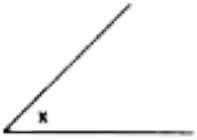
MATHS

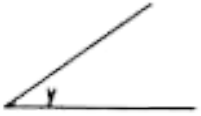
BOOKS - ICSE

CONSTRUCTION (USING RULER AND COMPASSES ONLY)

Example

1. Given below are the two angles x and y.





Construct an angle ABC such that:

(i) $\angle ABC = x + y$

(ii) $\angle ABC = 2x + y$.

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Exercise 18 A

1. Given below are the angles x and y.

Without measuring these angles, construct:

(i) $\angle ABC = x + y$

(ii) $\angle ABC = 2x + y$

(iii) $\angle ABC = x + 2y.$

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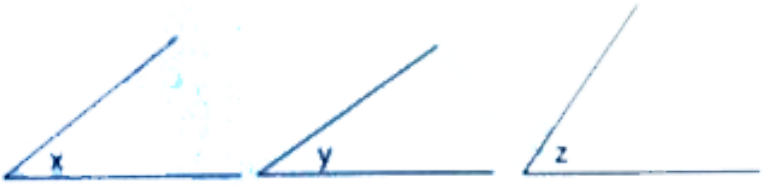
2. Given below are the angles x, y and z.



Without measuring these angles construct:

(i) $\angle ABC = x + y + z$

(ii) $\angle ABC = 2x + y + z$

(iii) $\angle ABC = x + 2y + z.$

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3. Draw a line segment BC=4cm. Construct angle $ABC = 60^\circ$.

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4. Construct angle ABC=45° in which BC=5cm and AB=$4 \cdot 6cm.$

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5. Construct angle $ABC = 90^\circ$. Draw BP, the bisector of angle ABC. State, the measure of angle PBC.

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6. Draw angle ABC of any suitable measure.

(i) Draw BP, the bisector of angle ABC.

(ii) Draw BR, the bisector of angle PBC and draw BQ, the bisector of angle ABP.

(iii) Are the angles ABQ, QBP, PBR and RBC equal ?

(iv) are the angles ABR and QBC equal ?

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Exercise 18 B

1. Draw a line segment AB of length 5.3 cm. using two different methods bisect AB.

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2. Draw a line segment PQ=4.8 cm.

Construct the perpendicular bisector of PQ.

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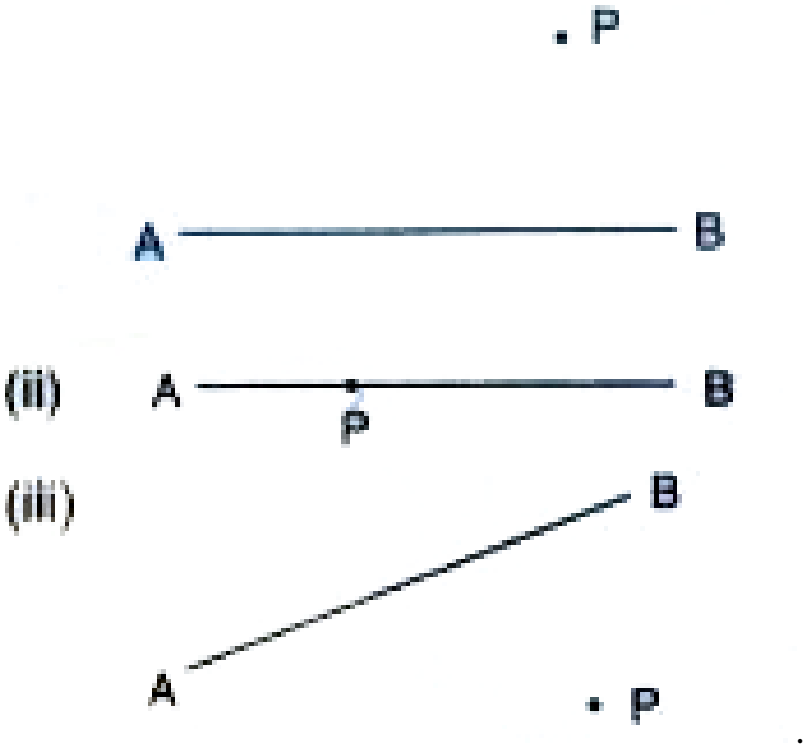
3. In each of the following, draw a perpendicular through point P to the line segment AB:



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4. Draw a line segment AB=5.5 cm. mark a point P, such that PA=6cm and PB=4.8 cm. from the point P, draw a perpendicular to AB.

