

Instructions :

You are allowed to discuss the topic and take help from your friends, family members, classmates, or even me. However, the help should be limited to discussions, sharing ideas, or clarifying doubts – not having someone else write your paper for you.

ii) You are not allowed to use any AI tools help. This includes tools like ChatGPT, DeepSeek , Perplexity, or any similar technology.

iii) Make sure your paper is neatly written and properly formatted. It is suggested to use the Adobe Scan app to create a clear and clean PDF of your paper. Here is a short video on how the app works:- <https://youtu.be/h0U6kNHBC9A?si=CNHy0VEQInjX8R15>

iv) Submit your paper on or before the deadline. Late submissions will not be accepted. Deadline: June 7, 2025 (Sunday), by 6:00 PM.

Section A : BODMAS

Que 1 : Evaluate using BODMAS rule (1 x 5 = 5 marks)

- A) $18 \div (3 + (5 - 2))(1 + 2) + 4 \times 4 - (8 - (3 + 1)) \times 2$
B) $25 - 5(2 + (6 - 3)) + (9 \times 9 \div (4 + (7 - 4))) \times 3$
C) $36 \div (6 - (2 + 1))(4 + 1) - (5 \times 5 + 5 + (10 \div (5 - 3))) + 6$
D) $14 \div 2(3 + (8 - 5))(2 + 1) - ((12 - 4) \div 2) \times 5$
E) $48 \div (8 - (3 + 2))(2 + (4 - 1)) + 3 \times 3 \times 3 - (9 - (5 - 2)) \times 4$

Que 2 : Evaluate using BODMAS rule (1.5 x 3 = 4.5 marks)

Answer in fractional form.

- A) $\left\{ \left[\frac{5}{6} - \left(\frac{1}{3} + \frac{1}{6} \right) \right] \div \frac{1}{2} \right\} + \frac{1}{4}$
B) $\left[\left(\frac{3}{4} + \frac{1}{2} \right) \times 2 \right] - \frac{5}{8}$
C) $\left[\left(\frac{7}{8} \div \frac{1}{4} \right) - 2 \right] + \left(\frac{1}{2} \times \frac{3}{5} \right)$

Que 3 Which one of these options gives the biggest value? (4 marks)

- 1) $[48 \div (6 \times 2) + (-4 + 9 - (6 - 3))] - \{16 \div 4 - [2 + (5 - 3)]\}$
2) $[81 \div (9 + 0) - \{3 \times (2 - 5 + 4)\} + (-2 + 3)] + (6 - 7)$
3) $-12 + [(18 \div 3) \times (-2 + 6 - 3)] + \{5 - (-4 + 2)\} - 8$
4) $\{(45 \div 5) - [2 \times (4 - 1 - 3)] + (-3 + 7)\} + 6$

Que 4 Evaluate all the expression given below ? (Fractional Form) (1.1 x 8 = 8.8 marks)

- A) $(1 - \frac{1}{2})$
B) $(1 - \frac{1}{2}) \times (1 - \frac{1}{2})$
C) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4})$
D) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5})$
E) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5}) \times (1 - \frac{1}{6})$
F) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5}) \times (1 - \frac{1}{6}) \times (1 - \frac{1}{7})$
G) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5}) \times (1 - \frac{1}{6}) \times (1 - \frac{1}{7}) \times (1 - \frac{1}{8})$
H) $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5}) \times (1 - \frac{1}{6}) \times (1 - \frac{1}{7}) \times (1 - \frac{1}{8}) \times (1 - \frac{1}{9})$

Que 5 Observe the pattern in previous question(Q4).

Answer the expression below without actually solving.

Reasoning required . (2 marks)

$$(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times (1 - \frac{1}{5}) \times \dots \times (1 - \frac{1}{96}) \times (1 - \frac{1}{97}) \times (1 - \frac{1}{98}) \times (1 - \frac{1}{99})$$

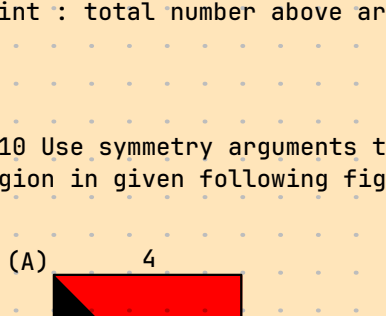
Section B : Area and Perimeter

Que 6 : Can you draw a shape where the numerical value of the area (in square units) is equal to the numerical value of the perimeter (in units)? Draw such shape and prove it with calculations. (Hint: Try simple shape like square)

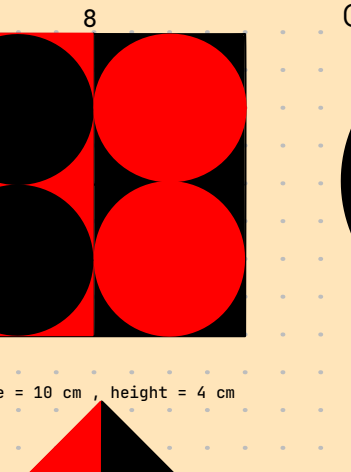
(4 marks)

Que 7 : Find the area and perimeter of given figure . (4 marks)

A , B , C are squares.



