

Specification Grid: 2081

Sub: C Math

For First Terminal Examination

FM: 50

PM: 20

Class : 10

Time: 2 hour

S. N	Area	Teaching hours	Knowledge (16%)		Understanding (24%)		Application (40%)		Higher Ability (20%)		Total No of Items	Total No of Questions	Total Marks
			No of items	Marks	No of items	Marks	No of items	Marks	No of items	Marks			
1	Set Cardinality relation of sets	7	1	1	1	1	1	3	1	1	4	1	6
2	Arithmetic Compound Interest	8	1	1	2	2	2	2	1	1	6	2	6
3	Mensuration • Pyramid	6	1	1	1	1	1	2	1	2	4	1	6
4	Algebra Sequence and Series	12	2	2	2	3	2	4	1	1	7	2	10
5	Geometry Area of triangle and Quadrilateral	10	1	1	1	2	2	4	2	2	6	2	9
6	Statistics and Probability Statistics	7	1	1	1	2	2	4	2	2	6	2	9
7	Trigonometry	5	1	1	1	1	1	1	1	1	4	1	4
	Total	55	8	8	9	12	11	20	9	10	37	11	50

MODEL QUESTIONS 2081

FIRST TERMINAL EXAM

Attempt all the questions

1. In a survey of a group of people, it was found 65% of them liked comedy movies, 63% liked action movies, 33% liked both types of movies and 150 people did not like both types of movies.

- I. Draw a Venn diagram to illustrate the above information. 1
- II. b. Find the number of people participated in the survey. 3 III. Find the number of people who liked both types of movies. 1
- IV. Find the ratio of number of people who liked both types of movies to the number of people who did not like both types of movies. 1

2. Harka deposited Rs.60000 in Garima Development Bank at the rate of 12% p.a for 2 years.

- I. what is the formula to calculate the compound interest, yearly? 1
- II. b. How much interest did he get in 2 years? 1
- III. How much amount will he get, if the bank pays the simple interest? 1

3. Mrs. Sunita borrowed Rs 5,00,000 from a commercial bank at the rate of 10% p.a compounded half yearly for 2 years. After one year, the bank changed its policy to pay the interest compounded quarterly at the same rate.

- i. How much interest should she have to pay in the first year? 1
- ii. How much interest should she have to pay for the second year? 1
- iii. what is the difference between the interest of the first year and second year? 1

4. In a community, people want to make a temple in the public place. The roof of the temple is in the shape of a square-based pyramid of side length 20 ft and slant height 15 ft. The roof of the temple is covered with the zinc sheet.

I. What is the formula to calculate the lateral surface area of a square-based pyramid?

1 ii. How much zinc sheet is required for the roof? 2 iii. What would be the cost of zinc

at the rate of Rs 125 per square ft? 3

5. If 13, x, y, 28 are in AP, answer the following questions.

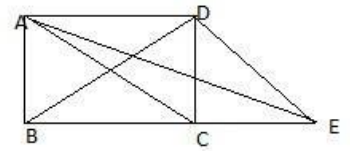
- i. Define arithmetic sequence. 1 ii. find the common difference. 1
- iii. Calculate the values of x and y. 2

6. Samreen saves Rs 100 during the first month and Rs 150 in the second month and Rs 200 in the third month. If she continues her saving in the sequence, i. find the common difference. 1

ii.in how many months will she saves Rs 257500? 3

iii.Find the total saving at the end of seven years? 2

7. In the adjoining figure,ABCD is a rectangle .Answer the following questions.



I. Name the triangles which are standing on the same BC and between same BC and between the AC//BE. 1

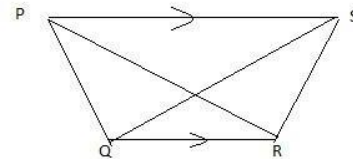
II.Write the relation between the area of $\triangle ABD$ and $\triangle ACD$. 1

iii.If the area of $\triangle BCD$ is 20cm^2 ,what is the area of $\triangle AED$? 2

iv.If the triangles ACE and ABD are equal in area

,show that $AC \parallel DE$. 2

8.In the given figure ,PS//QR.



i.Which triangle is equal to the $\triangle PQR$ in area? 1 ii .prove

that $\triangle POQ$ and $\triangle ROS$ have equal area. 2

9.The table given below shows the marks obtained by the students of class ;10of a school.

