



MATHS

BOOKS - ICSE

CONSTRUCTION OF POLYGONS

Exercise 15

1. Construct a quadrilateral ABCD, when :

$AB = 3.2\text{cm}$, $BC = 5.2\text{cm}$, $CD = 6.2\text{cm}$, $DA = 4.2\text{cm}$ and $BD = 5.2\text{cm}$

.



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2. Construct a quadrilateral ABCD, when :

$AB = 7.2\text{cm}$, $BC = 5.8\text{cm}$, $CD = 6.3\text{cm}$, $AD = 4.3\text{cm}$ and $\text{angle } A = 75^\circ$



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3. Construct a quadrilateral ABCD, when :

Angle $A = 90^\circ$,

$AB = 4.6\text{cm}$, $BD = 6.4\text{cm}$, $AC = 6.0\text{cm}$, and $CD = 4.2\text{cm}$.



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4. Construct a quadrilateral ABCD, when :

$AB = 3.8\text{cm}$, $AC = 4.8\text{cm}$, $AD = 4.3\text{cm}$, angle $A = 105^\circ$ and angle $B = 60^\circ$



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5. Construct a quadrilateral ABCD, when :

$BC = 7.5\text{cm}$, $AC = 5.8\text{cm}$, $AD = 3.6\text{cm}$, $CD = 4.2\text{cm}$ and angle $A = 120^\circ$



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6. Construct a quadrilateral ABCD, when :

$AD = AB = 4\text{cm}$, $BC = 2.8\text{cm}$, $CD = 2.5\text{cm}$ and $\angle BAD = 45^\circ$.



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7. Construct a quadrilateral ABCD, when :

$AB = 6.3\text{cm}$, $BC = CD = 4.2\text{cm}$ and $\angle ABC = \angle BCD = 90^\circ$.



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8. Constructed a parallelogram ABCD, when :

$AB = 4.4\text{cm}$, $AD = 6.2\text{cm}$ and $AC = 4.8\text{cm}$.



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9. Constructed a parallelogram ABCD, when :

Diagonal $AC = 6.4\text{cm}$, diagonal $BD = 8.2\text{cm}$ and angle between the diagonals = 60° .



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10. Constructed a parallelogram ABCD, when :

$AB = 5.8\text{cm}$, diagonal $AC = 8.2\text{cm}$ and diagonal $BD = 6.2\text{cm}$.



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11. Constructed a parallelogram ABCD, when :

$AB = 6.0\text{cm}$, $AD = 5.0\text{cm}$ and $\angle A = 45^\circ$



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12. Constructed a parallelogram ABCD, when :

Base $AB = 6.5\text{cm}$, $BC = 4\text{cm}$ and the altitude corresponding to $AB = 3.1\text{cm}$.

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13. Constructed a parallelogram ABCD, when :

$AB = 4.5\text{cm}$, $\angle B = 120^\circ$ and the distance between AB and DC = 3.0cm .

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14. Constructed a parallelogram ABCD, when :

Base $BC = 5.6\text{cm}$, diagonal $BD = 6.5\text{cm}$ and altitude = 3.2cm .

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15. Construct a rectangle ABCD, when :

Its sides are 6.0cm and 7.2cm .

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16. Construct a rectangle ABCD, when :

One side = 4cm and one diagonal is 5cm . Measure the length of other side.

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17. Construct a rectangle ABCD, when :

One diagonal = 6.0cm and the acute angle between the diagonals = 45° .

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18. Construct a rectangle ABCD, when :

Area = 24cm^2 and base = 4.8cm .



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19. Construct a rectangle ABCD, when :

Area = 36cm^2 and height = 4.5cm .



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20. Construct a trapezium ABCD, when :

$AB = 4.8\text{cm}$, $BC = 6.8\text{cm}$, $CD = 5.4\text{cm}$, $\text{angle}B = 60^\circ$ and $AD \parallel BC$.



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21. Construct a trapezium ABCD, when :

$AB = 4.8\text{cm}$, $BC = 6.8\text{cm}$, $CD = 5.4\text{cm}$, $\text{angle}B = 60^\circ$ and $AD \parallel BC$.



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22. Construct a rhombus ABCD, when :

Its side = 6cm and $\angle A = 60^\circ$.

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23. Construct a rhombus ABCD, when :

One side = 5.4cm and one diagonal is 7.0cm .

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24. Construct a rhombus ABCD, when :

Diagonal $AC = 6.3\text{cm}$ and diagonal $BD = 5.8\text{cm}$.

