DC Convent School

Najafgarh, New Delhi

Class IX

Summer Holidays Homework

English

Do the work in A4 colored sheets and maintain them in a flip folder

1.Plan a visit to a nearby park in the evening click a picture of yours enjoying there and write about the experience in 100-150 words.

2. Make a collage of 'Save the Environment' and write an essay of the same.

3.Write a self-composed poem in minimum 3 stanzas.

4.Study in detail about the lost plane in the Bermuda triangle and explain the case and its facts in your words.(At least one page)

Hindi

1 ल्हासा की ओर पाठ के आधार पर आप अपनी किसी यात्रा का वर्णन करो जिसमें यात्रा के समस्त पहलुओं को समेटा गया है ।

2 प्रेमचंद के बारे में जानकारी प्राप्त करो उनके लेखन की विशेषताएं लिखो और बताओ कि वह हिंदी साहित्य में इतने प्रसिद्ध क्यों हैं ।

3 .100 तक गिनती हिंदी में लिखना में याद करना है।

4 .20 पेज़ सुलेख लिखो ।

5. ऋतु पर अनुच्छेद लिखो ।

6.अपने मित्र को जन्मदिन की शुभकामना देते हुए पत्र लिखिए ।

7.Activity वाक्य के भेद चार्ट पर दर्शाओ ।

8. पढ़ाए गए सभी पाठकों की पुनरावृत्ति करें तथा प्रश्न उत्तर याद करें।

9. कोई भी दो स्वतंत्रता सेनानी का चित्र चिपकाइये और उनके बारे में लिखिए।

Note- All work done in project file .

SOCIAL SCIENCE Geography

1. Learn all notebook work

2. Complete your lab manual (geography chapter 1&2, civics chapter 1&2)

3. Make chart and models according to your roll number

   A. 1 to 10 roll number students make chart on soil

B. 11 to 25 Roll number Student make chart on agriculture

C. 26 above student make chart on communication

  4. Girls make a model on primary activity and boys make a model on secondary activity industries

  5. Activity make brief research on the topic COVID-19.HOLIDAY HOMEWORK SUMMER VACATION

HISTORY

CH. 1 THE FRENCH REVOLUTION READ CHAPTER & WRITE SOME MAJOR OR MINOR POINTS IN YOUR OWN LANUGUAGE AND MAKE A FLOW CHART ACCORDINGLY.

CIVICS

ECO: REVISE LESSON- 1,2 FOR TEST AFTER VACATION.

PAT

Create a sample assessment on :

a) Identify the qualities of a good physical activity facilitator.

b) list at least five points that indicates that a physical activity facilitator nurtures each student.

c)make a bulletin on the notice board on the importance of physical activities and healthy eating habits

d)what are the advantages of using report card

e)Define sports, game and play

Lesson Plan

a) conduct a physical activity to make children practice catching a ball

b)on some examples of the activities they are suitable for the age group of (3 to 8) years.

Science

1. Learn all the chapter done so far.

2. Complete your lab manual in a proper way.

3. Make plant cell and animal cell using clay.

4. Make a scrap book explaining any 5 metal and any 5 non-metals.

Mathematics

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Project work

1. Prepare a Project File on the history of Pie (π) and correlate Pie (π) in real life situations.
2. Prepare a bar graph representing the literacy rate of two countries (India, China) for the last five years i.e. 2019 to 2023.
3. Take any three temples from Uttar Pradesh and three temples from Tamil Nadu and observe thoroughly their construction work that how mathematics is used in their construction. Prepare a project file on it.

Lab Manual

➢ Do Lab Activity Number 1 to 5 in the lab Manual Activity book.

Worksheets

➢ Do the given worksheets in the separate assignment file.