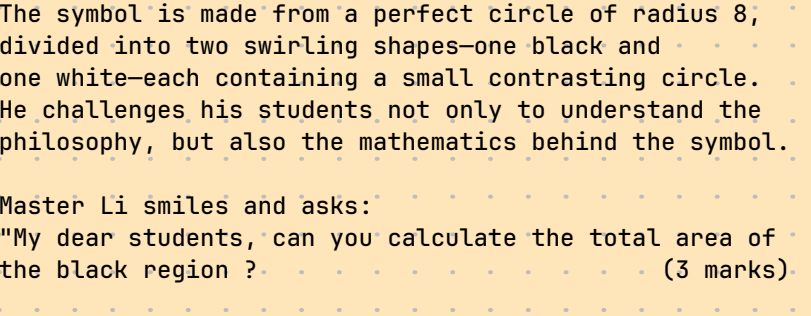
Que 8 : Answer the questions given below (2 + 4 = 6 marks)



i) Find the area of the shaded region.

ii) As you have calculated area of shaded region (ie A , square inside) , Calculate the side length of that square .

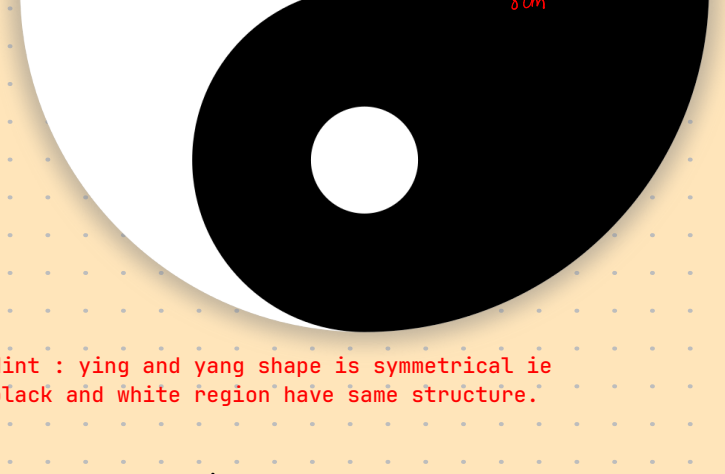
Que 9:Answer the questions given below (3.3+6.7=10 marks)



side length = ?
red area = ?
green area = ?
yellow area = ?
blue area = ?
brown area = ?
pink area = ?
total = red + green + yellow + blue + brown + pink = ?

Observe the pattern above , and find the value of
1 + 3 + 5 + 7 + 9 ... 95 + 97 + 99
Hint : total number above are 50 (ie (99+1)/2)

Q 10 Use symmetry arguments to find the area of red region in given following figures. (5 marks)



