EMBOCS, NAWALPARASI
SPECIFICATION GRID-2081
First and second Terminal Examination-2081

S.N	Area	K(16%)		U(24%)		A(40%)		HA(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-	**1**	1	**1**	1	**1**	3	**1**	1	4	1	6
2	Arithmetic	**2**	2	**2**	3	**2**	4	**3**	3	9	3	12
3	Menstruation	**1**	1	**1**	2	**1**	2	**-**	-	3	1	5
4	Algebra	**2**	2	**1**	3	**2**	4	**1**	2	6	2	11
5	Geometry	**1**	1	**2**	2	**2**	**3**	**1**	2	6	2	**8**
6	Statistics & problem	**-**	-	**1**	1	**1**	**3**	**-**	-	**2**	1	**4**
7	Trigonometry	**1**	1	**1**	1	**1**	2	**-**	-	3	1	4
	Total	**8**	8	**9**	13	**10**	21	**6**	8	33	11	50

EMBOCS, NAWALPARASI
SPECIFICATION GRID-2081
First Terminal Examination-2081

Class:9 **Time: 1 hr 30 min.** **F.M-50**
Subject: Comp. Maths

S.N	Topics	No. of teaching hrs	Marks for examination
1	Set	10hrs	6
2	Arithmetic i) Taxation	10hrs	12
3	Menstruation i. Area of Triangle	4 hrs	5
4	Algebra sequence and series	8 hrs	11
5	Geometry i. Triangles: up to Triangles inequalities properties	3hrs	8
6	Statistics & probability i) Classification and Graphical Representation of data ii) Arithmetic mean	3hrs	4
7	Trigonometry i) Trigonometric Ration	4hrs	4
	Total	42 hrs	50

Second Terminal Examination-2081

Class:9 **Time: 1:30 hrs** **F.M-50**
Subject: Comp. Maths

S.N	Topics	No. of teaching hrs	Marks for exam
1	Set	-	6
2	Arithmetic i). Taxation ii) Commission,Bonus and Dividend	11hrs	12
3	Menstruation i) Local land Measurement units in Nepal ii) Area of four walls, floor and ceiling	5hrs 6hrs	5
4	Algebra i) Geometrical concept of $(A \pm B)^3$ ii) Factorization of type $(a^4+a^2b^2+b^4)$	4hrs 2hrs	11

	iii) H.C.F	3hrs	
5	Geometry: i) Congruent Triangles ii) ii) Similar triangles	 3hrs 4hrs	10
6	Statistics & probability i) Median	 3hrs	2
7	Trigonometry i) Trigonometric Ratios of some standard angles	 4hrs	4
	Total	45hrs	50

EMBOCS, NAWALPARASI
SPECIFICATION GRID-2081
Third Terminal Examination-2081

Class:9 **Time: 3 hrs** **F.M-75**
Subject: Comp. Maths

S.N	Topics	No. of teaching hrs	Marks
1	Set	-	6
2	Arithmetic i) electricity bill ii) water bill	 3hrs 2hrs	13
3	Menstruation i) Prism	 6hrs	13
4	Algebra i) L.C.M ii) Indices	 3hrs 4hrs	15
5	Geometry i) Parallelogram ii) Construction	 4 hrs 5 hrs	13
6	Statistics & probability i) quartiles , mode and range ii) Introduction to probability iii) Empirical probability	 6hrs 5hrs 3hrs	11
7	Trigonometry	-	4
	Total	41 hrs	75

EMBOCS, NAWALPARASI
SPECIFICATION GRID-2081
Annual Examination-2081

Class:9 **Time: 3 hrs** **F.M-75**

Subject: Comp. Maths

S.N	Topics	No. of teaching hrs	Marks
1	Set	-	6
2	Arithmetic i) Telephone bill ii) Calculation of Taxi fare	 4hrs 3hrs	13
3	Menstruation i) Cylinder and sphere	 11 hrs	13
4	Algebra: Simultaneous linear question	 9hrs	15
5	Geometry i) Circle	 5 hrs	13
6	Statistics & probability	 -	11
7	Trigonometry	-	4
	Total	32 hrs	75

EMBOCS, NAWALPARASI
SPECIFICATION GRID-2081
Third and Annual Examination-2081

Class:9 **Time: 3 hrs** **F.M-75**

Subject: Comp. Maths

S.N	Area		K(16%)		U(24%)		A(40%)		HA(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-		**1**	**1**	**1**	**1**	**1**	**3**	**1**	**1**	**4**	**1**	**6**
2	Arithmetic		**2**	**2**	**2**	**3**	**3**	**5**	**2**	**3**	**9**	**3**	**13**
3	Menstruation		**2**	**2**	**2**	**3**	**2**	**5**	**2**	**3**	**8**	**3**	**13**
4	Algebra		**2**	**2**	**2**	**4**	**3**	**7**	**1**	**2**	**8**	**3**	**15**
5	Geometry		**2**	**2**	**2**	**3**	**2**	**5**	**2**	**3**	**8**	**3**	**13**
6	Statistics & problem		**2**	**2**	**2**	**3**	**2**	**4**	**2**	**2**	**8**	**2**	**11**
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**