Marks	20-30	30-40	40-50	50-60	60-70	70-80
No.of students	3	5	8	18	10	6

I. Construct the cumulative frequency table. 1

ii. find the class in which the median lies . 1 iii.

compute the median. 2

10.The following table represent the age distribution of cases of a certain viral diseases admitted in a hospital.

Age(in yrs)	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No.of cases	3	7	10	k	12	6	8

i.If the modal age is 36 years ,find the modal class. 1

ii.Find the missing frequency k. 2

iii.find the percentage of cases found in highest age group. 2

11.A vertical tree of height 18m is broken by the wind so that its top has touched the ground by making an angle of 30° .

i.Find the height of unbroken part of the tree if the length of broken part of tree is 'x'm. 1

ii.Name the trigonometric ratio that represents the ratio of unbroken and unbroken part of the tree. 1

iii.find the actual length of broken part of the tree.1

iv.At what distance has the top of the tree touched the ground from the foot of the tree? 1

THE END
Second Terminal Exam specification grid 2081

subject: C Math

-**For Second Terminal Examination**

FM: 50

S. N	Area	Teaching hours	Knowledge (16%)		Understanding (24%)		Application (40%)		Higher Ability (20%)		Total No of Items	Total No of Questions	Total Marks
			No of items	Marks	No of items	Marks	No of items	Marks	No of items	Marks			
1	Set <ul style="list-style-type: none"> Cardinality relation of sets 	-	1	1	1	1	1	3	1	1	4	1	6
2	Arithmetic <ul style="list-style-type: none"> Compound Interest Depreciation and population growth Money and money exchange 	10	1	1	2	2	2	2	1	1	6	2	6
3	Mensuration <ul style="list-style-type: none"> Pyramid Combined Solid 	12	2	2	1	1	2	3	1	2	6	2	8
4	Algebra <ul style="list-style-type: none"> Sequence and Series Quadratic Equation 	12	1	1	2	3	2	3	1	1	6	2	8
5	Geometry <ul style="list-style-type: none"> Area of triangle and Quadrilateral Construction 	7	1	1	1	2	2	4	2	2	6	2	9
6	Statistics and Probability <ul style="list-style-type: none"> Statistics 	2	1	1	1	2	2	4	2	2	6	2	9
7	Trigonometry	-	1	1	1	1	1	1	1	1	4	1	4
	Total	43	8	8	9	12	12	20	9	10	38	12	50

Class : 10 Time: 2 hour PM: 20 Second terminal Modal question 2081

Class:10

Time: 2 hours

FM:50

Sub: c.math

pm:

1. According to a survey of 93 women of a community the number of women engaged in agriculture is 80 and that in sewing is 71 but number of women engaged in other job is 10. a) If A and S denote the set of women who engaged in agriculture activity and sewing activities respectively then write the value of $(A \cap S)$. [1]
 - b) Represent the information in Venn diagram by finding the cardinality of the sets. [1]
 - c) Find how many women were engaged in both agriculture and sewing. [3]
 - d) By how many times the number of women engaged in agriculture only is more than the number of women engaged in sewing only. [1]
2. The annual compound amount on Rs 576 in 2 years is Rs 625.
 - a) Find the interest. [1]
 - b) Find the rate of interest. [1]
 - c) Compare the annual compound amount and semi-annual compound amount in 2 years. [1]
3. Nepal Raastriya bank has published the exchange rate of the US dollar for 5 September 2024 are as follows.