1. Prove that $\sqrt{5} - \sqrt{3}$ is not a rational number.
2. Arrange the following in descending order of magnitude: $\sqrt[8]{90}, \sqrt[4]{10}, \sqrt{6}$
3. Simplify the following:

   $(i)\left(4\sqrt{3} - 2\sqrt{2}\right)\left(3\sqrt{2} + 4\sqrt{3}\right)$

   $(ii)\left(2 + \sqrt{3}\right)\left(3 + \sqrt{5}\right)$

   $(iii)\left(\sqrt{3} + \sqrt{2}\right)^2$

   $(iv)\left(\dfrac{2}{3}\sqrt{7} - \dfrac{1}{2}\sqrt{2} + 6\sqrt{11}\right) + \left(\dfrac{1}{3}\sqrt{7} + \dfrac{3}{2}\sqrt{2} - \sqrt{11}\right)$

4. Rationalize the denominator of the following:

   $(i)\ \dfrac{2}{\sqrt{3} - \sqrt{5}}$ $(ii)\dfrac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ $(iii)\dfrac{6}{\sqrt{5} + \sqrt{2}}$ $(iv)\dfrac{1}{8 + 5\sqrt{2}}$

   $(v)\dfrac{3 - 2\sqrt{2}}{3 + 2\sqrt{2}}$ $(vi)\dfrac{\sqrt{3} - 1}{\sqrt{3} + 1}$ $(vii)\dfrac{4}{\sqrt{7} + \sqrt{3}}$ $(viii)\dfrac{1}{5 + 3\sqrt{2}}$

5. Rationalise the denominator of the following:

   $(i)\dfrac{2}{3\sqrt{3}}$ $(ii)\dfrac{16}{\sqrt{41} - 5}$ $(iii)\dfrac{\sqrt{5} + \sqrt{2}}{\sqrt{5} - \sqrt{2}}$

   $(iv)\dfrac{\sqrt{40}}{\sqrt{3}}$ $(v)\dfrac{3 + \sqrt{2}}{4\sqrt{2}}$ $(vi)\dfrac{2 + \sqrt{3}}{2 - \sqrt{3}}$

   $(vii)\dfrac{\sqrt{6}}{\sqrt{2} + \sqrt{3}}$ $(viii)\dfrac{3\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$ $(ix)\dfrac{4\sqrt{3} + 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$

6. If $a = 6 - \sqrt{35}$, find the value of $a^2 + \dfrac{1}{a^2}$.

7. If $x = 3 + \sqrt{8}$, find the value of (i) $x^2 + \dfrac{1}{x^2}$ and (ii) $x^4 + \dfrac{1}{x^4}$

8. Simplify, by rationalizing the denominator $\dfrac{2\sqrt{6}}{\sqrt{2} + \sqrt{3}} + \dfrac{6\sqrt{2}}{\sqrt{6} + \sqrt{3}} - \dfrac{8\sqrt{3}}{\sqrt{6} + \sqrt{2}}$

9. Simplify, by rationalizing the denominator

   $\dfrac{1}{3 - \sqrt{8}} - \dfrac{1}{\sqrt{8} - \sqrt{7}} + \dfrac{1}{\sqrt{7} - \sqrt{6}} - \dfrac{1}{\sqrt{6} - \sqrt{5}} + \dfrac{1}{\sqrt{5} - 2}$

10. If $x = \dfrac{\sqrt{2} + 1}{\sqrt{2} - 1}$ and $y = \dfrac{\sqrt{2} - 1}{\sqrt{2} + 1}$, find the value of $x^2 + y^2 + xy$.

11. If $x = \dfrac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, find the value of $x^2 + y^2$.

12. If $x = \dfrac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$ and $y = \dfrac{\sqrt{5} - \sqrt{3}}{\sqrt{5} + \sqrt{3}}$, find the value of $x + y + xy$.

13. If $x = \dfrac{2-\sqrt{5}}{2+\sqrt{5}}$ and $y = \dfrac{2+\sqrt{5}}{2-\sqrt{5}}$, find the value of $x^2 - y^2$.

14. If $\dfrac{5+2\sqrt{3}}{7+\sqrt{3}} = a - \sqrt{3}b$, find a and b where a and b are rational numbers.

15. If a and b are rational numbers and $\dfrac{4+3\sqrt{5}}{4-3\sqrt{5}} = a + b\sqrt{5}$, find the values of a and b.

16. If a and b are rational numbers and $\dfrac{2+\sqrt{3}}{2-\sqrt{3}} = a + b\sqrt{3}$, find the values of a and b.

17. If a and b are rational numbers and $\dfrac{\sqrt{11}-\sqrt{7}}{\sqrt{11}+\sqrt{7}} = a - b\sqrt{77}$, find the values of a and b.