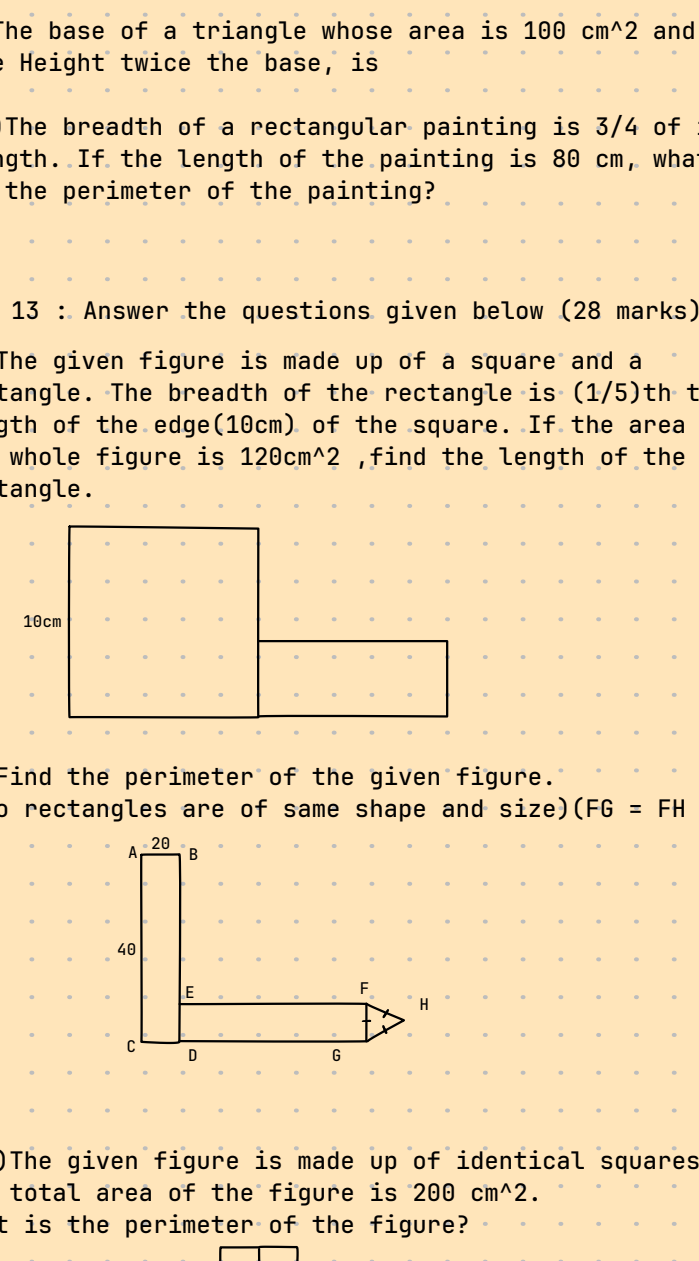
Que 11 In an ancient temple atop the Wudang Mountains, a wise monk named Master Li teaches students about the unity of opposites through the symbol of Yin and Yang. He carves a perfect Yin-Yang symbol into a circular stone tablet in the courtyard.

The symbol is made from a perfect circle of radius 8, divided into two swirling shapes—one black and one white—each containing a small contrasting circle. He challenges his students not only to understand the philosophy, but also the mathematics behind the symbol.

Master Li smiles and asks:

"My dear students, can you calculate the total area of the black region ? (3 marks)

Help the students to calculate the area of black region .
dimensions given below



Que 12 : Answer the questions given below (2x11 =22marks)

i)The length and breadth of a rectangle are (5a + 3) and (4a - 2). What will be perimeter ?

ii)The area of a triangle whose base is 100 cm and the Height twice the base, is

iii)The breadth of a rectangle is increased by 6 units. Its perimeter is now increased by?

iv)The area of a square is 64 sq. cm. If the sides this square are increased by 50% then what will be the area of new square?

v)A cuboid measures 48 m x 48 m x 64 m. How many cubes of side 16 m can fit in the box?

vi)The area of a square is 81 square units .Find its perimeter.

vii)Area of rectangle is 128 m^2 . If the length is 16 m then breadth = -----

viii)Reema wants to spread the carpet on the floor of dimensions 20 m x 26 m. If the cost of spreading the carpet is Rs 23 per sq m. calculate the cost of carpeting the area.

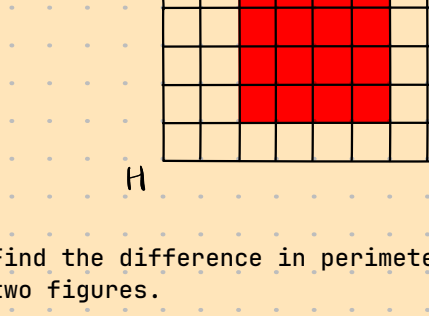
ix)Find the area of rectangular garden of length 25 m and breadth 20 m. Also, find the cost of manuring the garden at the rate of Rs 5 per m^2.

x)The base of a triangle whose area is 100 cm^2 and the Height twice the base, is

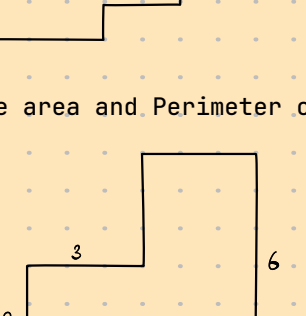
xi)The breadth of a rectangular painting is 3/4 of its length. If the length of the painting is 80 cm, what is the perimeter of the painting?

Que 13 : Answer the questions given below (28 marks)

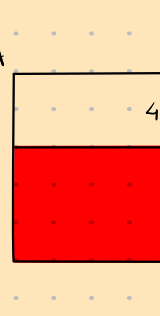
i) The given figure is made up of a square and a rectangle. The breadth of the rectangle is (1/5)th the length of the edge(10cm) of the square. If the area of the whole figure is 120cm^2 ,find the length of the rectangle.