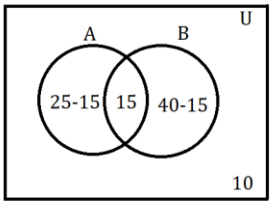
Internal Evaluation

S.N.	Area of Evaluation	Marks
1	Participations: attendance and participation in classroom activities	3
2	Marks of terminal examinations	6
3	Practical /Project work (at least 1 project work from each area should be prepared and presented in class)	16
	Total	25

Model Question
first Terminal Examination

Class-9 Time-1hr.30min. F.M-50

1. भेनचित्रको अध्ययन गरी प्रश्नको उत्तर दिनुहोस् । (study the given venn diagrams and attempt the question.)



a) n(A) को मान पत्ता लगाउनुहोस् । (calculate n(A) . (1)

b) n(A-B) को मान पत्ता लगाउनुहोस् । (1)

c) Prove that: प्रमाणित गर्नुहोस् । $n(\overline{A \cup B}) = n(A \cup B)$ (3)

d) $n_0(A) + n_0(B)$ को मान निकाल्नुहोस् । (Calculate $n_0(A) + n_0(B)$. (1)

2) डेभिड र अनुसाको मासिक तलब क्रमशः Rs. 65,000 र Rs. 45,000 छ । करको दर तलको तालिकामा दिइएको छ । (Monthly salary of David is Rs. 65,000 and that of Anusha is Rs. 45,000. The tax rate is given as below:)

For married	Up to 6 Lakhs 1% 6 to 8 Lakhs 10% 8 to 11 Lakhs 20%	For Unmarried	Up to 5 Lakh 1% 5-7 Lakhs 10% 7-10 Lakhs 20%

a) हामी सरकारलाई कर किन तिर्न चाहान्छौ ? (Why do we pay tax to government?) (1)

b) डेभिड र अनुसाको छुट्टाछुटै वार्षिक आम्दानी पत्ता लगाउनुहोस् । (Calculate the individual yearly income of David and Anusha.) (2)

c) अनुसा अविवाहित भए उनले तिनुपर्ने वार्षिक कर पत्ता लगाउनुहोस् । (Calculate the tax paid by Anusha at the edn of year if she is unmarried individual) (2)

3. एलईडी टिभीको अंकित मूल्य रु. ४५००० हो। निश्चित प्रतिशत छुट दिएर र १३% भ्याट थपेर रु. ४०,६८० मा टिभी बिक्री हुन्छ। अब दिइएको जानकारीको आधारमा तलका प्रश्नहरूको उत्तर दिनुहोस्। (The marked price of an LED TV is Rs.45000.After allowing certain percent discount and adding 13% VAT, the TV is sold at RS. 40,680.Now on the basis of given information answer the questions below.

a) भ्याट भन्नाले के बुझ्नुहुन्छ ?(What do you mean by VAT?) (1)

b) VAT बिना T.V को बिक्री मूल्य गणना गर्नुहोस्। (Calculate the selling price of T.V. without VAT.) (2)

C) छुट प्रतिशत पत्ता लगाउनुहोस्।Find the discount percentage. (1)

4. Zenith' s monthly salary is Rs 35000 and annual tax allowance is Rs 250000.
(जेनिथको मासिक आम्दानी Rs. 35,000 छ र वार्षिक रु RS. 250,000 सम्मको आम्दानीमा कर छुट छ ।)

a) Find his yearly income. (1)
(उसको वार्षिक आम्दानी पत्ता लगाउनुहोस् ।)

b) Find the taxable income. (1)
(कर तिर्नुपर्ने आम्दानी पत्ता लगाउनुहोस् ।)

c) What is the rate of social security Tax? (1)

(सामाजिक सुरक्षा करको दर कति हो ?)

5. Sarmila made a triangular garden near her house in Daldale with its side 8ft,3ft and 9 ft.(सर्मिलाले ग्रीन हिल सिटीको आफ्नो घर छेउमा तीन भुजाहरुको नाप क्रमशः 8ft, 3ft र 9ft भएको त्रिभुजाकार बगैँचाको निर्माण गरिन् ।)

a) State the formula to find area of above triangular garden. (1)
(उक्त बगैँचाको क्षेत्रफल निकाल्न आवश्यक पर्ने सुत्र लेख्नुहोस् ।)

b) Calculate the area of that triangular garden. (2)
(बगैँचाको क्षेत्रफल निकाल्नुहोस् ।

c) If Sarmila was able to increase side of triangular field having side 3 ft. to 8ft. examine the new area of above triangle. (2)
(यदि उनले 3ft को किनारालाई 8ft को बनाउन सकिन भने उक्त बगैँचाको नयाँ क्षेत्रफल परीक्षण गर्नुहोस् ।)

6. एउटा सभाहलको पहिलो पक्तिमा 14 सिट, दोस्रो पक्तिमा 16 सिट, तेस्रो पक्तिमा 18 सिट र चौथोमा 20 सिट गरी समानान्तरिय अनुक्रम बनाएर सिटहरु राखिएको छ । (In an auditorium hall there are 14 seats in the first row, 16 in the second row, 18 in the third row, 20 in the fourth row and so on in arithmetic sequence.)