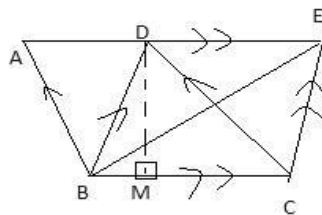
Money	buying rate	selling rate
US \$1	NRS130	NRS130.5

Ramu Bought Some US dollar and sold them after the devaluation of Nepali currency by 10%, so that answer the following question

 - a) At what rate, Ramu had bought US Dollar at that day. [1]
 - b) How much he had bought at NRS 717750 before devaluation of Nepal money. [1]
 - c) What is the Selling rate after 10% devaluation of Nepali currency. [1]
4. The lateral surface area of a square based pyramid is 540 cm^2 and its slant height is 15 cm ,
 - a) Write the formula to find out the total surface area of pyramid. [1]
 - b) Find the length of its base. [1]
 - c) Find its volume. [2]
5. From the adjoining solid answer the following question.
 - a) In the figure what type of ΔABC ? [1]
 - b) Find the height of cone. [1]
 - c) Are the total surface and the curved surface area of the solid equal? Justify with solution [2]
6. Rejina has collected following sum of money in Piggy Bank respectively per day.
Rs 25, Rs 50, Rs 100, Rs 200, Rs 400
 - a) Whether the above sequence is arithmetic or geometric. [1]
 - b) If she wants to deposit money in the piggy bank in the same way, how much money will be deposited up to 5 days. [1]
 - c) Based on above sequence, after 8 days of deposit be enough to collect Rs 6375? Write with reason [2]
7. In a positive number of two digits, the ten's place digit exceeds the unit place digit by 5. If the product of these digits is 36,
 - a) What does X represent in the two digit number $10x + y$. [1]
 - b) Find these two digits. [2]
 - c) Test whether the two digits number satisfies the given condition or not? [1]

8. Parallelogram ABCD
base BC and between

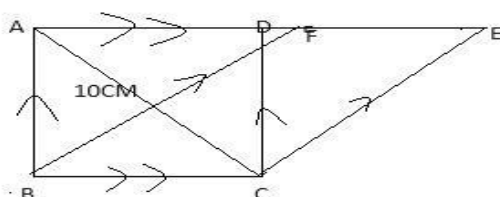
- a) prove that the
ABCD is double
[2]
b) what is the area
=10 cm and
[1]



and DBCE are on the same
the same parallel AE//BC.
area of parallelogram
then area of triangle BCE.

of triangle BCE if its BC
straight height DM=8cm.

- c) what is the area of parallelogram BCED, write with reason. [1]
9. A) write of property which is common in between rectangle and parallelogram. [1]
b) construct a triangle PQR in which QR= 6.4 cm PQ=5 cm and angle PQR = 75 and construct



- c) from the figure ABCD be a square and BCEF be a parallelogram. if AC=10 cm then what is
the area of parallelogram BCFE. [1]

a

rectangle STRU equal in area to that of triangle PQR.[3]

10. A tree 18 M high is broken by the wind so that its top touches the ground and makes an
angle of 30° with ground.

- a) Draw figure of given on context. [1]
b) if the tree is broken down at a height of x m above the ground level, Express the length of its
broken part as an expression . [1]
c) Find the value of x. [1]
d) what percent of entire tree is broken? [1]

11] The lower quartile of the given data is 25.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No.of std	9	11	M	20	30	16

A] Find the value of m .[2]

B] If mode class is (40-50) then find mode value of the data. [2]

C) What percentage of students scored the marks higher than mode class? [1]

- 12) A box contains 5 red and 4 white balls of same size and shape, a) Define
dependent events? [1]

b) Two balls are drawn randomly one after another from the box without replacement, show the
probability of all the possible outcomes in a tree diagram.[2]

c) What is the difference between total probability and probability of getting both the white balls. [1]