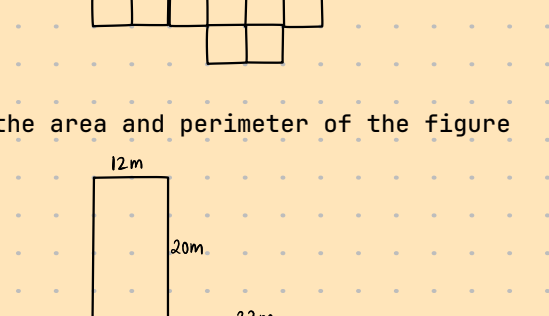
ii)Find the perimeter of the given figure. (Two rectangles are of same shape and size)(FG = FH = GH)



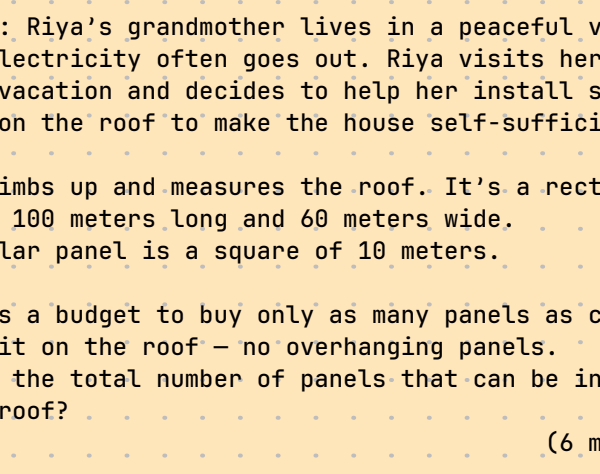
iii)The given figure is made up of identical squares. The total area of the figure is 200 cm^2. What is the perimeter of the figure?



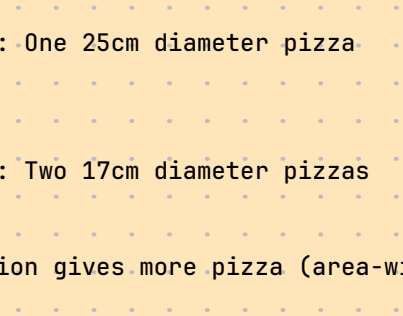
iv) Which shape has the largest area? Red , Blue or Green (Area of square = 2 sq. units)



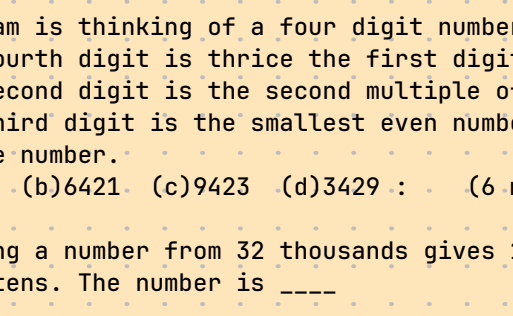
v) Find the area of the shaded part



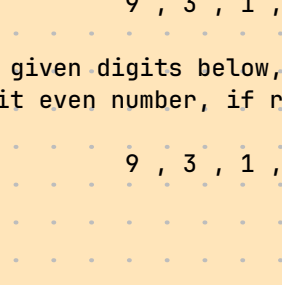
vi) Find the area and Perimeter of the given shape.



vii) In the given figure, AB is 2/3 as long as BC and DE = EF = FG. What is the perimeter of BCDE?



viii)In the figure, side of each square is 1 cm. The area, in square cm, of the shaded part is



ix) In the given figure, the area of the shaded square is 196 cm^2. What is the perimeter of the rectangle EFGH?

x) Find the difference in perimeters between the two figures.

xi) Find the area and Perimeter of the given shape

xii)Rectangle ACEG below is divided into 4 parts. BCDE is square. What is the area of shaded part?

xiii) If each square has perimeter 8 centimetres, then the perimeter of the following shape is -----.

xiv)Find the area and perimeter of the figure

Que 14 : Riya's grandmother lives in a peaceful village where electricity often goes out. Riya visits her during summer vacation and decides to help her install solar panels on the roof to make the house self-sufficient.

Riya climbs up and measures the roof. It's a rectangle that is 100 meters long and 60 meters wide. Each solar panel is a square of 10 meters.

Riya has a budget to buy only as many panels as can fully fit on the roof – no overhanging panels. What is the total number of panels that can be installed on the roof? (6 marks)

Que 15 : Two pizzas options :

Option A : One 25cm diameter pizza

Option B : Two 17cm diameter pizzas

Which option gives more pizza (area-wise)? (6 marks)

Section C : Number System

Que 16 Answer the following questions (32 marks)

i) Gautam is thinking of a four digit number.