18. Evaluate: $\dfrac{1}{\sqrt{2}+1} + \dfrac{1}{\sqrt{3}+\sqrt{2}} + \dfrac{1}{\sqrt{4}+\sqrt{3}} + \ldots\ldots\ldots + \dfrac{1}{\sqrt{9}+\sqrt{8}}$

19. If $x = \dfrac{1}{2+\sqrt{3}}$, find the value of $2x^3 - 7x^2 - 2x + 1$.

20. If $x = \dfrac{1}{2-\sqrt{3}}$, find the value of $x^3 - 2x^2 - 7x + 5$.

21. If $\sqrt{2} = 1.414$ and $\sqrt{5} = 2.236$, find the value of $\dfrac{\sqrt{10}-\sqrt{5}}{2\sqrt{2}}$ upto three places of decimals.

22. Find six rational numbers between 3 and 4.

23. Find five rational numbers between $\dfrac{3}{5}$ and $\dfrac{4}{5}$

24. Find the value of a and b in $\dfrac{\sqrt{3}-1}{\sqrt{3}+1} = a + b\sqrt{3}$.

25. Find the value of a and b in $\dfrac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

26. Find the value of a and b in $\dfrac{5-\sqrt{6}}{5+\sqrt{6}} = a - b\sqrt{6}$

27. Simplify $\dfrac{4+\sqrt{5}}{4-\sqrt{5}} + \dfrac{4-\sqrt{5}}{4+\sqrt{5}}$ by rationalizing the denominator.

28. Simplify $\dfrac{\sqrt{5}-1}{\sqrt{5}+1} + \dfrac{\sqrt{5}+1}{\sqrt{5}-1}$ by rationalizing the denominator.

29. Simplify $\dfrac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ by rationalizing the denominator.

30. If x $= \dfrac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, find (i) $x^2 + \dfrac{1}{x^2}$ (ii) $x^4 + \dfrac{1}{x^4}$.

31. If x $= 4 - \sqrt{15}$, find (i) $x^2 + \dfrac{1}{x^2}$ (ii) $x^4 + \dfrac{1}{x^4}$.

32. If x $= 2 + \sqrt{3}$, find (i) $x^2 + \dfrac{1}{x^2}$ (ii) $x^4 + \dfrac{1}{x^4}$.

33. Represent the real number $\sqrt{10}$ on the number line.

34. Represent the real number $\sqrt{13}$ on the number line.

PRACTICE QUESTIONS
CLASS IX : CHAPTER - 2
POLYNOMIALS

1. Factorize the following: $9x^2 + 6x + 1 - 25y^2$.

2. Factorize the following: $a^2 + b^2 + 2ab + 2bc + 2ca$

3. Show that $p(x) = x^3 - 3x^2 + 2x - 6$ has only one real zero.

4. Find the value of a if $x + 6$ is a factor of $x^3 + 3x^2 + 4x + a$.

5. If polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ leaves the same remainder when each is divided by $x - 4$, find the value of a..

6. The polynomial $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ when divided by $(x - 1)$ and $(x + 1)$ leaves the remainders 5 and 19 respectively. Find the values of a and b. Hence, find the remainder when $f(x)$ is divided by $(x - 2)$.

7. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 2x + a$ leave the same remainder when divided by $(x - 2)$, find the value of a. Also, find the remainder in each case.

8. If the polynomials $az^3 + 4z^2 + 3z - 4$ and $z^3 - 4z + a$ leave the same remainder when divided by $z - 3$, find the value of a.

9. The polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 3a - 7$ when divided by $x + 1$ leaves the remainder 19. Find the values of a. Also find the remainder when $p(x)$ is divided by $x + 2$.