a) समानअन्तर निकाल्ने सुत्र लेख्नुहोस् । (Write a formula to calculate common difference.) (1)

b) अनुक्रमको कुन पद 60 हुन्छ ? (Which term of given A.P. is 60 ?) (3)

7. Answer the following questions from the given series: 4+8+16+32+64
(दिइएको श्रेणीबाट निम्न प्रश्नको उत्तर दिनुहोस् : 4+8+16+32+64

a) What type of series is it? (यो कुन प्रकारको श्रेणी हो ।) (1)

b) Find the common ratio. (समान अनुपात पत्ता लगाउनुहोस् ।) (2)

c) find the n^{th} term. (n^{th} पद पत्ता लगाउनुहोस् ।) (2)

d) Write the series in sigma notation. (दिइएको श्रेणीलाई sigma notation मा व्यक्त गर्नुहोस् ।)

(2)

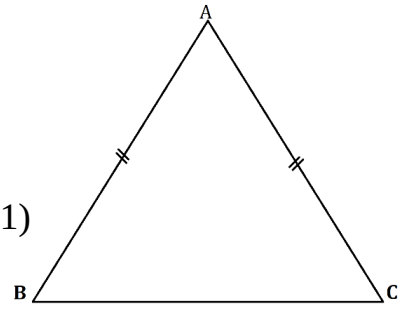
8. ABC एउटा त्रिभुज हो । (ABC is a triangle)

a) Define a Triangle. (1)

b) फरक नापका दुईवटा त्रिभुज ABC खिचि सबैभन्दा ठुलो कोणको सम्मुख भुजा सबै भन्दा लामो र सबै भन्दा सानो कोणको सम्मुख भुजा छोटो हुन्छ भनी प्रयोगात्मक विधिबाट सिद्ध गर्नुहोस् । (Draw two triangle of ABC of different shape and size and verify experimentally that side opposite to the greatest angle is longest and the side opposite to the smallest angle is the shortest.) (2)

c) AB=3.5 cm, BC= 4.2 cm र AC= 3.6 cm भए $AB + BC > AC$ देखाउनुहोस । (If AB = 3.5 cm, BC= 4.2 cm and AC=6.3 cm then, Show that $AB + BC > AC$.
(1)

9. Examine the given triangle carefully and answer the given questions:
(दिइएको त्रिभुजको अध्ययन गरी निम्न प्रश्नहरुको उत्तर दिनुहोस् ।)

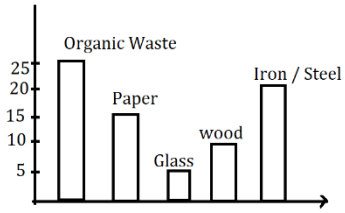


a) If AB=AC, what is the relation between $< ABC$ and $< ACB$? (1)
(AB=AC भए $< ABC$ र$< ACB$ को सम्बन्ध लेख्नुहोस् ।)

b) $If < BAC = 80^0$,work out the value of $< ACB$. (1)
(यदि $< BAC = 80^0$ भए $< ACB$ को मान पता लगाउनुहोस् ।)

c) Recall the relation between AD and BC if D is mid -point of base BC. Also mention the vertical angle. (2)
(BC को मध्यविन्दु D भए AD र BC को सम्बन्ध लेख्नुहोस् र शीर्षकोणको नाम लेख्नुहोस् ।)

10. काठमान्डौ नगरपालिकाले कुनै महिनामा 75 टन फोहोर रिसाइकल गऱ्यो । तलको चित्र पढी उत्तर दिनुहोस् ।
(Kathmandu Metropolitan City Recycled 75 tons of trans in a certain month. Study the given bar diagram and answer the questions.)

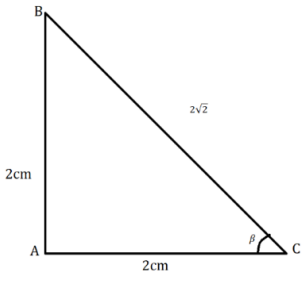


a) सबै भन्दा बढी मात्रामा रिसाइकल गरेको फाहोरको प्रकार कुन हो ? (Find the highest amount of trashed recycled.) (1)

b) तलको तथ्यांकबाट मध्यक पत्ता लगाउनुहोस (Find the mean from given data.) [3]

Income(Rs)	4000	5000	6000	7000	8000	9000
No. of persons	10	20	11	22	12	4

11. ABC is a right triangle in which $\beta$is the reference angle.
(ABC एउटा समकोण त्रिभुज हो । जसमा B सन्दर्भ कोण हो ।)



a) Write a mathematical relation of AB, BC and AC. (1)
(AB, BC र AC को गणितिय सम्बन्ध लेख्नुहोस् ।)

b) What trigonometric ratio does $\frac{AB}{AC}$ represent? (1)
($\frac{AB}{AC}$ ले जनाउने त्रिकोणमिति अनुपात कुन हो ।)

c) If $\sin\beta = \frac{1}{\sqrt{2}}$ and AB=4 cm ,find the length of BC. (2)
$\sin\beta = \frac{1}{\sqrt{2}}$ र AB=4 cm भए BC को लम्बाइ पत्ता लगाउनुहोस् ।