• The fourth digit is thrice the first digit.

• The second digit is the second multiple of 2.

• The third digit is the smallest even number.

Find the number. (a)3426 (b)6421 (c)9423 (d)3429 : (6 marks)

ii)Taking a number from 32 thousands gives 14 hundreds and 26 tens. The number is ----

iii)What is the difference in the place value of the digits 8 and 9 in the numeral 8962321?

iv)Using all the given digits below, form the greatest possible 9-digit even number, if repetition of digits is allowed.

9 , 3 , 1 , 8

v)Using all the given digits below, form the smallest possible 9-digit even number, if repetition of digits is allowed.

9 , 3 , 1 , 8

vii)Using all the given digits below, form the smallest possible 4-digit odd number, if repetition of digits is allowed.

9 , 3 , 1 , 8

vii)15 hundreds multiplied by fifteen tenths multiplied by three fifteenths divided by forty five thousandths is equal to the successor of -----

viii)The smallest nine digit number that has three digits the same is -----.

ix)Number of thousandths in 6 tenths is -----.

x)400 thousand + 200 hundred + 350 tens = -----

xi) I am an even number. You will find me if you count in 7s. I am less than 100. I am more than 80. Who am I?
(a)72 (b)84 (c)96 (d)82

xii)Find the greatest number which divides 36 and 84 leaving no remainder in each case.

xiii) In number 97580, when the digits 7 and 5 as interchanged its place, then the difference between the original and the new number is

xiv)Sum of a number of two digits and the number obtained by reversing the digits of the first number is 110. If the difference of the digits is 4, then the number is
(a)62 (b)73 (c)84 (d) 51

xv)How many four digit numbers are there between 9 and 9000?

xvi)The expanded form of 8,263,934 is

Q17 Answer the following question (8 marks)

i)Using all the given digits 2, 3, 5, 7, form the smallest possible 4-digit odd number

ii)Using all the digits 1, 4, 6, 9, form the largest possible 4-digit even number

iii)Using all the digits 1, 4, 6, 9, form the largest possible 4-digit number

iv)Using all the digits 1, 4, 6, 2, form the smallest possible 4-digit number

Section D : Fractions

Que 18 Answer the following question (30 marks)

i) Mrs. Priya bought 3 litres of milk in the morning. There was $\frac{2}{3}$ litres left in the evening. How much milk was used during the day?

ii) Billy ate $\frac{5}{4}$ pizza and John ate $\frac{1}{4}$ pizzas. How much more pizza did Billy eat than John?

iii) Mrs. Sen makes $\frac{2}{3}$ of her garden into a vegetable garden. She plants tomatoes in $\frac{1}{4}$ of the vegetable garden. What fraction of the garden does she use to grow tomatoes?

iv) In a multi-storey building, $\frac{1}{5}$ of the 720 residents watch the Sports channel. Find the number of people who do not watch this channel.

v) The health club advises every child to drink $2\frac{3}{4}$ litres water in the morning, $\frac{1}{2}$ litres in the afternoon and litres before going to bed. How much water should a child drink in whole day?

vi) A vessel had $\frac{1}{4}$ L of milk. A cat drink $\frac{1}{5}$ L from vessel. How much milk was left in the vessel?

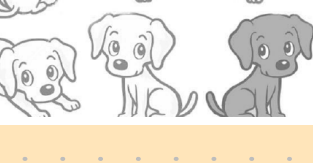
vii) How many minutes in $\frac{5}{6}$ of an hour?

viii) The price of a metre of cloth is $\frac{5}{2}$ Rs . What would be the price of $\frac{4}{3}$ metre of cloth?

ix) A cookie factory uses $\frac{3}{16}$ of a bag of flour in each bag of cookies. The factory used $\frac{3}{2}$ of a bag of flour yesterday. How many bags of cookies did the factory made yesterday?

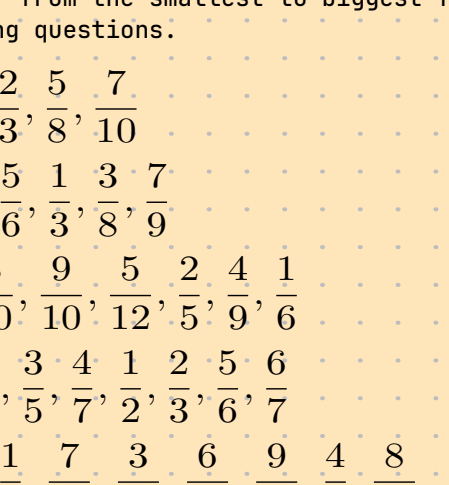
x) Anita works for 12 hours and sleeps for 8 hours. What fraction of the day does Anita sleep?

xi) P and Q are two points on the following number line. Each of them represents a fraction. Find their product.