Specification Grid: 2081

Sub: C Math

****For Third and Annual Examination****

FM: 75

Class : 10

Time: 3 hour

PM: 30

S · N	Area	Teach ing hours	Knowledg e (16%)		Understan ding (24%)		Applicatio n (40%)		Higher Ability (20%)		Tot al No of Ite ms	Total No of Questi ons	Tota l Mar ks
			No of ite ms	Mar ks	No of ite ms	Mar ks	No of ite ms	Mar ks	No of ite ms	Mar ks			
1	Set • Cardinality relation of sets	-	1	1	1	1	1	3	1	1	4	1	6
2	Arithmetic • Compound Interest • Depreciation and population growth • Money and money exchange	-	2	2	2	3	3	5	2	3	9	3	13
3	Mensuration • Pyramid • Combined Solid	-	2	2	2	3	2	5	2	3	8	3	13
4	Algebra • Sequence and Series • Quadratic Equation • Rational Expression • Exponential Equation	-	2	2	2	4	3	7	1	2	8	3	15
5	Geometry • Area of triangle and Quadrilateral • Construction • Circle	-	2	2	2	3	2	5	2	3	8	3	13

6	Statistics and Probability • Statistics	-	2	2	2	3	2	4	2	2	8	2	11
	• Probability												
7	Trigonometry	-	1	1	1	1	1	1	1	1	4	1	4
	Total	-	12	12	12	18	14	30	11	15	49	16	75

एस.ई.ई परीक् २०८१ नमून् , SEE Exam 2081-Model

अनिवार गनित Compulsory Mathematics

पणाङ्क Full Marks: 75

समर Time: 3 hours

परिकाषार् समव भएसम आफिन शबमा जवाफ निि अिोध छ । छ उमा निइएका अंकहरर् पूि अंकहर संक् त गिछ । Candidates are required to answer in their own words as far as practicable. Figures in the margin indicate full marks.

सबै प्रश समाधान गररहसन् स् Attempt all the questions

Q.1 एउटा कक्षामा 50 जना विद्यार्थी छन् । तीमध्ये 20 जनालेस्याउ मन पराउँ छन् , 22 जनाले सु त्तला मन पराउँ छन् र 5 जनाले यी दु वै फलफू ल मन पराउँ छन् ।

In a class there are 50 students in a class. out of them 20 like apple, 22 like orange and 5 students like both type of fruits,

(a) दु वै फलफू ल मन नपराउने विद्यार्थी को समू हलाई जनाउने सं के त ले खु हो स् write the set of students who like none of the fruits in set notation. 1

(b) दिइएको जानकारीलाई भे नचित्रमा प्र स्तु त गनु हो स् Illustrate the given information

in Venn diagram.

1

(c) स्झाउ वा सु त्तला मन पराउने विद्यार्थी को सं ख्या पत्ता लगाउनु हो स् Find the number of

students who like apple or orange.

3

(d) एकमात्र फलफू ल मन पराउने विद्यार्थी को सं ख्या पत्ता निकाल्नु हो स् Find the number of

students who like only one type of fruit.

1

Q.2 रमे शले हिमे शसँ ग 2 वर्ष का लागि 10% साधारण व्याजका दरले रु 5000 सापटी लिएछ र त्यतिनै बे ला सो रकम समान समय र व्याज दरमा वार्षि क चक्रीय व्याजमा लगानी गरे छन् । Ramesh borrowed Rs 5000 from Himesh

for 2 years at the rate of 10% simple interest . At the same time he invested the same sum for the same time and rate compounded annually.