Model Question
Third terminal examination-2081

Class: 9 Time: 3 hour F.M. =75

Subject: Mathematics

1. यदि $U = \{x: x < 10, x \in N\}, A = \{x: x > 5\}, B = \{$बिजोर संख्या हरु$\}$ and C = {रुढ संख्या हरु } भए
   (If $U = \{x: x < 10, x \in N\}, A = \{x: x > 5\}, B = \{\text{odd numbers}\}$ and C = {prime numbers} then),
   a. दिइएको समुह हरुलाई सूचीकरण विधिद्वारा लेख्नुहोस (Write the given sets by listing method.) [1]
   b. दिइएको समुह हरुलाई भेन चित्र मा देखाउनुहोस (Show the given sets in a Venn-diagram.) [1]
   c. प्रमाणित गर्नुहोस (Prove that): $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ [3]
   d. कुन समुहले एकात्मक समुह जनाउछ?किन? (Which of the sets represent singletons and why? [1]
2. किरण बैंकका कर्मचारी हुन् । उनको मासिक तलब रु. 65,000 । यदि उसले एक वर्षमा 15 महिनाको तलब भत्ता र बोनस सहित पाउँछ । तलका प्रश्नहरूको उत्तर दिनुहोस। (Kiran is an employee of a bank. His monthly salary is Rs. 65,000. If he gets 15 months salary in a year including allowances and bonus. Answer the following questions.)

For Unmarried		For married	
Annual income	Tax Rates	Annual income	Tax Rates
Upto Rs 5,00,000	1%	Upto Rs 6,00,000	1%
Additional Rs 2,00,000	10%	Additional Rs 2,00,000	10%
Additional Rs 3,00,000	20%	Additional Rs 3,00,000	20%
Additional Rs 10,00,000	30%	Additional Rs 9,00,000	30%
Any additional amount above Rs 20,00,000	36%	Any additional amount above Rs 20,00,000	36%

   a. सामाजिक सुरक्षा कर भन्नाले के बुझ्नुहुन्छ ? (What do you understand by the social security tax?) [1]
   b. किरण अविवाहित भएमा वार्षिक कति आयकर तिर्नुपर्छ ? (If Kiran is unmarried then how much income tax should she pay annually?) [2]

c. किरण विवाहित भएमा वार्षिक कति आयकर तिर्नुपर्छ ? (If Kiran is married then how much income tax should she pay annually?)

[2]

3. क्लिनिकमा कार्यरत डाक्टरको मासिक तलब रु. 40,000 । उनले कुल औषधि बिक्रीमा 5% कमिशन पाउँछन् । यदि एक महिनामा औषधिको कुल बिक्री रु 10,00,000 छ भने, निम्न प्रश्नहरूको जवाफ दिनुहोस्:(A doctor working in a clinic has monthly salary Rs. 40,000. He gets 5% commission on total sales of medicine. If total sales of medicine in a month is Rs 10,00,000 then, answer the following questions)

   a. 5% कमिशनको अर्थ के हो ? (What is the meaning of 5% commission?)

   [1]

   b. एक डाक्टर द्वारा प्राप्त मासिक कमीशन रकम पत्ता लगाउनुहोस्। (Find the monthly commission amount received by a doctor.)

   [1]

   c. डाक्टरको मासिक आम्दानीको कति प्रतिशत कमिशन रकम हो?(What percent of monthly income of the doctor is the commission amount?)

   [2]

4. जनसेवा माविमा 5 A बिजुली मिटर र 0.5 इन्चको पाइप जडान गरिएको छ । दिइएको शुल्कको दर अनुसार निम्न प्रश्नहरूको उत्तर दिनुहोस्। (Janasewa Secondary School has

Electricity Charge			Rate of water consumption per month(0.5 inch pipe)
Units	Service Charge	Energy Charge	
0-20	Rs. 30	Rs. 3	• Min charge up to 10 units: Rs. 100 • Extra charge= Rs 32 per unit
21-30	Rs. 50	Rs. 6.50	
31-50	Rs. 50	Rs. 8.00	
51-100	Rs. 75	Rs. 9.50	

connected with 5A electricity meter and 0.5 inch pipe.) Answer the following questions according to the given rate of charges.

   a. 1 युनिट बिजुलीले के बुझ्नुहुन्छ ? (What do you understand by 1 unit of electricity?) [1]

   b. वैशाख 1 को मिटर रिडिङ 04560 र जेठ 1 गते 04610 भए वैशाख महिनाको बिजुलीको बिल तिर्न आवश्यक पर्ने रकम गणना गर्नुहोस्। (Calculate the amount required to pay the electricity bill of the month of Baisakh if the meter reading of Baisakh 1 is 04560 and that of Jesth 1 is 04610.)