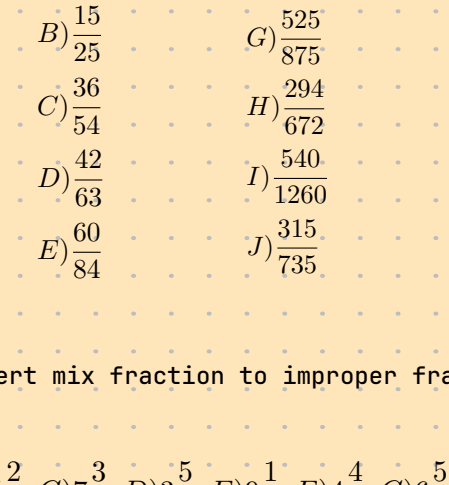


xii) If there are 10 apples and 5 oranges in the basket then what fraction of oranges are there in the fruit basket?

xiii) Below is an aquarium with different types of fishes swimming in it. What fraction of fishes are star FISHES?



xiv) Mother Labrador gave birth to 8 puppies. Off these puppies, 1 is black in colour whereas other 7 are golden coloured. What fraction of the whole group of puppies are golden Labrador.



xv) If $A + \frac{7}{2} = \frac{11}{3}$, A must be equal to
(a) $\frac{1}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{3}$ (d) $\frac{1}{5}$

Que 19 Order from the smallest to biggest fraction in the following questions.

(20 marks)

A) $\frac{1}{2}, \frac{3}{4}, \frac{2}{3}, \frac{5}{8}, \frac{7}{10}$

B) $\frac{4}{5}, \frac{2}{7}, \frac{5}{6}, \frac{1}{3}, \frac{3}{8}, \frac{7}{9}$

C) $\frac{6}{11}, \frac{3}{10}, \frac{9}{10}, \frac{5}{12}, \frac{2}{5}, \frac{4}{9}, \frac{1}{6}$

D) $\frac{11}{12}, \frac{7}{8}, \frac{3}{5}, \frac{4}{7}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}, \frac{7}{9}$

E) $\frac{5}{9}, \frac{2}{3}, \frac{1}{4}, \frac{7}{10}, \frac{3}{11}, \frac{6}{13}, \frac{9}{20}, \frac{4}{5}, \frac{8}{15}$

Que 20 Reduce the given fraction to lowest terms (20 marks)

- A) $\frac{6}{8}$ F) $\frac{336}{588}$
B) $\frac{15}{25}$ G) $\frac{525}{875}$
C) $\frac{36}{54}$ H) $\frac{294}{672}$
D) $\frac{42}{63}$ I) $\frac{540}{1260}$
E) $\frac{60}{84}$ J) $\frac{315}{735}$

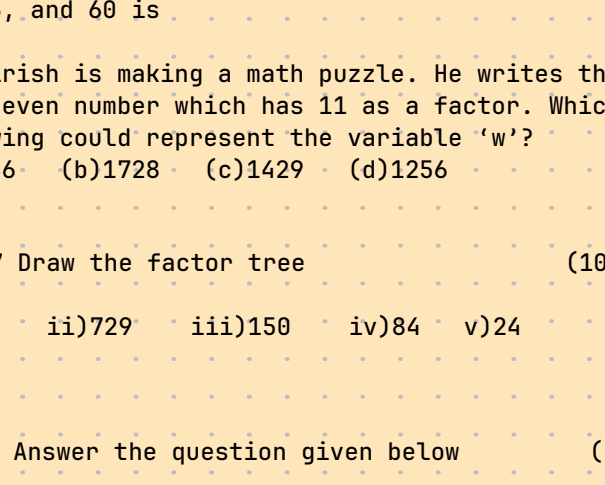
Que 21 Convert mix fraction to improper fractions (16 marks)

A) $2\frac{1}{3}$, B) $5\frac{2}{5}$, C) $7\frac{3}{4}$, D) $3\frac{5}{6}$, E) $9\frac{1}{2}$, F) $4\frac{4}{7}$, G) $6\frac{5}{8}$, H) $10\frac{3}{10}$

