 12.5 \% \text{ p.a.}$$

$$\text{Simple interest (I)} = ?$$

We know that,

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

$$= \frac{6000 \times \frac{5}{6} \times 12.5}{100}$$

$$= \frac{60 \times 5 \times 12.5}{6}$$

$$= \frac{3750}{6}$$

$$= \text{RS. } 625$$

Thus,

Sangita earns RS. 625 in 10 months.

Here,

(b) The interest in 2 years is

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

$$= \frac{6000 \times 2 \times 12.5}{100}$$

$$= \text{Rs. } 1500$$

Also

$$\text{Total amount} = P + I$$

$$= \text{Rs. } 6000 + \text{Rs. } 1500$$

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

Thus,

Sangita gets Rs. 7500 total amount after 2 years.

(c) Here,

The ratio of the elder and younger brother

$$= 12:8$$

$$= \frac{12}{8}$$

$$= \frac{3}{2}$$

$$= 3:2$$

Total amount = Rs. 200000

Now,

Divide Rs. 200000 in the ratio of 3:2 as;

Let x be the common ratio, then

Elder brother gets = $3x$

Younger brother gets = $2x$

Now,

$$3x + 2x = \text{RS. } 200000$$

$$\text{or, } 5x = \text{RS. } 200000$$

$$\text{or, } x = \frac{\text{RS. } 200000}{5}$$

$$\therefore x = \text{RS. } 40000$$

Here,

$$\Rightarrow 3x = 3 \times \text{RS. } 40000 = \text{RS. } 120000$$

$$\Rightarrow 2x = 2 \times \text{RS. } 40000 = \text{RS. } 80000$$

Thus,

the elder and younger brother get RS. 1,20,000 and RS. 80,000 respectively.

Solⁿ.

Q.N. 4 Ans,

(a) Here,

The capacity of water tank = 37200 liter

Now,

In scientific notation,

$$37200 = 3.72 \times 10^4 \text{ Ans}$$

(b) Here,

Amount of consumed water = 8520 liter

Cost of water = RS. 0.40 per liter

Now,

$$\begin{aligned} \text{Cost of 8520 liters of water} \\ &= \text{RS } 0.40 \times 8520 \\ &= \text{RS } 3408 \end{aligned}$$

Thus,

A family of that village has to be paid RS. 3408 in a month.

(c) Here,

$$0.\overline{34}$$

Let,

$$x = 0.\overline{34}$$

$$\text{or, } x = 0.3434\dots$$

Multiplying both sides by 100,

Then,

$$100x = 34.34\dots$$

$$\text{or, } 100x = 34 + 0.34\dots$$

$$\text{or, } 100x = 34 + x$$

$$\text{or, } 100x - x = 34$$

$$\text{or, } 99x = 34$$

$$\text{or, } x = \frac{34}{99}$$

Thus,

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

(d) Here,

$$\begin{aligned} 11100_2 &= 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 0 \times 2^0 \\ &= 1 \times 16 + 1 \times 8 + 1 \times 4 + 0 \times 2 + 0 \times 1 \\ &= 16 + 8 + 4 + 0 + 0 \\ &= 28_{10} \quad \underline{\text{Ans}} \end{aligned}$$

Q.N. 5 AnsSolⁿ:

(a) The formula to find the area of upper circular part of well is

$$A = \pi r^2$$

(b) Here,

$$\begin{aligned} \text{Radius of top of well (r)} &= \frac{1.4 \text{ m}}{2} \\ &= 0.7 \text{ m} \end{aligned}$$

Now,

$$\text{The area of top of well (A)} = \pi r^2$$

$$= \frac{22}{7} \times 0.7 \times 0.7$$

$$= \frac{10.78}{7}$$

$$= 1.54 \text{ m}^2$$

(c) Here,

$$a = 45 \text{ m}$$

$$b = 55 \text{ m}$$

$$\text{Height (h)} = 40 \text{ m}$$

Now,

$$\text{Area of trapezium (A)} = \frac{1}{2} (a+b) \times h$$

$$= \frac{1}{2} (45+55) \times 40$$

$$= \frac{1}{2} \times 100 \times 40$$

$$= 2000 \text{ m}^2$$

Also,

The area of well (A) = 1.54 m^2

Now,

The area of land except the well is

$$= 2000 \text{ m}^2 - 1.54 \text{ m}^2$$

$$= 1998.46 \text{ m}^2$$

(d) Here,

The perimeter of trapezium is

$$P =$$

Q.N. 6 AnsSolⁿ.