   [2]

   c. वैशाख महिनामा 40 युनिट पानी खपत भए वैशाख महिनाको पानीको बिल पत्ता लगाउनुहोस्

   (If 40 units of water was consumed in the month Baisakh, find the water bill of the month Baisakh.)

   [1]

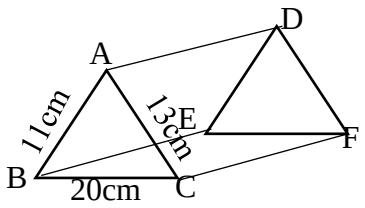
5. त्रिभुजकार जग्गाको नापहरु 2:3:4 को अनुपातमा रहेका छन यसको परिधि 900m रहेका छन (The sides of a triangular field are in the ratio of 2:3:4. Its perimeter is 900m then)

a. यदि त्रिभुजका तीनवटा भुजा क्रमशः a,b र c भए, त्रिभुजको अर्ध-परिधि कति हुन्छ?
If three sides of triangle are a,b and c respectively, what is the semi-perimeter of triangle? [1]

b. जग्गाको क्षेत्रफल कति हुन्छ ? (What is the area of the land?)
[2]

c. प्रति मिटर 200 रुपैयाँका दरले जग्गामा पाँच पटक तारबार लगाउन कूल लागत कति हुन्छ ?
(What is the total cost of fencing the land five times at the rate of Rs 200 per meter? [1]

6. चित्रमा ठोस प्रिज्म देखाइएको छ । (In the figure a solid prism is shown.)



a. त्रिभुजाकार प्रिज्मको छड्के सतहको क्षेत्र पत्ता लगाउने सूत्र के हो?
What is formula to find Lateral surface area of triangular prism?
[1]

b. प्रिज्मको पुरा सतह क्षेत्र पत्ता लगाउनुहोस्।
(Find the total surface area of prism.)
[2]

c. प्रिज्मको आयतन पत्ता लगाउनुहोस्। (Find the volume of prism?)
[2]

7. विद्यालयको षडमुखा आकारको कोठाको चार भित्ताको क्षेत्रफल 88 वर्ग मिटर छ । कोठाको लम्बाइ र चौडाइ क्रमशः 6 मिटर र 5 मिटर छ। कोठामा 3 वर्ग मिटर क्षेत्रफल भएको एउटा ढोका र 2.25 वर्ग मिटर क्षेत्रफल भएको 2 वटा झ्यालहरू छन्। (The area of four walls of a cuboid shaped room in a school is 88sq meter. The length and breadth of the room are 6m and 5m respectively. The room has one door having area 3 sq meter and 2 windows having area 2.25 sq meter.

a. प्रति वर्ग मिटर रु 175 को दरले ढोका र झ्याल बाहेक यसको चार भित्तामा रङ लगाउन कूल लागत कति लाग्छ ?
What is the total cost of painting its four walls excluding door and windows at the rate of Rs 175per square meter?
[2]

b. कोठाको चार भित्तामा ढोका र झ्याल बाहेक रु 250 प्रति वर्ग मिटरमा wall paper टाँसिएको भए त्यसलाई पेन्ट गर्दा भन्दा कति बढी वा कम खर्च लाग्छ ? तिनीहरूलाई तुलना गर्नुहोस्। (If the wall paper is pasted in the four walls of the room excluding door and windows at the rate of Rs 250 per square meter then how much does it cost more than when it is painted? Compare them.)
[2]

8. यदि अंक गणितीय श्रेणीमा तेस्रो पद -40 र 13^{औ} पद 10 भए (In A.P., the 3rd term is -40 and 13th term is 10.)

a. पहिलो पद र सामान अन्तर पत्ता लगाउनुहोस (Find the first term and common difference.) [2]

b. $30^{औ}$ पद पत्ता लगाउनुहोस (find 30^{th} term of AP.)
[1]

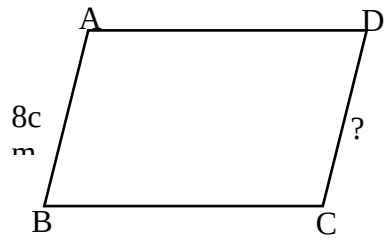
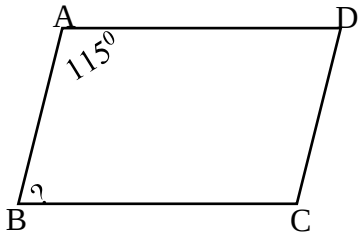
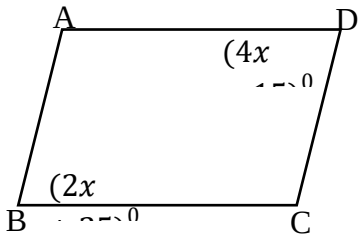
c. कति औ पद 35 हुन्छ पत्ता लगाउनुहोस (Which term of the AP is 35?)
[2]