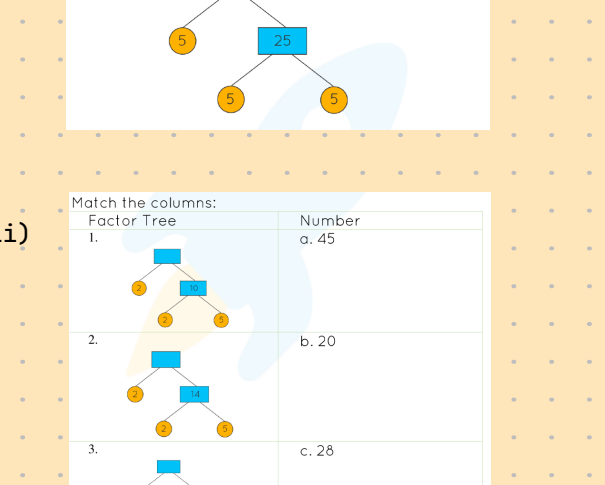
Que 22 Convert the following fractions to mixed numbers (if possible) (16 marks)

A) $\frac{17}{5}$, B) $\frac{45}{8}$, C) $\frac{29}{6}$, D) $\frac{9}{4}$, E) $\frac{22}{7}$, F) $\frac{12}{11}$, G) $\frac{3}{8}$, H) $\frac{5}{9}$

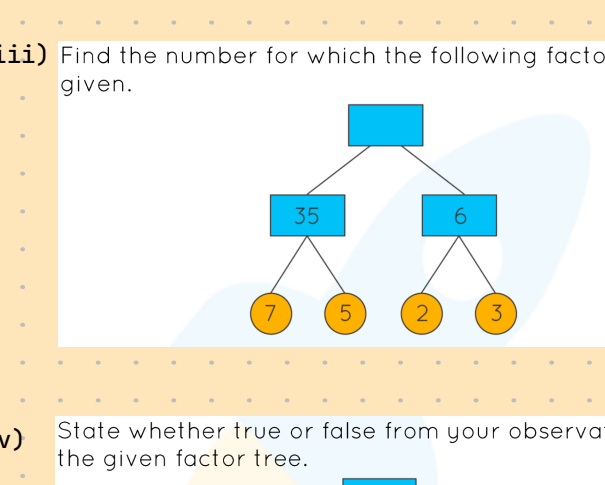
Que 23 Which of the following drawing shows $\frac{1}{4}$ (2 marks)



Que 24 Which of the following drawing shows $2 \times \frac{1}{3} = \frac{2}{3}$ (2 marks)



Que 25 Which of the following drawing shows $3 \times \frac{1}{5} = \frac{3}{5}$ (2 marks)



Section E : Factor and Multiples

Que 26 Answer the following question (14 marks)

i) The greatest number that will divide 37, 50, and 123 leaving remainders 1, 2, and 3 respectively is

ii) The greatest number that will divide 42, 67, and 97 leaving remainders 2, 3, and 5 respectively is:

iii) The greatest number that will divide 85, 122, and 157 leaving remainders 5, 4, and 2 respectively is

iv) The smallest 4-digit number exactly divisible by 12, 15, 20, and 35 is

v) The smallest 4-digit number exactly divisible by 18, 24, and 30 is

vi) The smallest 5-digit number exactly divisible by 24, 36, and 60 is

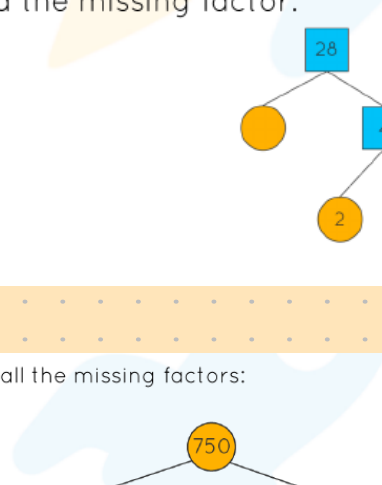
vii) Girish is making a math puzzle. He writes that 'w' is an even number which has 11 as a factor. Which of the following could represent the variable 'w'?
(a) 2156 (b) 1728 (c) 1429 (d) 1256

Que 27 Draw the factor tree (10 marks)

i) 126 ii) 729 iii) 150 iv) 84 v) 24

Que 28 Answer the question given below (18 marks)

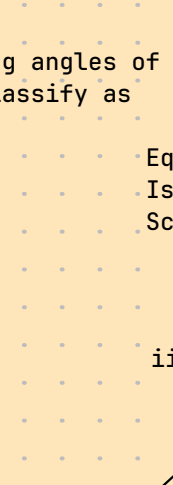
i) Find the number for which the following factor tree is given.