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25. Construct a rhombus ABCD, when :

One side = 5.0cm and height = 2.6cm .

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26. Construct a rhombus ABCD, when :

$\angle A = 60^\circ$ and height = 3.5cm .

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27. Construct a rhombus ABCD, when :

Diagonal $AC = 6.0\text{cm}$ and height = 3.5cm .

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28. Construct a square ABCD, when :

One side = 4.5cm .





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29. Construct a square ABCD, when :

One diagonal = 5.4cm .



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30. Construct a square ABCD, when :

Perimeter = 24cm .



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31. Construct a rhombus, having given one side = 4.8cm and one angle =

75° .



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32. Construct a regular hexagon of side

(i) 2.5cm

(ii) 3.2cm .



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33. Using ruler and compasses only, construct the quadrilateral ABCD, having given $AB = 5\text{cm}$, $BC = 2.5\text{cm}$, $CD = 6\text{cm}$, $\angle BAD = 90^\circ$ and the diagonal $AC = 5.5\text{cm}$.



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34. Using ruler and compasses only, construct a trapezium ABCD, in which the parallel sides AB and DC are 3.3cm apart, $AB = 4.5\text{cm}$, $\angle A = 120^\circ$, $BC = 3.6\text{cm}$ and angle B is obtuse.



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35. Using ruler and compasses only, construct the quadrilateral ABCD, having given $AB = 5\text{cm}$, $BC = 2.5\text{cm}$, $CD = 6\text{cm}$, $\angle BAD = 90^\circ$ and diagonal $BD = 5.5\text{cm}$.



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36. Using ruler and compasses only, construct a parallelogram ABCD, using the following data: $AB = 6\text{cm}$, $AD = 3\text{cm}$ and $\angle DAB = 45^\circ$. If the bisector of $\angle DAB$ meets DC at P, prove that $\angle APB$ is a right angle.



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37. Draw parallelogram ABCD with the following data :

$AB = 6\text{cm}$, $AD = 5\text{cm}$ and $\angle DAB = 45^\circ$.

Let AC and DB in O let E be the mid-point of BC. Join OE. Prove that :

(i) $OE \parallel AB$

(ii) $OE = \frac{1}{2}AB$.



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38. Using ruler and compasses only, construct a rectangle each of whose diagonals measure 6cm and diagonals intersect at an angle of 45° .

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39. Construct a quadrilateral ABCD, when :

$AB = 3.2\text{cm}$, $BC = 5.2\text{cm}$, $CD = 6.2\text{cm}$, $DA = 4.2\text{cm}$ and $BD = 5.2\text{cm}$

.

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40. Construct a quadrilateral ABCD, when :

$AB = 7.2\text{cm}$, $BC = 5.8\text{cm}$, $CD = 6.3\text{cm}$, $AD = 4.3\text{cm}$ and $\text{angle } A = 75^\circ$

.

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41. Construct a quadrilateral ABCD, when :

$$\text{Angle } A = 90^\circ,$$

$$AB = 4.6\text{cm}, BD = 6.4\text{cm}, AC = 6.0\text{cm}, \text{ and } CD = 4.2\text{cm}.$$



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42. Construct a quadrilateral ABCD, when :

$$AB = 3.8\text{cm}, AC = 4.8\text{cm}, AD = 4.3\text{cm}, \text{ angle } A = 105^\circ \text{ and angle } B = 60^\circ$$



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43. Construct a quadrilateral ABCD, when :

$$BC = 7.5\text{cm}, AC = 5.8\text{cm}, AD = 3.6\text{cm}, CD = 4.2\text{cm} \text{ and angle } A = 120^\circ$$



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44. Construct a quadrilateral ABCD, when :

$AD = AB = 4\text{cm}$, $BC = 2.8\text{cm}$, $CD = 2.5\text{cm}$ and $\angle BAD = 45^\circ$.

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45. Construct a quadrilateral ABCD, when :

$AB = 6.3\text{cm}$, $BC = CD = 4.2\text{cm}$ and $\angle ABC = \angle BCD = 90^\circ$.

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46. Constructed a parallelogram ABCD, when :

$AB = 4.4\text{cm}$, $AD = 6.2\text{cm}$ and $AC = 4.8\text{cm}$.

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47. Constructed a parallelogram ABCD, when :

Diagonal $AC = 6.4\text{cm}$, diagonal $BD = 8.2\text{cm}$ and angle between the

diagonals = 60° .

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48. Constructed a parallelogram ABCD, when :

$AB = 5.8\text{cm}$, diagonal $AC = 8.2\text{cm}$ and diagonal $BD = 6.2\text{cm}$.