(a) Here,

$$\frac{x^m}{x^n} = x^{m-n}$$

(b) Here,

$$\frac{x}{x-y} + \frac{y}{y-x}$$

$$= \frac{x}{x-y} - \frac{y}{x-y}$$

$$= \frac{(x-y)}{(x-y)}$$

$$= 1 \text{ Ans}$$

Q.N. 7 AnsSolⁿ.(b) Given eqⁿ.

$$x+y = 4 \longrightarrow (1)$$

$$3x-2y = -13 \longrightarrow (2)$$

From eqⁿ. (1)

$$x+y = 4$$

$$\therefore y = 4-x$$

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

From eqⁿ (2)

$$3x - 2y = -13$$

$$\text{or } 3x + 13 = 2y$$

$$\text{or } 2y = 3x + 13$$

$$\therefore y = \frac{3x + 13}{2}$$

| | | | |
|---|---|----|----|
| x | 1 | -1 | -3 |
| y | 8 | 5 | 2 |

From graph,

$$x = -1 \text{ and } y = 5 \text{ ans.}$$

(a) The system of given equation is called simultaneous equation.

Q.N. 8 Ans

Solⁿ

(a) Here,

$$x^2 - 1, \quad x^2 - 2x + 1$$

$$1^{\text{st}} \text{ expression} = x^2 - 1$$

$$= x^2 - 1^2$$

$$= (x+1)(x-1)$$

$$2^{\text{nd}} \text{ expression} = x^2 - 2x + 1$$

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

$$= x^2 - 1x - 1x + 1$$

$$= x(x-1) - 1(x-1)$$

$$= (x-1)(x-1)$$

∴ HCF = $(x-1)$ **ANS**

b) Here,

$$x^2 - 5x + 6 = 0$$

$$\text{or } x^2 - (3+2)x + 6 = 0$$

$$\text{or } x^2 - 3x - 2x + 6 = 0$$

$$\text{or } x(x-3) - 2(x-3) = 0$$

$$\text{or } (x-3)(x-2) = 0$$

Either

$$\Rightarrow x-3 = 0$$

$$\therefore x = 3$$

$$\Rightarrow x-2 = 0$$

$$\therefore x = 2$$

Thus,

the values of x are 2 or 3 then the value of $x^2 - 5x + 6$ becomes zero.

Q.N. 9 ANS

Solⁿ

(a) The pair of co-interior angle from the given figure are:-
 $\angle AGH$ and $\angle CHG$

(b) Here,

In $\triangle GHK$,

$$\angle KGH + \angle GKH + \angle GHK = 180^\circ$$

$$\text{or } x + 60^\circ + 2x = 180^\circ$$

$$\text{or } 3x = 180^\circ - 60^\circ$$

$$\text{or } 3x = 120^\circ$$

$$\text{or, } x = \frac{120^\circ}{3}$$

$$\therefore x = 40^\circ$$

Thus,

the value of x is 40°

(c) Here,

$$\angle BGR = \angle GRH \text{ [} \because \text{ Alternate angle]}$$

$$= 2x$$

$$= 2 \times 40^\circ$$

$$= 80^\circ$$

Thus,

the value of $\angle BGR$ is 80° then the line segment AB and CD becomes parallel.

