MATHS

BOOKS - NAGEEN PRAKASHAN

ENGLISH

CONSTRUCTIONS

Solve Examples

1. Determine a point which divides a line segment 7 cm long, internally in the ratio 2:3

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2. Determine a point which divides a line segment 6cm long externally in the ratio 5:3

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3. Determine a point which divides a line segment 6 cm long externally in the ratio 3:5.

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4. Construct a triangle similar to a given triangle ABC such that each of its sides is $\frac{2}{3}$rd of the corresponding sides of the triangle ABC. It is given that AB=4cm, BC=5cm and AC=6cm .

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5. Construct an isosceles triangle whose base is 6cm and altitude 4 cm. Then construct another triangle whose sides are $\frac{3}{4}$ times the corresponding sides of the first triangle.

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6. Construct a quadrilateral ABCD with AB=3 cm, AB=3cm, AD=2.7 cm, DB=3.6 cm, $\angle B = 110^\circ$ and BC=4.2 cm. Construct another quadrilateral A'BC'D' similar to quadrilateral ABCD so that diagonal BD'=4.8 cm.

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7. Construct a cyclic quadrilateral ABCD in which AB=4.2 cm, BC=5.5 cm, CA=4.6 cm and

AD=3 cm. Also construct a quadrilatral similar to $\square ABCD$ whose side are 1.5 times the corresponding sides of $\square ABCD$.

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Construction Of Tangents To A Circle

1. Take a point O on the plane of the papr. With O as centre draw a circle of radius 4 cm. Take point P on this circle and draw a tangent at P.

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2. Draw a circle of radius 3 cm. Take a point P on it. Without using the centre of the circle, draw a tangent to the circle at point P.

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3. Draw a circle of radius 2.5 cm. Take a point at a distance of 5 cm from the centre of the circle. From point P, draw two tangents to the circle.

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4. about to only mathematics

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5. Draw a circle of radius 4 cm. Take a poin P outside the circle. Without using the centre of the circle, draw two tangents to the circle from point P.

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Problems From Ncert Exemplar

1. Construct a triangle with sides 5cm, 6cm and 7cm and then another triangle whose sides are $7/5$ of the corresponding sides of the first triangle.

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2. Construct an isosceles triangle whose base in 8 cm and altitude 4 cm and then another

triangle whose sides are $1\frac{1}{2}$ times the corresponding sides of the isosceles triangle.

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3. Draw a right triangle in which the sides (other than hypotenuse) are of lengths 4 cm and 3 cm. Then construct another triangle whose sides are $\frac{5}{3}$ times the corresponding sides of the given triangle.

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4. Construct a tangent to a circle of radius 4 cm from a point on the concentric circle of radius 6 cm and measure its length. Also verify the measurement by actual calculation.

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5. Draw a circle of radius 3 cm. Take two points P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Drew tangents to the circle from these two points P and Q.

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6. Let ABC is a right triangle in which AB = 6 cm, BC = 8 cm, $\angle B = 90^\circ$. BD is the perpendicular from B on AC. The circle through B,C and D is drawn. Construct the tangents from A to this circle.

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7. Draw a circle with the help of a bangle. Take a point outside the circle. Construct the pair of tangents from this points to the circle.

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8. Draw a line segment of length 7cm. Find a point P on it which divides it in the ratio 3:5.

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9. Drw a ΔABC in which BC = 6 cm, CA = 5 cm and AB = 4 cm. Construct and triangle similar to it and of scale factor $\frac{3}{5}$.

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10. Draw two concentric circles of radii 3 cm and 5 cm. Taking a point on outer circle, construct the pair of tangents to the other. Measure the length of a tangent and verify is by actual calculation.

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Exercise 11 A

1. Divide a line segment of length 10 cm internally in the ratio 5:4.

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2. Divide a line segment of length 8 cm internally in the ratio 4:2 .

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3. Divide a line segment of length 5 cm externally in the ratio 5:2 .

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4. Divide a line segment of length 7 cm internally in the ratio 3:5 . Also justify your construction.

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5. Construct a ΔABC in which AB=4 cm, BC=5 cm and AC=6cm. Now construct a triangle similar to triangle ABC such that each of its sides is $\frac{2}{3}$ of the corresponding sides of ΔABC.

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6. Construct a triangle similar to a given ΔABC Such that each of its sides is (4/5)th of the corresponding sides of ΔABC. It is given that AB=6cm,BC=5cm and $\angle ABC = 60^\circ$,

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7. Construct a triangle similar to a given ΔABC Such that each of its sides is (3/4)th of the corresponding sides of ΔABC. It is given that BC=7cm and $\angle B = 45^\circ$, $\angle A = 105^\circ$,

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8. Draw a triangle similar to ΔABC with its sides equla to $\left(\frac{4}{3}\right)$th of the corresponding

sides of ΔABC. It is given that AB=AC=5.0 cm and $\angle A = 90^\circ$.

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9. Construct a triangle similar to ΔABC with equal to 3/2 times of the corresponding sides of ΔABC, it is given that AB=5cm, $\angle B = 60^\circ$ and altitude CD=3cm

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10. Construct an isosceles triangle whose base is 8cm and altitude 4cm and then construct another triangle whose sides are $\frac{3}{2}$ times the corresponding sides of the isosceles triangle.

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11. Construct a quadrilateral in which AB=6.5 cm, BC=5.4 cm, CD=5.8 cm, DA=7.3 cm and $\angle B = 60^\circ$. Construct a quadrilateral similar

to quadrilateral ABCD with its sides 4/5 of the corresponding sides of ABCD

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12. Construct a triangle ABC in which AB=5cm and $\angle = 60^\circ$. Construct a $\Delta AB'C'$ similar to ΔABC with scale factor $\frac{2}{3}$.

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13. Construct an equilateral ΔABC whose altitude is 4cm. Also construct a triangle similar to ΔABC with scale factor $\frac{3}{4}$.

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Exercise 11 B

1. Draw a circle of radius 3.0 cm. Take a point P on it. Construct a tangent at point P.

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2. Draw a circle of radius 2.5 cm with centre O and take a ponit P outside the circle such that OP=7.0 cm. From P draw two tangents to the circle.

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3. Draw a circle of radius 3.5 cm with centre O. Draw two tangents to the circle so that the angle. Between tangent is 60°.

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4. Draw a circle of radius 5.0 cm. Take a point P on it. Without using the centre of the circle construct a tangent at the point P.

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5. Draw a circle of radius 3 cm. Take a point P outside it. Without using the centre of the circle, draw two tangents to the circle from the point P.

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6. Draw a circle of radius 4 cm. Draw pair of tangents to this circle which are inclined to each other at 75°.

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7. Draw a circle of radius 3 cm. Draw two tangents to the circle which ar perpendicular to each ouher.

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8. Draw a line segment AB of length 8 cm. Taking A as centre draw a circle of radius 3.5 cm and taking B as centre draw another circle of radius 2.5 cm. Construct tangents to each circle from the centre to the other circle.

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9. Draw a circle of radius 3 cm and take a point P outside it. Without using the centre of the

circle draw two tangents of the circle from the point P.

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10. Draw a circle of radius 2.5 cm. Draw a tangent to the circle making an angle of 45° with a line passing through the centre.

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