10. If both $x - 2$ and $x - \dfrac{1}{2}$ are factors of $px^2 + 5x + r$, show that $p = r$.

11. Without actual division, prove that $2x^4 - 5x^3 + 2x^2 - x + 2$ is divisible by $x^2 - 3x + 2$.

12. Simplify $(2x - 5y)^3 - (2x + 5y)^3$.

13. Multiply $x^2 + 4y^2 + z^2 + 2xy + xz - 2yz$ by $(-z + x - 2y)$.

14. If a, b, c are all non-zero and $a + b + c = 0$, prove that $\dfrac{a^2}{bc} + \dfrac{b^2}{ca} + \dfrac{c^2}{ab} = 3$

15. If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that $a^3 + b^3 + c^3 - 3abc = -25$.

16. Without actual division, prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$.

17. Without actual division, prove that $x^3 - 3x^2 - 13x + 15$ is exactly divisible by $x^2 + 2x - 3$.

18. Find the values of a and b so that the polynomial $x^3 - 10x^2 + ax + b$ is exactly divisible by $(x - 1)$ as well as $(x - 2)$.

19. Find the integral zeroes of the polynomial $2x^3 + 5x^2 - 5x - 2$.

20. If $(x - 3)$ and $\left(x - \dfrac{1}{3}\right)$ are both factors of $ax^2 + 5x + b$, then show that $a = b$.

21. Find the values of a and b so that the polynomial $x^4 + ax^3 - 7x^2 + 8x + b$ is exactly divisible by $(x + 2)$ as well as $(x + 3)$.

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22. If $x^3 + ax^2 + bx + 6$ has $(x - 2)$ as a factor and leaves a remainder 3 when divided by $(x - 3)$, find the values of a and b.

23. Find the value of $x^3 + y^3 + 15xy - 125$ if $x + y = 5$.

24. Without actually calculating, find the value of $(25)^3 - (75)^3 + (50)^3$.

25. Factorise each of the following cubic expressions:
    (i) $8x^3 - y^3 - 12x^2y + 6xy^2$
    (ii) $27q^3 - 125p^3 - 135q^2p + 225qp^2$
    (iii) $8x^3 + 729 + 108x^2 + 486x$
    (iv) $27x^3 - \dfrac{1}{216} - \dfrac{9}{2}x^2 + \dfrac{1}{4}x$

26. Factorise:
    (i) $x^3 + 216y^3 + 8z^3 - 36xyz$
    (ii) $a^3 - 64b^3 - 27c^3 - 36abc$

27. Factorise: $\left(\dfrac{1}{2}x - 3y\right)^3 + \left(3y - \sqrt{3}z\right)^3 + \left(\sqrt{3}z - \dfrac{1}{2}x\right)^3$

28. Give one example each of a binomial of degree 35, and of a monomial of degree 100.

29. Find a zero of the polynomial $p(x) = 2x + 1$.

30. Verify whether 2 and 0 are zeroes of the polynomial $x^2 - 2x$.

31. Find the zero of the polynomial in each of the following cases:
    (i) $p(x) = x + 5$ (ii) $p(x) = x - 5$ (iii) $p(x) = 2x + 5$
    (iv) $p(x) = 3x - 2$ (v) $p(x) = 3x$ (vi) $p(x) = ax, a \neq 0$

32. Find the value of each of the following polynomials at the indicated value of variables:
    (i) $p(x) = 5x^2 - 3x + 7$ at $x = 1$.
    (ii) $q(y) = 3y^3 - 4y + \sqrt{11}$ at $y = 2$.
    (iii) $p(t) = 4t^4 + 5t^3 - t^2 + 6$ at $t = a$.

33. Divide $p(x)$ by $g(x)$, where $p(x) = x + 3x^2 - 1$ and $g(x) = 1 + x$.

34. Divide the polynomial $3x^4 - 4x^3 - 3x - 1$ by $x - 1$.

35. Find the remainder obtained on dividing $p(x) = x^3 + 1$ by $x + 1$.

36. Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $x - 1$.

37. Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is a multiple of $2t + 1$.

38. Check whether $p(x)$ is a multiple of $g(x)$ or not, where $p(x) = x^3 - x + 1$, $g(x) = 2 - 3x$.

39. Check whether $g(x)$ is a factor of $p(x)$ or not, where $p(x) = 8x^3 - 6x^2 - 4x + 3$, $g(x) = \dfrac{x}{3} - \dfrac{1}{4}$.