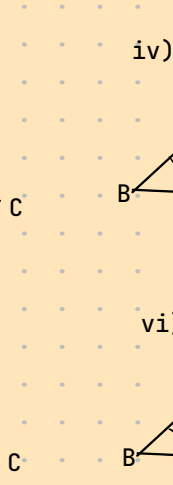
ii) Match the columns:

Factor Tree:	Number
1.	a. 45
2.	b. 20
3.	c. 28

iii) Find the number for which the following factor tree is given.

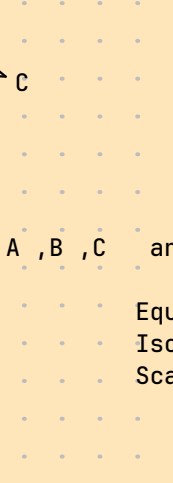


iv) State whether true or false from your observations on the given factor tree.



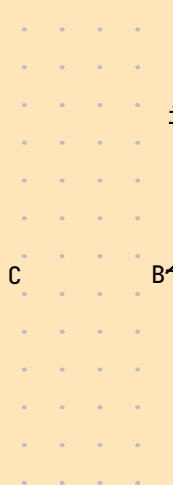
"The factor tree given above is for number 150."

v) Complete the following factor tree to pick the correct set of prime factors of 105.



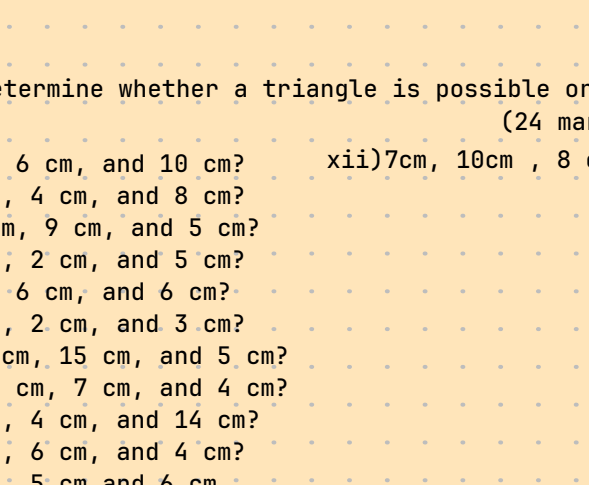
- a) $5 \times 3 \times 7$
b) $3 \times 7 \times 11$
c) $5 \times 5 \times 12$
d) $7 \times 11 \times 5$

vi) Fill in the blanks in the following factor tree to find the number and its prime factorization.

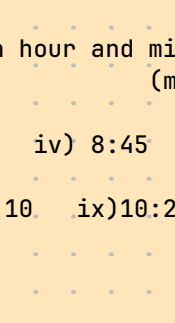


_____ = _____ $\times$ _____ $\times$ _____ $\times$ _____

vii) Complete the following factor tree:



viii) Find the missing factor.



ix) Find all the missing factors:

Que 29 Find prime factorisation, number of factors and sum of factor of following numbers (8 marks)

i) 105 ii) 315 iii) 1008 iv) 3628800

Section F : Geometry

Que 30 Find the missing angles of the triangle, compare sides a , b , c and classify as

Angle Side
Acute-angled Equilateral
Obtuse-angled Isosceles
Right-angled Scalene

(28 marks)

i)

ii)

iii)

iv)

v)

vi)

vii)

Que 31 Compare angles A , B , C and classify as

Angle Side
Acute-angled Equilateral
Obtuse-angled Isosceles
Right-angled Scalene

(18 marks)

i)

ii)

iii)

iv)

v)

vi)

Que 32 Determine whether a triangle is possible or not (24 marks)

i) 5 cm, 6 cm, and 10 cm? xii) 7cm, 10cm , 8 cm ?

ii) 3 cm, 4 cm, and 8 cm?

iii) 7 cm, 9 cm, and 5 cm?

iv) 2 cm, 2 cm, and 5 cm?

v) 6 cm, 6 cm, and 6 cm?

vi) 1 cm, 2 cm, and 3 cm?

vii) 10 cm, 15 cm, and 5 cm?

viii) 12 cm, 7 cm, and 4 cm?

ix) 9 cm, 4 cm, and 14 cm?

x) 11 cm, 6 cm, and 4 cm?

xi) 8 cm, 5 cm and 6 cm

Que 33 Determine angle between hour and minute hand ? (marks 10)

i) 10:00 ii) 9:00 iii) 8:30 iv) 8:45 v) 9:50

vi) 1:32 vii) 4:16 viii) 5:10 ix) 10:23 x) 2:16