- (a) चक्र ीय ब्याज पत्ता लगाउने सू त्र सं के तसहित लेख्नु हो स् ।
Write down the notational formula to find out the compoiund interest. 1
- (b) साधारण ब्याज र चक्र ीय ब्याज पत्ता लगाउनु हो स् । Find the simple interest and compound interest. 3
- (c) यस करे बारमा रमे शलाई कति नाफा भएछ ? पत्ता लगाउनु हाने स् । How much did he gain in this transaction? Find it. 1

Q.3 एउटा छापाखाना कम्पनी EXCEL प्र .लि.ले रु 8,00,000 मा किने को अफसे ट मे शिनको मू ल्य वार्षि क 10% का दरले चक्र ीय ह् इस हुँ दै जान्छ । 2 वर्ष पछि उक्त मे शिन विक्री गने निर्ण य भयो । A private Offset company EXCEL bought an offset machine for Rs 8,00,000 which depreciates at the rate 10% annually. After 2 years the company decided to sell the machine

- (a) चक्र ीय ह् इस निकाल्ने सू त्र ले ख्नु हो स् । Find the formula to find compound depreciation. 1
- (b) 1 वर्ष मा उक्त मे शिनको मू ल्य कति घटे छ ? How much did it depreciate it in 1 year? 1 (c) 2 वर्ष पछि सो मे शिन कतिमा विक्री हो ला ? At what price the machine will be sold afte 2 years? 2

Q.4 AD 2023/02/26 को बिनिमय दर अनु AD सार 1 US \$= रु 132.24 छ । As per the exchange rate of 2023/02/26 , 1 US \$= रु 132.24 ।

- (a) अमे रिकी पर्य टकले 1000 डलर साट् दा ने पाली रुपै याँ कति पाउँ छन् ? How much N.Rs. can get an American tourist exchange with \$ 1000? 2
- (b) यदि 1 अमे रिकी डलरको विक्री दर रु 132.84 छ भने उनीसँ ग बचत रु 30,550 भए आफ्नो दे श फर्कि दा कति अमे रिकी डलर सटही गर्न सकलान् ? If the Selling rate of 1 US\$=Rs 132.84 , how much american dollar can he/she exchange saving NRs 30550 while returning back ?

2

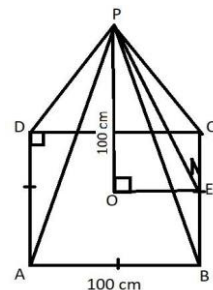
Q.5 एउटा विद्यालयको गणित प्र यो गशालाको बाहिरपट्टी दिइएको ठो स वस्तु को प्र तिमा राखिएको छ । There is a solid statue just outside the Mathlab in a school.

- (a) यस ठो स वस्तु को नाम के हो ? What is the name of the solid? 1

(क) बे लना(Cylinder) (ख) सो ली (Cone)

(ग) प्रि ज्म (Prism) (घ) पिरामिड(Pyramid) (b) यसको आयतन निकाल्नु हो स् । Find it's volume. 2

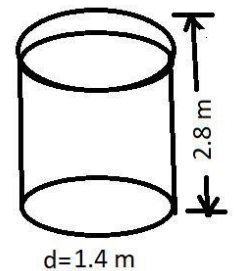
(c) यसको क्षेत्रफलको आधारसँ ग बराबर हु ने र समान उँ चाई भएको सो ली बनाउँ दा उक्त सो लीको आयतन यसको भन्दा कतिले बढी वा घटी हु न्छ ? पत्ता लगाउनु हो स् । What will be the difference between the volume of this solid and a cone of same base area and same height? 1



Q.6 एउटा विद्यालय परिसरमा बे लना र अर्ध गो लाकार ठो सको सं यो जनमा पानी ट याङ्गी रहे को छ । There is a water tank in the school premises made of cylinder and hemisphere.

(a) उक्त ट याङ्गीको आयतन निकाल्ने सू त्र ले ख्नु हो स् । Write down the formula to calculate the volume of a tank. 1

(b) बे लनाकार भागको ट याङ्गीको उँ चाई निकाल्नु हो स् । Find the height of the cylindrical part of the tank. 1



(c) उक्त ट याङ्गीमा अधिकतम कति लिटर पानी अटाउँ छ ? Find the maximum capacity of the tank in litres. 3

Q.7 नदी कटानबाट जमिन बचाउन तटबन्धको निर्मा ण गर्न पालिकाले सभे रायो । सभे ाबाट 120 m लम्बाई मा 4m x 2m x 1m आयाम भएका जालीहरु दु ङ्गले भने ि निर्ण य गरियो । Municipality decided to construct a cubical embankment to protect land from river erosion. It is also decided to construct 120 m embankment from 4m x 2m x 1m net by filling along length by stones.