40. Find the remainder when $x^3 - ax^2 + 6x - a$ is divided by $x - a$.

41. Examine whether $x + 2$ is a factor of $x^3 + 3x^2 + 5x + 6$ and of $2x + 4$.

PRACTICE QUESTIONS
CLASS IX : CHAPTER - 3
COORDINATE GEOMETRY

1. Which of the following points lie in I and II quadrants?
   (1, 1), (2, –3), (–2, 3), (-1, 1), (–3, –2), (4, 3)

2. Which of the following points lie on (a) x-axis (b) y-axis?
   (5, 1), (8, 0), (0, 4), (–3, 0), (0, –3), (0, 5), (0, 0)

3. If the x-coordinate of a point is negative, it can lie in which quadrants?

4. From the figure, write the coordinates of the point P, Q, R and S. Does the line joining P and Q pass through origin?
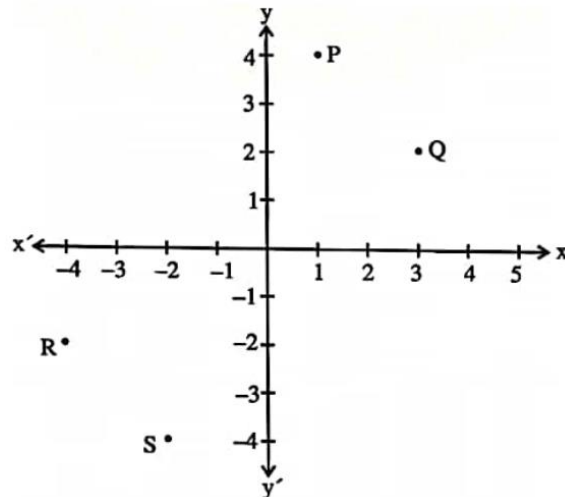
5. Write the coordinates of the following points:
   (i)   lying on both axes
   (ii) lying on x-axis and with x-coordinate 4
   (iii) lying on y-axis with y-coordinate –3.

6. The coordinates of the three vertices of a rectangle ABCD are A(3, 2), B(–4, 2), C(–4, 5). Plot these points and write the coordinates of D.

7. ABC is an equilateral triangle as shown in the figure. Find the coordinates of its vertices.
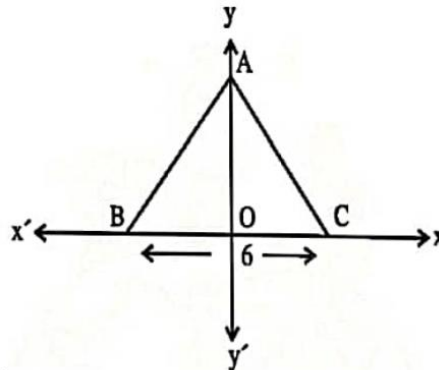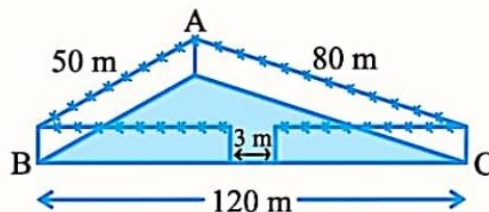
HERON'S FORMULA

1. Find the area of a triangle whose sides are 35 cm, 45 cm and 50 cm.

2. An isosceles triangle has perimeter 30 cm and each of its equal sides is 12 cm. Find its area. (use $\sqrt{15} = 3.88$)

3. The measure of one side of a right triangular field is 4.2 m. If the difference of the lengths of hypotenuse and the other is 14m, find the sides of the triangle and its area.

4. Find the area of the quadrilateral ABCD given in the below figure
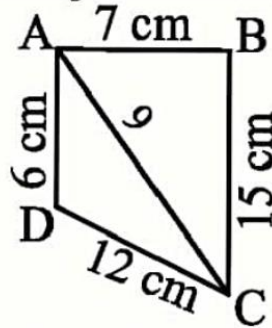
5. The perimeter of a rhombus is 40cm. If one of its diagonal is 16cm, find the area of the rhombus.

6. Two parallel sides of a trapezium are 60cm and 77cm and the other sides are 25cm and 26cm. Find the area of the trapezium.