9. तलका प्रश्न हरुको उत्तर दिनुहोस (Answer the following questions)
   a. खण्डिकरण गर्नुहोस (Factorize:)) $x^2-2x+1-a^2-4ab-4b^2$
   [3]
   b. In $8x^3-1$ and $16x^4+4x^2+1$ write common factors.
   [1]
   c. Find L.C.M of $8x^3-1$ and $16x^4+4x^2+1$
   [2]

10. तलका प्रश्न हरुको उत्तर दिनुहोस (Answer the following questions)
   a. $(10x^o)$, $x \neq 0$ को मान कति हुन्छ ? (What is the value of $(10x^o)$,$x \neq 0$?)
   [1]
   b. सरल गर्नुहोस (Simplify): $(x^m \div x^n)^{m^2+mn+n^2} \times (x^n \div x^p)^{n^2+np+p^2} \times (x^p \div x^m)^{p^2+pm+m}$ [3]

11. फरक आकार भएका दुईवटा त्रिभुजहरु $\triangle ABC$ खिच्नुहोस त्यसपछि BC लाई D सम्म लम्ब्याउनु होस (Draw two triangles ΔABC having different shapes then extend BC up to D then)
   a. बाहिरी कोण ∡ACD विपरीत भित्री कोण∡ABC र ∡BAC को योगफल बराबर हुन्छ भनि प्रयोगात्मक रूपमा प्रमाणित गर्नुहोस्। Verify experimentally that the exterior angle $\measuredangle ACD$ is equal to the sum of opposite interior angle$\measuredangle ABC \text{ and } \measuredangle BAC$.
   [3]
   b. $\measuredangle ABC$ र $\measuredangle BAC$ को नाप लिई तिनीहरु बीच तुलना गर्नुहोस
   Find measuring $\measuredangle ABC \text{ and } \measuredangle BAC$ then compare them.
   [1]
   c. यदि पूरक कोणको दुई कोणको अनुपात 2:3 छ भने, तिनीहरूलाई पत्ता लगाउनुहोस्।
   If the ratio of two angles of a supplementary angle is 2:3, find them.
   [2]

12. दिइएको चित्रको आधारमा निम्न प्रश्नहरूको उत्तर दिनुहोस् On the basis of given figure answer the following questions.

a	b	c
		

a. समानान्तर चतुर्भुज ABCD, AB=8cm मा, CD को नाप कति हुन्छ ?
In a parallelogram ABCD, AB=8cm, what is the measure of CD?
[1]

b. समानान्तर चतुर्भुज ABCD मा, यदि $\measuredangle A = 115^0$ छ भने समानान्तर चतुर्भुज ABCD मा, यदि $\measuredangle$B हो भने, को मान पत्ता लगाउनुहोस्।
In the parallelogram ABCD, if $\measuredangle A = 115^0$ Find the value of$\measuredangle B$ In the parallelogram ABCD [1]

c. समानान्तर चतुर्भुज ABCD मा, $\measuredangle B = (2x + 25)^0$ र $\measuredangle D = (4x - 15)^0$ भए $\measuredangle BAD$ को मन पत्ता लगाउनुहोस
In the parallelogram ABCD, if $\measuredangle B = (2x + 25)^0$ and $\measuredangle D = (4x - 15)^0$ find the value of$\measuredangle BAD$. [2]

13. तलका प्रश्न हरुको उत्तर दिनुहोस Answer the following questions

a. समलम्ब चतुर्भुजको एउटा बिशेषता लेख्नुहोस Write a property of rhombus.
[1]

b. एउटा चतुर्भुज को रचना गर्नुहोस जसमा AB=5.4cm, BC=5.1cm, CD=4.9cm, AD=6.2cm र विकर्ण BD=5.8cm छन Construct a quadrilateral ABCD in which AB=5.4cm, BC=5.1cm, CD=4.9cm, AD=6.2cm and the diagonal BD=5.8cm.
[2]

14. यदि दिइएको तथ्यांक को मध्यक 38 भए If the mean of given data is 38.

Weight	25	30	35	40	45
No. of people	6	2	M	10	3

a. M को मान पत्ता लगाउनुहोस what is the value of m?
[2]

b. दिइएको तथ्यांकमा रित कति हुन्छ पत्ता लगाउनुहोस What is the mode of the data?
[1]

c. यदि m =4 भए मध्यक पत्ता लगाउनुहोस If m=4, find the mean of the data.
[1]

d. सन्चित बारम्बरता तालिका बनाई मध्धिका पत्ता लगाउनुहोस
Construct a cumulative frequency table and find median.
[2]

15. एउटा झोलामा 5 वोटा रातो, 2 वोटा सेतो र 3 वोटा कालो बल हरु छन जस बाट एउटा बल निकाल्दा
A bag contain 5 red balls, 2 white balls and 3 black balls. If a ball is drawn at random,

a. कुनै सम्भाव्यताको न्युनतम र अधिकतम मान कति हुन्छ?
What are the maximum and minimum probabilities of any events?
[1]

b. रातो बल आउने सम्भाव्यता कति हुन्छ? What is the probability of getting red balls?
[1]

c. सेतो वा कालो बल आउने सम्भाव्यता कति हुन्छ?What is the probability of getting a white or a black ball?[1]

d. कालो बल नआउने सम्भाव्यता कति हुन्छ?What is the probability of not getting black balls? [2]