(a) लम्बाइ तर्फ बाट दु ङ्ग भर्न कतिओ टा जाली चाहिन्छ ? Find the number of nets required to fill along the length? 2

(b) प्र ति घनमिटर दु ङ्गको रु 1500 को दरले दु ङ्ग भर्दा जम्मा कति खर्च लाग्छ ? Find the total cost of filling nets at the rate Rs 1500 per m³. 2

Q.8 एकजना पसले ले प्र त्ये क महिना बै ं कमा रकम जम्मा गर्न खाता खो ले छन् । उनले प्र त्ये क महिना रु 1000 बचतबाट सु रु गरी त्यसपछिका प्र त्ये क महिनामा रु 200 का दरले बढाउँ दै लगे छन् । A businessman decided to open bank account to deposit monthly as saving. If he deposited Rs 1000 at first, then he increased by Rs 200 every month.

(a) यो कु न प्र कारको अनु क मसँ ग सम्बन्धित छ ? What type of sequence is related to this problem? 1

(b) बचत सु रु गरे को 12 औ ं महिनामा पसले ले कति रकम जम्मा गर्छ न् ? निकाल्नु हो स् । What amount will he deposit in 12th month? 3

Q.9 बाबु र छो रीको हालको उमे रको गु णनफल 1000 छ । 10 वर्ष अघि बाबु को उमे र छो रीका उमे रको 4 गु णा थियो । The product of present ages of father and daughter is 1000. Ten years ago the father's age was equal to 4 times the daughter's age.

(a) दिइएको भनाई अनु सार समीकरण बनाउनु हो स् । Make an equation for this statement. 2

(b) बाबु र उसको छो रीको हालको उमे र पत्ता लगाउनु हो स् । Find the present ages of father and his daughter. 2

Q.10 Given: $a = 10^x$, $b = 10^y$ ि $a^y b^x = 100$ र $+1^1 + -1^1 + 4^1 - +1^1_2$ दिइएको छ

(a) xको मा ि कनत हु िा a को मा ि 1 हु छ ? For what value of x, the value of a = 1? 1

(b) निइएको पनहरोबाट पमानित गुिहोसस (Prove that from first part): $xy = 1$ 2

(c) निइएको प (ख) सिर गिहोसस । Simplify: $+11 + -11 + 41 - +12$ 2

(d) $+11 + -11 + 41 - +12 = 0$ भए x को मान पत्ता लगाउनु हो स् । (Find the value of x from the given) 2

Q.11 दिइएको चित्रको आधारमा निम्न प्रश्नहरूको समाधान लेख्नु हो स् । Solve the questions given below on the basis of given figure.

- (a) समानान्तर चतुर्भुजको नाम लेख्नु हो स् । 1 Write down the name of given parallelogram.
 (b) यदि $AB = 6$ cm, $DF = 5$ cm भए उक्त समानान्तर चतुर्भुजको क्षेत्रफल निकाल्नु हो स् । If $AB = 6$ cm, $DF = 5$ cm then find the area of given parallelogram.

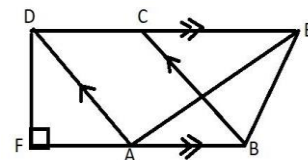
2

(c) त्रिभुज ABC को क्षेत्रफल निकाल्नु हो स् । Find the area of given Δ 2

Q.12 $AB = 5$ cm, $BC = 4.5$ cm र $CA = 7.5$ cm भएको एउटा Δ को रचना गरी उक्त त्रिभुजको क्षेत्रफलसँग बराबर हुने गरी एउटा भुजा $DA = 6.5$ cm भएको Δ को रचना गर्नु हो स् । Construct a Δ with measurement $AB = 5$ cm, $BC = 4.5$ cm र $CA = 7.5$ cm . Also construct a Δ with $DA = 6.5$ cm. 3