7. Find the area of quadrilateral ABCD in which AD = 24cm, ∠BAD = 90⁰ and B, C and D form an equilateral triangle of side 26cm. (use $\sqrt{3} = 1.73$)

8. The height of an equilateral triangle measures 9cm. Find its area, correct to two places of decimals (use $\sqrt{3} = 1.73$)

9. A triangular park ABC has sides 120m, 80m and. A gardener *Dhania* has to put a fence all around it and also plant grass inside. How much area does she need to plant? Find the cost of fencing it with barbed wire at the rate of Rs 20 per metre leaving a space 3m wide for a gate on one side.


10. A traffic signal board, indicating 'SCHOOL AHEAD', is an equilateral triangle with side '*a*'. Find the area of the signal board, using Heron's formula. If its perimeter is 180 cm, what will be the area of the signal board?

11. A park, in the shape of a quadrilateral ABCD, has ∠C = 90°, AB = 9 m, BC = 12 m, CD = 5 m and AD = 8 m. How much area does it occupy?

12. Find the area of a quadrilateral ABCD in which AB = 3 cm, BC = 4 cm, CD = 4 cm, DA = 5 cm and AC = 5 cm.

13. There is a slide in a park. One of its side walls has been painted in some colour with a message "KEEP THE PARK GREEN AND CLEAN". If the sides of the wall are 15 m, 11 m and 6 m, find the area painted in colour.
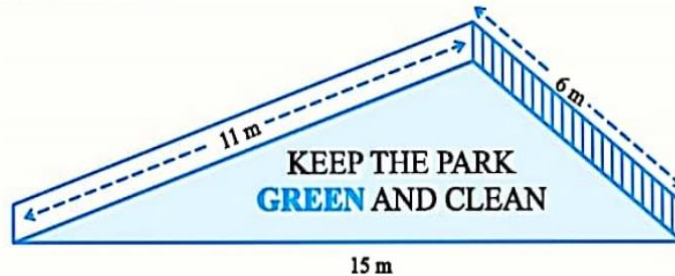
14. Students of a school staged a rally for cleanliness campaign. They walked through the lanes in two groups. One group walked through the lanes AB, BC and CA; while the other through AC, CD and DA. Then they cleaned the area enclosed within their lanes. If AB = 9 m, BC = 40 m, CD = 15 m, DA = 28 m and ∠B = 90°, which group cleaned more area and by how much? Find the total area cleaned by the students (neglecting the width of the lanes).
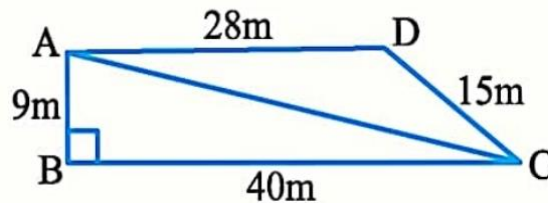
15. Sanya has a piece of land which is in the shape of a rhombus. She wants her one daughter and one son to work on the land and produce different crops. She divided the land in two equal parts. If the perimeter of the land is 400 m and one of the diagonals is 160 m, how much area each of them will get for their crops?

16. Find the area of a triangle, two sides of which are 8 cm and 11 cm and the perimeter is 32 cm.

17. A triangle has sides 35 cm, 54 cm and 61 cm long. Find its area. Also find smallest of its altitudes.

18. The sides of a triangular plot are in the ratio 3 : 5 : 7 and its perimeter is 300 m. Find its area.

19. A triangle and a parallelogram have the same base and the same area. If the sides of the triangle are 26 cm, 28 cm and 30 cm, and the parallelogram stands on the base 28 cm, find the height of the parallelogram.

20. A rhombus shaped field has green grass for 18 cows to graze. If each side of the rhombus is 30 m and its longer diagonal is 48 m, how much area of grass field will each cow be getting?

21. Sides of a triangle are in the ratio of 12 : 17 : 25 and its perimeter is 540cm. Find its area.

22. The base of an isosceles triangle is 10 cm and one of its equal sides is 13 cm. Find its area.

23. Find the area of a right triangle in which the sides containing the right angle measure 20 cm and 15 cm.