



MATHS

BOOKS - V PUBLICATION

Parallel Lines

Question Bank

1. Draw an 8 centimetres long line and divide it in the ratio 2.: 3.



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2. Draw a rectangle of perimeter 15 cm and sides are in the 3: 4.



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3. Draw triangles specified below, each of perimeter 10 centimetres.

i) Equilateral triangle ii) Sides in the ratio 3: 4:

5 iii) Sides in the ratio 2: 3: 4

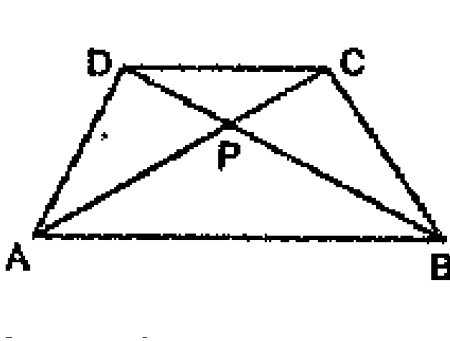


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4. In the picture below, the diagonals of the trapezium $ABCD$ intersect at P .

Prove that

$$PA \times PD = PB \times PC.$$



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5. Draw a triangle of perimeter 15 centimetres and sides are in the ratio 3:3:4



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6. Draw a rectangle of perimeter 20 centimetres and sides in the ratio 3:4



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7. Prove that diagonals of trapezium cut each other proportionally.



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8. Draw a triangle of perimeter 13.7 cm and sides are in the ratio 2: 3: 4.



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9. Draw a triangle of perimeter 14 cm and sides in the ratio 3: 4: 5.



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10. In the picture, the perpendicular is drawn from the midpoint of the hypotenuse of a right triangle. to the base. Calculate the length of the third side of the large right triangle and the lengths of all three sides of the small right triangle.



11. Draw a right triangle and the perpendicular from the midpoint of the hypotenuse to the base.

i) Prove that this perpendicular is half the perpendicular side of the large triangle.

ii) Prove that this perpendicular bisects the bottom side of the larger triangle.

iii) Prove that in the large triangle, the distances from the midpoint of the hypotenuse to all the vertices are equal.

iv) Prove that the circumcentre of a right triangle is the midpoint of its hypotenuse.

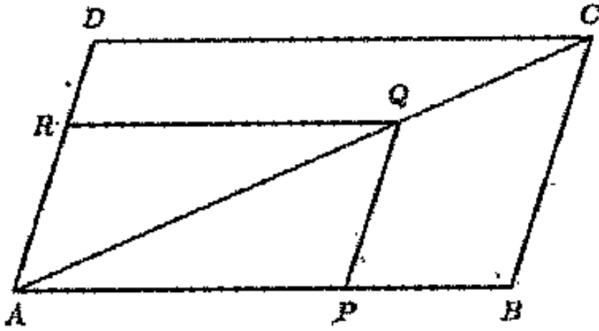


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12. In the parallelogram $ABCD$, the line drawn through Q point P on AB , parallel to BC meets AC at Q . The line through Q , parallel to AB meets AD R .

Prove that

$$\frac{AP}{PB} = \frac{AR}{RD}$$

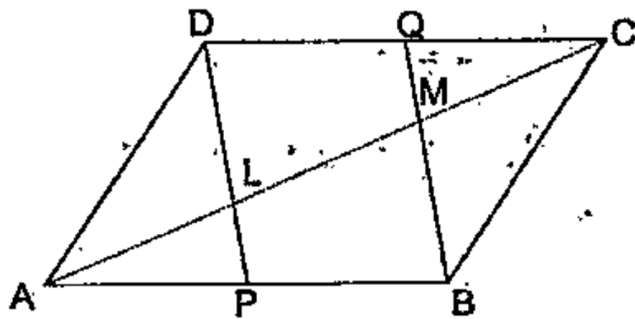


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13. In the picture below, two vertices of a parallelogram are joined to the mid points of two sides.

Prove that these lines divides the diagonal in

the picture into three equal parts.



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14. Prove that the quadrilateral formed by joining the mid points of the sides of a quadrilateral is a parallelogram.

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15. In trapezium ABCD, CD is parallel to AB. E and F are points on the non parallel sides. If EF is parallel to AB, then
prove that $\frac{AE}{ED} = \frac{BF}{FC}$



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16. In $\triangle ABC$, $AB = 6\text{cm}$. P is a point on AB. The line drawn parallel to BC through P meets AC at Q. If the length AP is double the length of PB and

the length of AQ is 1 cm more than QC , what is the length of AC ?



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17. In triangle ABC the length of AB is 6 centimetres and the length of AC is 5 centimetres. The length of AP is 4 centimetres.

The line PQ is parallel to BC .

Find the lengths of AQ and QC .



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18. In triangle ABC, a line parallel to BC cuts AB and AC at P and Q. Show that $AP/AB = AQ/AC$



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19. ABCD is a quadrilateral in which P, Q, R and S are midpoints of the sides AB, BC, CD and DA. AC is a diagonal. Show that

i) SR is parallel to AC, and $SR = \frac{1}{2} AC$.

ii) $PQ = SR$

iii) PQRS is a parallelogram.



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20. Given triangle ABC, lines are drawn through A, B and C parallel respectively to the sides BC, CA and AB forming PQ .

Show that $BC = \frac{1}{2}QR$



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21. In ABC, the line through a point P on BC, parallel to AC meets AB at Q. The line through Q, parallel to AP, meet BC at R



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22. AB and CD are parallel lines in the picture.