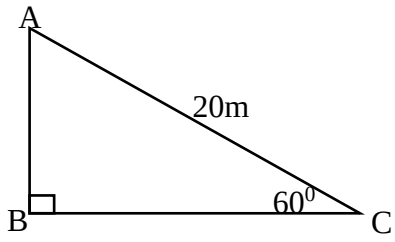
16. दिइएको चित्रमा,ΔABC समकोणी त्रिभुज हो जहाँ $\measuredangle ABC = 90^0$, $\measuredangle C = 60^0$ र कर्ण AC=20m रहेका छन
In the adjoining figure,ΔABC is right angled triangle in which, $\measuredangle ABC = 90^0$, $\measuredangle C = 60^0$ and hypotenuse AC=20m.

a. आधार र कर्ण भुजाको नाप पत्ता लगाउनुहोस
Find the length of base and perpendicular.
[1]

b. Sin A को मान कति हुन्छ पत्ता लगाउनुहोस what is the value of sin A?
[1]

c. प्रमाणित गर्नुहोस (Prove that): $\sin^2 A = 1 - \cos^2 A$
[1]

d. Tan A को त्रिकोणमितीय अनुपात लेख्नुहोस
Write the trigonometric ratio of Tan A.
[1]



THE-END

MODEL QUESTION SET

Class: IX **Time: 3 hours** **Full Marks: 75**

Attempt all the questions.

1. If $U = \{x : x < 10, x \in N\}$ is a universal set, $A = \{x: x \text{ is a factor of } 6\}$, $B = \{y: y \text{ is a prime number}\}$ and $C = \{z: z \text{ is a multiple of } 3\}$ are the subsets of U.
   (a) What is the cardinal number set U? **[1]**
   (b) Write $(A \cap B)$ in listing method. **[1]**
   (c) Find $\overline{(A \cup B) - C}$ and illustrate it in a Venn-diagram by shading. **[3]**
   (d) What is the relation between $A \cap B$ and $A \cap B \cap C$? Give reason. **[1]**
2. Mr. Yadav buys 100 cycles of same model from India and marked each cycle with price Rs 5,000. He allows 10% discount in each cycle and sells all the cycles by levying 13% VAT.
   (a) What is the formula to calculate the price of cycle after allowing discount? [1]
   (b) Calculate the selling price of all cycles with VAT. [2]
   (c) If he deposits half of the selling price of all cycles excluding VAT in a bank for next one year at 12% p.a., how much net interest will he get if 5% of interest is charged as income tax%? [2]
3. A group of youths returned from foreign employment of a village wished to run a mini-hydro company to uplift the economic status of the villagers. They sold 4,00,000 shares each of Rs. 100. After 1 year, the company made a net form of Rs. 25,00,000 and the management committee of the company decided to distribute Rs. 5,00,000 cash dividend among the shareholders.
   (a) From which amount is the cash dividend distributed? [1]
   (b) What percent of cash dividend was distributed? [1]
   (c) How much cash dividend would Janak get at the same rate if he had 4,800 shares and the net profit of the company was Rs. 30,00,000? [2]
4. The table given below shows the rate of electricity charge with service charge for a 5A meter box.

Case	kWh (units)	Service charge	Energy charge/unit
Consumed units is up to 20 units	0-20	Rs. 30.00	Rs. 0.00
Consumed units exceeds 20 units	0-20 21-30 31-50	Rs. 30.00 Rs. 50.00 Rs. 50.00	Rs. 3.00 Rs. 6.50 Rs. 8.00

A 5A transmission line is connected in Bina's house, and the meter reading of 1 Bhadra and 1 Aswin was recorded as 01045 units and 01070 units respectively. The electricity office is at a distance of 2 km from Bina's house. The minimum fare of taxi is Rs. 14 and fare per 200 meter is Rs 7.20.

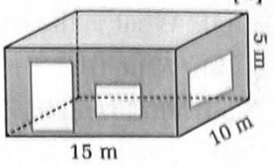
Answer the following questions.

(a) How many unit of electricity was consumed in Bhadra? [1]

(b) What was the electricity bill of the month Bhadra? [2]

(c) If she used the taxi to go to the electricity office for paying the bill, how much money did she pay for the taxi fare? [1]

5. In Geetanjali Secondary School, the room of class IX is rectangular in shape. It is 15 m long, 10 m broad and 5 m high. Also, it contains two windows of size 2 m × 1.5 m each and a door of size 1 m × 4 m.



(a) Write down the formula to calculate the area of four walls. [1]

(b) What is the area the ceiling of the room? [1]

(c) Find the cost of colouring its walls excluding the windows and door at Rs 250 per sq. metre. [2]

(d) By how much more or less does it require to papering the walls at Rs. 275 per sq. metre than couloring the walls? [1]

6. On a sunny day, Mr. Shah was working in the field. He went to a store and bought a cylindrical can completely filled with pineapple juice. The inner radius of base of the of can was 5 cm and height 14 cm.