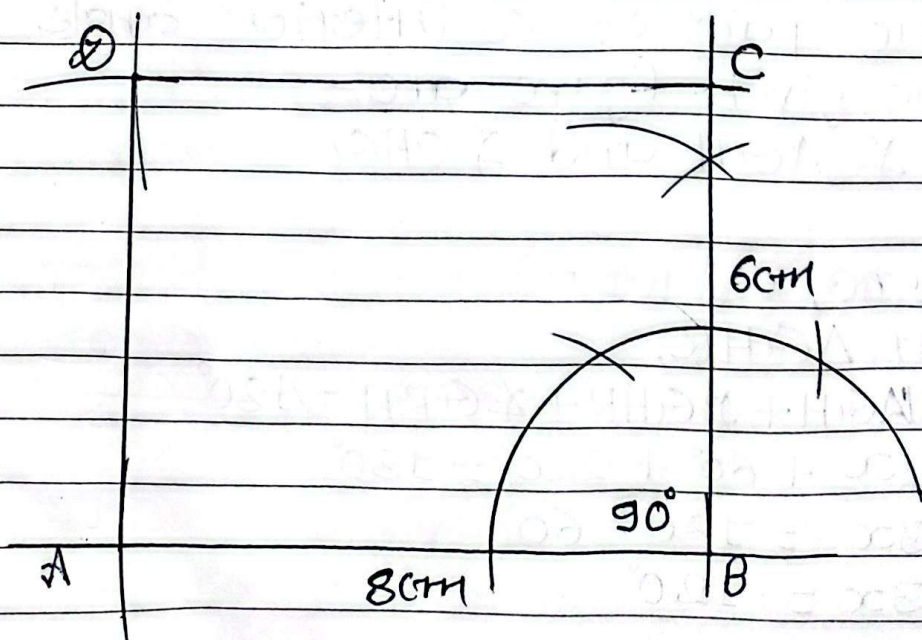
Solⁿ

Q.N. 10 Ans

Here,

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

$$BC = 6 \text{ cm}$$



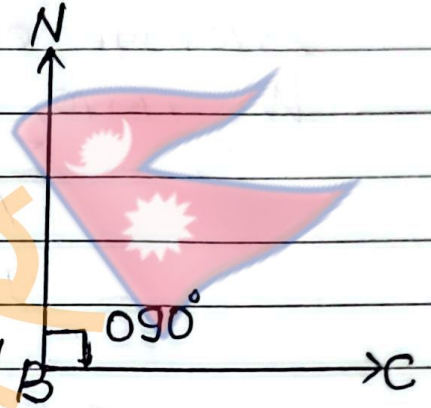
Q.N. 11 AnsSolⁿ

(a) Equilateral triangle is used to make regular tessellations.

(b) Here,
The bearing of C from B is 090°

Now,
Reverse bearing, $= 090^\circ + 180^\circ$
 $= 270^\circ$

Thus,
the bearing of B from C is 270° .



(c) Here,
Given,
 $A(1, 3), B(1, 0), C(5, 0)$

Now,
Rotate at $+90^\circ$ about centre $O(0, 0)$,
 $P(x, y) \longrightarrow P'(-y, x)$

Then,
 $A(1, 3) \longrightarrow A'(-3, 1)$
 $B(1, 0) \longrightarrow B'(0, 1)$
 $C(5, 0) \longrightarrow C'(0, 5)$

Q.N. 12 AnsSolⁿ,

(a) Here,

$$\begin{aligned} \text{Total expenditure } (\Sigma x) &= \text{RS. } 25000 + \text{RS. } 19000 \\ &\quad + \text{RS. } 28000 + \text{RS. } 18000 \\ &= \text{RS. } 90000 \end{aligned}$$

$$\text{No. of months } (N) = 4$$

$$\text{Average expenditure } (\bar{X}) = ?$$

We have,

$$\begin{aligned} \bar{X} &= \frac{\Sigma x}{N} \\ &= \frac{90000}{4} \\ &= \text{RS. } 22500 \end{aligned}$$

Thus,

the average expenditure of a family is RS. 22,500.