Prove that $AP \cdot PC = BP \cdot PD$



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23. The sides of the triangle are in the ratio 2: 2: 3 and its perimeter is 12cm. Draw the triangle.



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24. In the figure, MN is parallel to QR. PM =6 centimetres, P Q=10 centimetres.

a) What is the length of MQ?

b) What is PN : NR?



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25. In the figure, PQ is parallel to BC PA: PB=2:3.

AB=5centimetres,AQ=4 centimeters.

a) Find AQ: QC.

b) What is the length of QC ?

c) Find AQ: AC



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26. In the figure, O is the centre of the circle.

angle P=angle R=90, OP=2 centimetres PR=RB.

a) What is the measure of angle B ? b) What is the length of BC?

c) Find the length of QR.



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27. P, Q, R are the mid points of sides of triangle ABC

a) if $BC=10$ centimetres, what is the length of PQ?

b) If the area of triangle APQ is x , what is the area of triangle ABC? c) Find area of parallelogram PQRB. d) Draw a triangle and then draw a parallelogram with area half the area of the triangle.



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28. in the figure, the vertical lines are parallel.

$AR:RP:PB=1:2:2$ $AS=TS$, $QC=QT$

a) What is the ratio of sides of triangle TSQ?

b) Find the perimeter of the triangle if $Sa = 6$ centimeters.

c) What is the length of AC?



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29. The sides of rectangle are 6 centimetres and 2 centimetres.

a) Draw the rectangle.

b) Draw another rectangle of the same perimeter with sides in the ratio 5: 4



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30. Draw a rectangle of perimeter 18 centimetres and sides in the ratio 3: 4.



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31. In the figure, $BC=10$ cm, $AD=6$ cm $\angle PQB = \angle$

$\angle ABD$, $\angle PRC = \angle ACD$, $AP = 3$ cm, then

a) What is the area of triangle ABC?

b) What is the ratio $AD : PD$?

c) Calculate the area of triangle PQR.



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32. In the figure, XY is parallel to QR . $PX=2$ cm,

$QX=4$ cm, $PR=9$ cm.

a) Find PY:YR.

b) Find the length of PY.



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33. Draw a line of length 13 centimetres and divide it in the ratio 1: 2: 3



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34. The midpoints of sides of triangle ABC are P, Q, R, If the perimeter of triangle PQR is 18

centimetres.

a) How many times of PQ is BC ?

b) What is the perimeter of triangle ABC ?



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35. In the figure, the horizontal lines are parallel. The distance between them are 3 centimetres, 4 centimetres, 5 centimetres respectively. If $QR = 8$ centimetres then

a) Find the ratio $PQ : QR : RS$

b)if $RS=RT,PQ=QT$,calculate perimeter of triangle QRT.



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36. In the following figure, the sides AB, AD and the diagonal AC. of the quadrilateral ABCD are extended and marked the points C, E, F. Also EF, FG are parallel to the 'sides DC, CE respectively and $AC:CF=2:1$.

a) Find the ratio AB:BG.

b) If AB=10 centimetres, what is AG?

c) How many times the perimeter of quadrilateral ABCD?



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37. The midpoints of the sides of the quadrilateral ABCD are P, R, S respectively.

When they are joined a rectangle is obtained :

a) Which lines are parallel to BD?

b) What is the angle between the diagonals of quadrilateral ABCD? Why?

c) What types of quadrilaterals make a

rectangle when the midpoints of its sides are joined?



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38. Draw a triangle of perimeter 11 centimetres and sides in the ratio 2: 3: 3.



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39. In the figure, AB, CD and EF are parallel:

PC=4 cm, CE=2cm PD=6 cm Find DF and PF.



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40. Draw a triangle of perimeter 12 centimetres and sides in the ratio 1: 3: 3.



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41. In the figure, P and Q are midpoints of sides AC and BC of the triangle ABC. R and S are midpoints of lines BC and AC respectively.

i) Find $\angle C$: $\angle Q$ wf

ii) Prove that PQRS is a parallelogram.



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42. In triangle ABC, $\angle C = 90^\circ$, AC = 12 cm, BC = 16 cm and CD is perpendicular to AB.

i) Find the length of AB.

ii) Find the length of AD and BD.

iii) Find the length of CD.



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43. Draw a rectangle of sides 7 centimetre. and 5 centimetre. Construct another rectarigle of. length 8 centimetre without. changing the ratio of their sides.



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44. In triangle ABC, $AP=PQ$, angle C=angle Q
 $AP=6$ centimetre, $P B=8$ centimetre, $A Q =9$ centimetre.

i) Write the pairs of equal angles from the figure.

ii) Prove that triangle A B C is isosceles.

iii) Find the perimeter of the trapezium PBCQ.



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45. Draw a triangle of perimeter 15 centimetres and sides are in the ratio 2: 3: 3.



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46. In the figure, AB, CD and EF are parallel.

PC=6 cm, CE=3cm, PD=8cm. Find DF and PF.



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47. In triangle PQR, angle $R=90^\circ$, $PR=12\text{cm}$,
 $QR=16\text{cm}$ and RS is perpendicular to PQ.

1) . Find the length of PQ.

ii) Find the length of PS and SQ.

ii) Find the length of RS.



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48. In triangle ABC, a line parallel to BC meets AB and AC at D and E respectively. If $AE=4.5$, cm, $AD/DB = 2/5$. What is the length of EC ?



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49. In the figure, ABCD is a trapezium, AB and DC are parallel lines. P is the midpoint of AD. If PQ is parallel to AB, prove that Q is the midpoint of BC.



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