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5. Draw a line segment AB=6.2 cm. mark a point P in AB such that BP=4 cm. through point P draw a perpendicular to AB.

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Exercise 18 C

1. Draw a line AB=6cm. Mark a point P any where outside the line AB. Through the point P, construct a line parallel to AB.

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2. Draw a line MN=5.8 cm. locate a point A which is 4.5 cm from M and 5 cm from N. through A draw a line parallel to line MN.

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3. Draw a straight line AB=6.5 cm. draw another line which is parallel to AB at a distance of 2.8 cm from it.

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4. Construct an angle $PQR = 80^\circ$. Draw a line parallel to PQ at a distance of 3 cm from it and another line parallel to QR at a distance of 3.5 cm from it. Mark the point of intersection of these parallel lines as A.

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5. Draw an angle $ABC = 60^\circ$. Draw the bisector of it. Also draw a line parallel to BC a distance of 2.5 cm from it.

Let this parallel line meet AB at point P and angle bisectors at point Q. measure the lengths of BP and PQ. Is BP=PQ?

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6. Construct an angle $ABC = 90^\circ$. Locate a point P which is 2.5 cm from AB and 3.2 cm from BC.

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Exercise 18 D

1. Construct a quadrilateral ABCD, if:

(i) $AB = 4.3cm, BC = 5.4cm, CD = 5cm, DA = 4.8cm$ and angle $ABC = 75^\circ$.

(ii)

$AB = 6cm, CD = 4.5cm, BC = AD = 5cm$ and $\angle BCD = 60^\circ$

.

(iii)

$AB = 8cm, BC = 5.4cm, AD = 6cm, \angle A = 60^\circ$ and $\angle B = 75^\circ$

.

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2. Construct a parallelogram ABCD, if:

(i) $AB = 3.6cm, BC = 4.5cm$ and $\angle ABC = 120^\circ$.

(ii) $BC = 4.5cm, CD = 5.2cm$ and $\angle ADC = 75^\circ$.

(iii) $AD = 4cm, DC = 5cm$ and diagonal BD=7 cm.

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3. Construct a rectangle ABCD, if:

(i) AB=4.5 cm and BC=5.5 cm.

(ii) BC=6.1 cm and CD=6.8 cm.

(iii) AB=5.0 cm and diagonal AC=6.7 cm.

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4. Construct a rhombus ABCD, if:

(i) AB=4 cm and $\angle B = 120^\circ$.

(ii) $BC = 4.7cm$ and $\angle B = 75^\circ$.

(iii) $CD = 5cm$ and diagonal $BD = 8.5cm$.

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5. Construct a square, if

(i) its one side is 3.8 cm.

(ii) Its each side is 4.3 cm.

(iii) one diagonal is 6.2 cm.

(iv) each diagona is 5.7 cm.

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6. Construct a quadrilateral ABCD in which, $\angle A = 120^\circ, \angle B = 60^\circ, AB = 4cm, BC = 4.5cm$ and $CD = 5cm$.

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7. Construct a quadrilateral ABCD, such that $AB = BC = CD = 4.4cm, \angle B = 90^\circ$ and $\angle C = 120^\circ$.

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8. Using ruler and compasses only, construct a parallelogram ABCD, in which : $AB = 6cm, AD = 3cm$ and $\angle DAB = 60^\circ$.

In the same figure draw the bisector of angle DAB and let it meet DC at point P. measure angle APB.

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9. Draw a parallelogram ABCD, with AB=6cm, AD=4.8 cm and $\angle DAB = 45^\circ$.

Draw the perpendicular bisector of side AD and let it meet AD at point P. also, draw the diagonals AC and BD, and let them intersect at point O. join O and P. measure OP. DC=5 cm

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10. Using ruler and compasses only, construct a rhombus whose diagonals are $8cm$ and $6cm$. measure the length of its one side.

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