(b) Here,

$$\text{Total expenditure} = \text{RS. } 90000$$

Let,

$$\text{RS. } 90000 = 360^\circ$$

$$\therefore \text{RS. } 1 = \left(\frac{360}{90000} \right)^\circ$$

Now,

The expenditure on Baisakh in degree

$$= \frac{360}{90000} \times 25000$$

$$= 100^\circ$$

The expenditure on Jestha in degree

$$= \frac{360}{90000} \times 19000$$

$$= 76^\circ$$

The expenditure on Asar in degree

$$= \frac{360}{90000} \times 28000$$

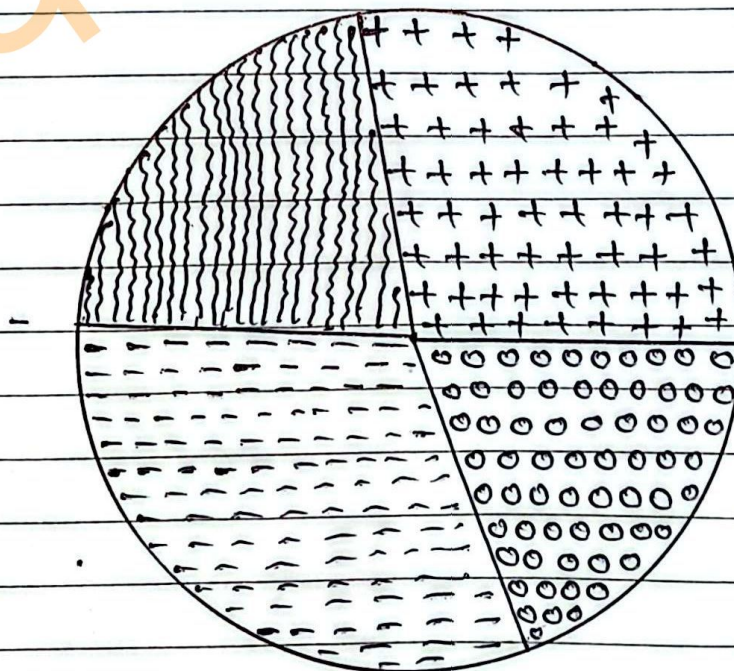
$$= 112^\circ$$

The expenditure on Ashraun in degree

$$= \frac{360}{90000} \times 18000$$

$$= 72^\circ$$

pie chart



| | |
|---------|----------------------|
| Baisakh | ++++ ++++ |
| Jestha | ~~~~~ |
| Asar | ----- |
| Ashraun | oooo oooo oooo |

~ The End ~

जनकपुरधाम उपमहानगरपालिका, धनुषा

आधारभूत तह परीक्षा-२०८१

BASIC LEVEL EXAMINATION-2081

विषय(Sub.): गणित (Mathematics)

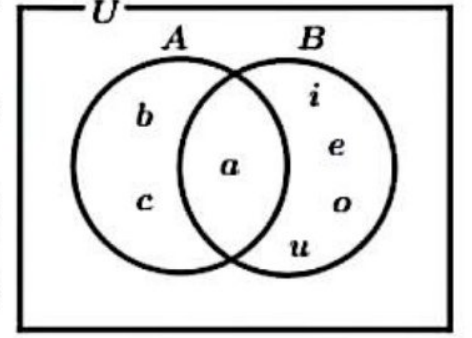
कक्षा(Class) : 8

समय(Time) : २ घण्टा (2 hrs.)

पूर्णाङ्क(Full Marks): 50

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

1. दिइएको भेन चित्र बाट (From the given a venn-diagram.)



- (a) उपयुक्त उपसमूहलाई परिभाषित गर्नुहोस् । (Define proper subset.) [1]

- (b) A का अनुपयुक्त उपसमूह लेख्नुहोस् । (Write the improper subset of A.) [1]

- (c) यदि e, i, o, u मात्र समूह B को सदस्य भए, A र B कुन प्रकारको समूह हो ? कारण सहित लेख्नुहोस् ।

(If e, i, o, u are the only members of set B then what type of set are A and B? write with reason.) [1]

2. एउटा पुस्तकको अङ्कित मूल्य रु. 3,900 छ । (Marked price of a book is Rs.3,900.)

- (a) अंकित मूल्यलाई 'M' र छुट प्रतिशतलाई 'D' ले सम्बोधन गरिन्छ भने छुट प्रतिशतको सूत्र लेख्नुहोस् । (If Marked price of a book represented by 'M' and discount by 'D', write the formula of discount percent.) [1]

- (b) यदि दिइएको छुट 7% छ भने उसले कति छुट पाउँछ ? (If discount percent is 7% then how much discount he gets?) [1]

- (c) यदि पसले ले 7% छुट पाउँछ 17% नाफा गर्छ भने एउटा पुस्तकको क्रयमूल्य निकाल्नुहोस् । (If the shopkeeper got 17% profit after selling it at 7% of discount. Find out the cost price of a book.) [2]

3. यदि 10 महिनाका लागि $12\frac{1}{2}\%$ ब्याजदरमा रु. 6,000 सापटी दिइएछ भने, (If Rs.6,000 is lent out at the rate of $12\frac{1}{2}\%$ per annum for 10 months.)