(a) What is the formula to calculate the volume of the can? [1]

(A) $\pi r^2 h$ (B) $\frac{1}{3}\pi r^2 h$ (C) $2\pi rh$ (D) $2\pi r(r + h)$

(b) How many liter of juice was filled in the can? Find it. [3]

7. Gopal's house was completely destroyed due to the devastating earth-quake on 12 Baishakh 2072 B.S. An organization distributed the canvas for making the tent. He made an equilateral triangular tent by using the canvas including the floor for the temporary shelter. The edge of the triangular face was 12 ft. each and length of the tent was 20 ft.

(a) How many square feet of canvas was given to him? [2]

(b) By how many feet would the length of tent be increased if he didn't use the canvas on the floor? [2]

8. In a Boost up Test of mathematics held on last Sunday in a school, the marks obtained by a group of students are 16, 24, 36, ..., 81.

(a) What is the formula to find the general term of a geometric sequence? [1]

(A) $t_n = a + (n-1)d$ (B) $t_n = a + (n-1)r$

(C) $t_n = ar^n$ (D) $t_n = ar^{n-1}$

(b) What is the common ratio of the sequence of marks? [1]

(c) How many students are there in the group? [2]

9. Solve the following problems.

(a) Find the H.C.F. of $8a^3 + b^3$ and $16a^4 + 4a^2b^2 + b^4$ **[3]**

(b) Simplify: $\sqrt[a+b]{\frac{x^{a^2}}{x^{b^2}}} \times \sqrt[b+c]{\frac{x^{b^2}}{x^{c^2}}} \times \sqrt[c+a]{\frac{x^{c^2}}{x^{a^2}}}$ **[3]**

10. Zeena bought 3 kg of apples and 5 kg of oranges for Rs 1155 from a fruit corner. At the same time, Chhiring bought 2 kg of oranges with the price of 1 kg of apples from the same corner.

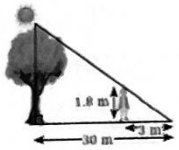
(a) Represent the given statements in linear equations. **[1]**

(b) Find the rates of cost of apples and oranges per kg. **[2]**

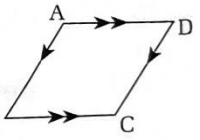
(c) If the rate of cost of oranges were decreased by 10% and that of apples were increased by 20%, how many kg of oranges and apples of equal quantity would be bought for Rs. 5544? **[2]**

11. (a) Draw two triangles ABC of different shapes and sizes. Explore the experimentally the relation between the sum of any two sides and the third side. **[3]**

(b) A boy 1.8 m tall casts the shadow of length 3 m at 2:30 p.m., what is the height of the tree which casts the shadow of length 30 m at the same time? **[2]**



12. A parallelogram ABCD is given aside.



(a) What is the relation between the diagonals of parallelogram? **[1]**

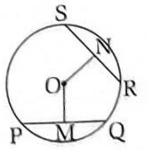
(A) equal (B) perpendicular to each other

(C) bisect each other (D) bisect each other perpendicularly.

(b) If $\angle ABC = (30^\circ + p)$ and $\angle ADC = (60^\circ - p)$, what is the value of p? Find it. **[1]**

(c) Construct a rhombus ABCD in which diagonal AC = 6 cm and diagonal BD = 8 cm. **[2]**

13. Dipesh draws a circle with centre O and radius 5 cm. He draws a chord PQ of length 6 cm and mark the mid-point M of it. Also, he draws another chord RS and joins centre O to the mid-point N of it.



(a) What is the relationship between OM and PQ? **[1]**

(b) Find the length of OM. **[2]**

(c) How should the chord RS be equal to the chord AB with respect to OM and ON? Give reason. **[1]**

14. Last week, the mathematics teacher of Children Park English Secondary School administered a class test for class-IX students. He recorded the marks obtained by students in the following table.

Marks obtained	15	30	45	60	75	90
No. of students	2	3	7	10	8	4

(a) What type of data is it? [1]

(b) Construct a cumulative frequency distribution table? [1]

(c) Calculate the median mark. [2]

(d) What is the average mark of students who secured more than median mark? [2]

15. A mathematics teacher divides the students into groups of 6/6 students. He rolls a die to select the student of a particular group for solving certain question in the board. If he rolls the die once, answer the following questions.

(a) Write down the sample space for the above experiment. [1]

(b) What is the probability of selecting the students numbered by an even number in a group? [2]

(c) What is probability of not selecting the students numbered by multiple of 3 in a group? [2]

16. In the given figure, a right angled triangle ABC is formed when a ladder AC is rest against a vertical wall AB making an angle of 60° with the ground. The length of the ladder is 18 ft.

Answer the following questions:

(a) Which trigonometric ratio is represented by $\frac{AB}{AC}$? [1]

(b) What is the value of $\tan 60^\circ$? [1]

(c) What is the length of BC? [1]

(d) What would be the size of angle ACB when the wall AB and the distance of the foot of the ladder from the base of wall (BC) were equal? [1]

♠♠♠ ... **The End** ... ♠♠♠