Q.13 दिइएको चित्रमा O वृत्तको केन्द्र बिन्दु हो जसमा PC स्पर्श रेखा, A स्पर्श बिन्दु, $AC = 12$ cm, $EC = 8$ cm र $\angle C = 30^\circ$ छ ।

- (a) OA र PC को सम्बन्ध के हुन्छ ? लेख्नु हो स् । 1
 (b) $\angle C$ को नाप कति हुन्छ ? लेख्नु हो स् । 1
 (c) $\angle C$ को नाप कति हुन्छ ? लेख्नु हो स् । 2
 (d) वृत्तको अर्ध व्यासको नाप पत्ता लगाउनु हो स् । 1



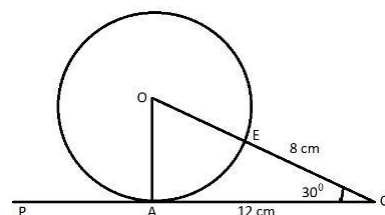
Q.14 पोखराको एउटा चिया पसलमा आउने ग्राहकहरूले गर्ने दैनिक खर्च तलको तालिकामा दिइएको छ ।

खर्च (रु)	ग्राहक संख्या
20-40	2
40-60	5
60-80	6
80-100	8
100-120	4
120-140	1

दिइएको तालिकाको आधारमा निम्न प्रश्नहरूको उत्तर दिनुहोस् ।

- (a) सबै भन्दा कम खर्च गर्ने ग्राहक कतिजना छन् ?

1



(b) ग्रहहरूको जम्मा खर्च कति होला?

2

(c) चिया पसलमा ग्रहहरूको औसत खर्च कति होला?

3

(d) पसलको जम्मा आमदानीमध्ये 10% कर तिर्नु पर्छ, यसरी कर बुझाउँदा बचत कति हुन्छ? 1

Q.15 सम्भाव्यता सम्बन्धी क्रियाकलाप सञ्चालन गर्नको लागि एउटा भोलमा 3 ओटा हरियो र 2 ओटा कालो उस्तै र उत्रै बलहरू राखिएको छ। दिइएको चित्रको आधारमा,

(a) सम्भाव्यता निकाल्ने सूत्र लेख्नुहोस्। 1

(b) भोलबाट एउटा गुच्छा नहरी निकाल्दा हरियो गुच्छा पर्ने सम्भाव्यता कति हुन्छ? 1

(c) भोलबाट निकालेको पहिलो गुच्छा हरियो र पुनः नराखी दोस्रो गुच्छा हरियो नै पर्ने सम्भाव्यतालाई वृक्षचित्रका आधारमा निकाल्नुहोस्। 1

(d) दुवै बल हरियो नपर्ने हुन्छ? निकाल्नुहोस्। 1

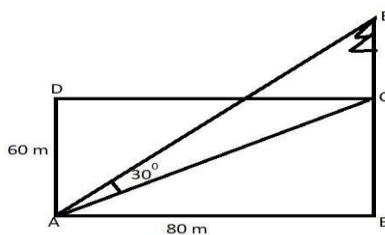
सम्भाव्यता कति

Q.16 एउटा $80\text{ m} \times 60\text{ m}$ भएको आयताकार समतल खेकु नामा भण्डा राखिएको छ। अर्को कुनाबाट भण्डाको अबलो भण्डाको टुप्पोको उन्नतांशको ण पाइएछ। (a) उन्नतांशको ण कस्तोको ण हो?

(b) AC को लम्बाई कति हुन्छ? 1

(c) भण्डाको टुप्पो जमिनबाट कति माथि छ? 1

(d) यदि उन्नतांशको 45° भयो भने भण्डाको उचाई कति बढ्छ? 1



लम्बै दानको एउटा कन गढा