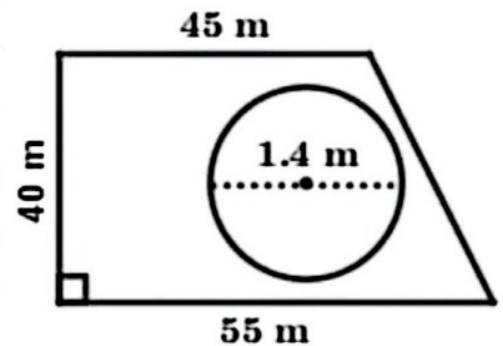
- (a) संगिताले 10 महिनामा कति ब्याज पाउँछे ? (How much interest does Sangita earn in 10 months?) [1]

- (b) संगिताले सोही ब्याजदरमा 2 वर्षपछि कति रुपैयाँ प्राप्त गर्ने छिन् ? (How much amount does sangita get after 2 years at the same rate?) [2]

- (c) दाई र भाईको उमेर क्रमशः 12 वर्ष 8 वर्ष रहेछन् । संगिताले उमेरको अनुपातमा रु. 2,00,000 लाई बाँड्नु भने दाइले भाइभन्दा कति रुपैयाँ बढि पाउँछ ? (The age of elder and younger brother are 12 year and 8 years respectively. If sangita divides her Rs.2,00,000 to her brother based on the ratio of their age. How much more money will the elder brother get than the younger brother?) [2]

4. कुनै गाउँमा भएको पानी वितरण गर्ने ट्याङ्कीको क्षमता 37,200 लिटर छ । (The capacity of a water tank to supply water to a village is 37,200 liter.)
- (a) ट्याङ्कीको पानी क्षमतालाई वैज्ञानिक पद्धतिमा लेख्नुहोस् । (Write the capacity of water tank in scientific notation.) [1]
- (b) गाउँमा भएका एकपरिवारले महिनामा 8520 लिटर पानी प्रयोग गर्छन् । यदि पानीको खपत गरे बापत प्रति लिटर रू.0.40 तिर्नुपर्छ भने उनीहरूले बुझाउने रकम कति होला? निकाल्नुहोस् । (If a family of that village has consumed 8520 liter of water in a month and cost of per liter water is Rs.0.40. How much rupees has to be paid for the consumption of water in one month?) [2]
- (c) $0.\overline{34}$ लाई भिन्नमा रूपान्तर गर्नुहोस् । (Convert $0.\overline{34}$ in to fraction.) [1]
- (d) 11100_2 भएको दुई आधार संख्यालाई दशमलव संख्यामा रूपान्तरण गर्नुहोस् । (Convert the following binary number 11100_2 in decimal number.) [1]

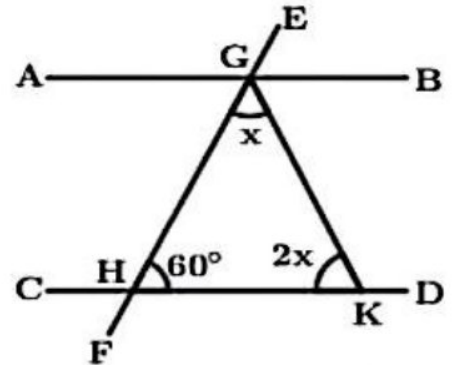
5. विमलाले आफ्नो समलम्ब चतुर्भुज आकार भएको जग्गामा सिचाइ गर्नको लागि कामदार लगाएर 1.4 मी. व्यास भएको एउटा इनार खनाउँछन्, जुन चित्रमा दिइएको छ । (The trapezium shaped land is shown in the figure, belongs to Bimala. She made the worker dig a circular well with diameter 1.4 m to irrigate her land.)



- (a) इनारको माथिल्लो सतहको क्षेत्रफल निकाल्ने सूत्र लेख्नुहोस् । (Write the formula to find the area of upper circular part of well.) [1]
- (b) इनारको माथिल्लो सतहको क्षेत्रफल पत्ता लगाउनुहोस् । (What is the area of top of well find it out?) [1]
- (c) इनारको क्षेत्रफल बाहेकका जग्गाको क्षेत्रफल पत्ता लगाउनुहोस् । (What is the area of land except the well?) [2]
- (d) यदि विमला जग्गालाई 3 फन्का तारले घेर्न चाहन्छन् भने कति मिटर तार चाहिन्छ? पत्ता लगाउनुहोस् । (Bimala wants to fence the land at three times. How much wire she wants. Find it.) [1]
6. (a) $\frac{x^m}{x^n}$ लाई x को घाताङ्कको रूपमा व्यक्त गर्नुहोस् । (Express $\frac{x^m}{x^n}$ as the power of x .) [1]
- (b) सरल गर्नुहोस् । (Simplify): $\frac{x}{x-y} + \frac{y}{y-x}$ [2]
7. दुई समीकरण तल दिइएको छ । (Two equations are given as.)
 $x + y = 4$ and $3x - 2y = -13$
- (a) दिएको समीकरणको पद्धति के हो ? (What is the system of given equation called?) [1]
- (b) ग्राफको प्रयोगगरी दिइएको समीकरण हल गर्नुहोस् । (Solve the equation by graph.) [2]