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49. Constructed a parallelogram ABCD, when :

$AB = 6.0\text{cm}$, $AD = 5.0\text{cm}$ and $\angle A = 45^\circ$

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50. Constructed a parallelogram ABCD, when :

Base $AB = 6.5\text{cm}$, $BC = 4\text{cm}$ and the altitude corresponding to

$AB = 3.1\text{cm}$.

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51. Constructed a parallelogram ABCD, when :

$AB = 4.5\text{cm}$, $\angle B = 120^\circ$ and the distance between AB and DC = 3.0cm .



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52. Constructed a parallelogram ABCD, when :

Base $BC = 5.6\text{cm}$, diagonal $BD = 6.5\text{cm}$ and altitude = 3.2cm .



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53. Construct a rectangle ABCD, when :

Its sides are 6.0cm and 7.2cm .



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54. Construct a rectangle ABCD, when :

One side = 4cm and one diagonal is 5cm . Measure the length of other side.



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55. Construct a rectangle ABCD, when :

One diagonal = 6.0cm and the acute angle between the diagonals = 45° .



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56. Construct a rectangle ABCD, when :

Area = 24cm^2 and base = 4.8cm .



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57. Construct a rectangle ABCD, when :

Area = 36cm^2 and height = 4.5cm .

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58. Construct a trapezium ABCD, when :

$AB = 4.8\text{cm}$, $BC = 6.8\text{cm}$, $CD = 5.4\text{cm}$, angle $B = 60^\circ$ and $AD \parallel BC$.

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59. Construct a trapezium ABCD, when :

$AB = CD = 3.2\text{cm}$, $BC = 6.0\text{cm}$, $AD = 4.4\text{cm}$ and $AD \parallel BC$.

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60. Construct a rhombus ABCD, when :

Its side = 6cm and $\angle A = 60^\circ$.





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61. Construct a rhombus ABCD, when :

One side = 5.4cm and one diagonal is 7.0cm .



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62. Construct a rhombus ABCD, when :

Diagonal $AC = 6.3\text{cm}$ and diagonal $BD = 5.8\text{cm}$.



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63. Construct a rhombus ABCD, when :

One side = 5.0cm and height = 2.6cm .



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64. Construct a rhombus ABCD, when :

$\angle A = 60^\circ$ and height = 3.5cm .

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65. Construct a rhombus ABCD, when :

Diagonal $AC = 6.0\text{cm}$ and height = 3.5cm .

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66. Construct a square ABCD, when :

One side = 4.5cm .

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67. Construct a square ABCD, when :

One diagonal = 5.4cm .





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68. Construct a square ABCD, when :

Perimeter = 24cm .



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69. Construct a rhombus, having given one side = 4.8cm and one angle =

75° .



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70. Construct a regular hexagon of side

(i) 2.5cm

(ii) 3.2cm .



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71. Using ruler and compasses only, construct the quadrilateral ABCD, having given $AB = 5\text{cm}$, $BC = 2.5\text{cm}$, $CD = 6\text{cm}$, $\angle BAD = 90^\circ$ and the diagonal $AC = 5.5\text{cm}$.

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72. Using ruler and compasses only, construct a trapezium ABCD, in which the parallel sides AB and DC are 3.3cm apart, $AB = 4.5\text{cm}$, angle $A = 120^\circ$, $BC = 3.6\text{cm}$ and angle B is obtuse.

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73. Using ruler and compasses only, construct the quadrilateral ABCD, having given $AB = 5\text{cm}$, $BC = 2.5\text{cm}$, $CD = 6\text{cm}$, $\angle BAD = 90^\circ$ and diagonal $BD = 5.5\text{cm}$.

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74. Using ruler and compasses only, construct a parallelogram ABCD, using the following data: $AB = 6\text{cm}$, $AD = 3\text{cm}$ and $\angle DAB = 45^\circ$. If the bisector of $\angle DAB$ meets DC at P, prove that $\angle APB$ is a right angle.



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75. Draw parallelogram ABCD with the following data :

$AB = 6\text{cm}$, $AD = 5\text{cm}$ and $\angle DAB = 45^\circ$.

Let AC and DB in O let E be the mid-point of BC. Join OE. Prove that :

(i) $OE \parallel AB$

(ii) $OE = \frac{1}{2}AB$.



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76. Using ruler and compasses only, construct a rectangle each of whose diagonals measure 6cm and diagonals intersect at an angle of 45° .



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