8. (a) दिइएका अभिव्यञ्जकको म.स. पता लगाउनुहोस् । (Find the Highest common factor of the followings.): $x^2 - 1$ and $x^2 - 2x + 1$ [2]
 (b) x को मान कति भए $x^2 - 5x + 6$ मान शून्य हुन्छ ? (What is the value of x for which value of $x^2 - 5x + 6$ becoms zero?) [2]

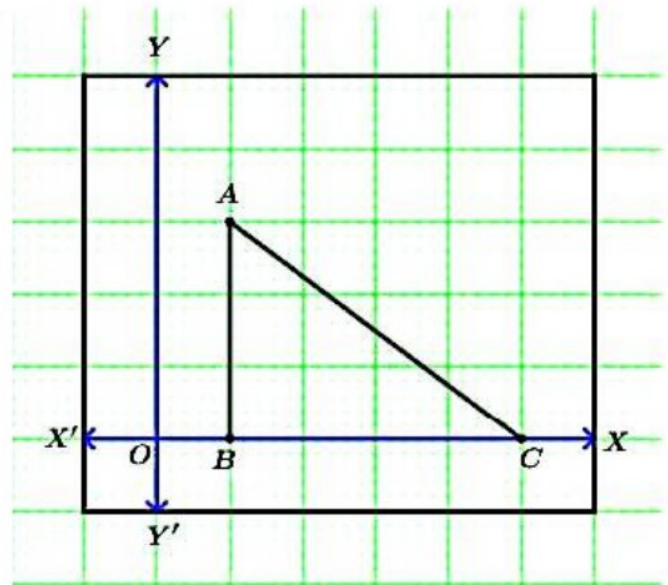
9. दिइएको चित्रमा EF ले दुई सरल रेखा AB र CD लाई बिन्दु G र H मा प्रतिच्छेदन गर्छ । दिइएको चित्र अवलोकन गरि सोधिएका प्रश्नको उत्तर दिनुहोस् । (In the adjoining figure. EF intersects two straight lines AB and CD at points G and H respectively. Observe the figure and answer the question.)



- (a) एक जोडी क्रमागत भित्री कोण उल्लेख गर्नुहोस् । (Write the pair of co-interior angle from the figure.) [1]
 (b) x को मान पता लगाउनुहोस् । (Find the value of x .) [2]
 (c) $\angle BGK$ को मान कति हुँदा AB र CD समानान्तर हुन्छन् ? (For what value of $\angle BGK$ the line segment AB and CD becomes parallel?) [1]
10. एउटा आयत ABCD को रचना गर्नुहोस्, जहाँ AB = 8 से.मी. र BC = 6 से.मी. छन् । (Construct a rectangle ABCD having AB = 8 cm and BC = 6 cm.) [3]

11. (a) नियमित टेसेलेसन बनाउन कुन प्रकारका त्रिभुज प्रयोग गरिन्छ ? (Which type of triangle is used to make regular tessellations.) [1]

- (b) दिइएको चित्रमा $\triangle ABC$ मा यदि बिन्दु B बाट C को दिशा स्थिति 090° छ भने C देखि B को दिशा स्थिति पता लगाउनुहोस् । (In the given figure $\triangle ABC$, the bearing of point C from the point B is 090° then find the bearing of point B from C.) [2]



- (c) $\triangle ABC$ लाई उद्गम बिन्दुमा $+90^\circ$ मा परिक्रमण गरि $\triangle A'B'C'$ का निर्देशाङ्कहरू लेख्नुहोस् । (Rotate triangle $\triangle ABC$ at $+90^\circ$ about center O (0, 0) and write co-ordinates of $\triangle A'B'C'$.) [3]

12. तल एक परिवारको मासिक खर्च दिइएको छ । (The monthly expenditure of a family is given below.)

| वैशाख | जेष्ठ | असार | श्रावण |
|----------|----------|----------|----------|
| Rs.25000 | Rs.19000 | Rs.28000 | Rs.18000 |

- (a) उक्त परिवारको मासिक औसत खर्च कति हो ? (What is the average monthly expenditure of family?) [1]
- (b) दिएको खर्चलाई वृत्तचित्र प्रस्तुत गर्नुहोस् । (Present the family expenditure in Pia Chart.) [2]

समाप्त