Chapter 11: Properties of Triangles and 4-Sided Figures

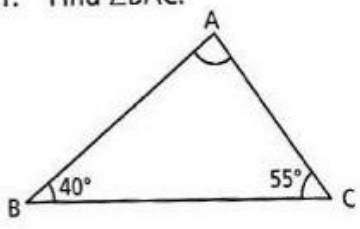
11.1

Calculators can be used only for questions with '*'.

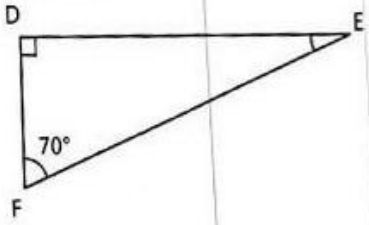
Level 1

Exercise 1

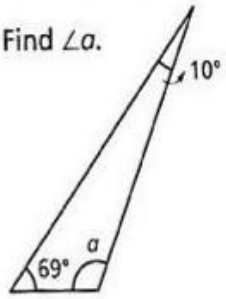
1. Find ∠BAC.



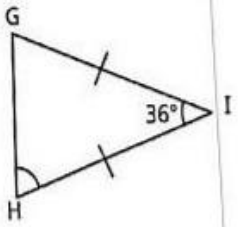
2. Find ∠DEF.



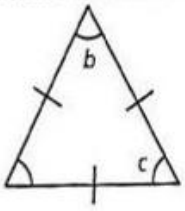
3. Find ∠a.



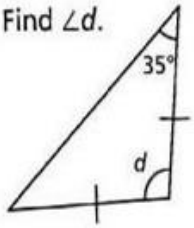
4. Find ∠GHI.



5. Find the sum of ∠b and ∠c.



6. Find ∠d.



(1) 85°

(2) 20°

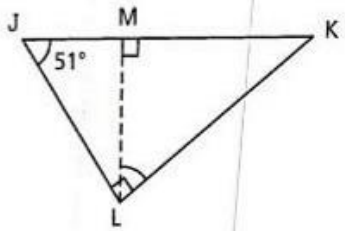
(3) 101°

(4) 72°

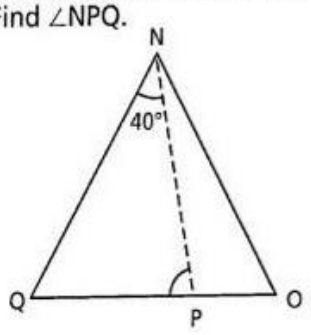
(5) 120°

(6) 110°

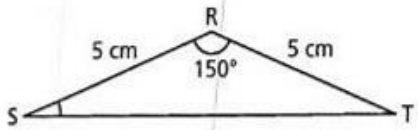
7. Find ∠KLM.



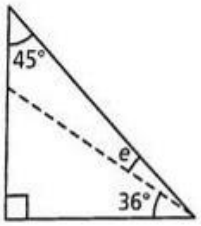
8. NOQ is an equilateral triangle. Find ∠NPQ.



9. Find ∠RST.

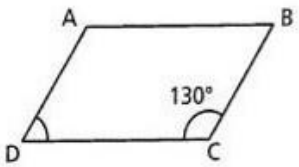


10. Find ∠e.

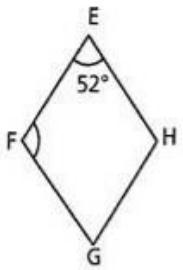


Exercise 2

1. ABCD is a parallelogram. Find ∠ADC.



2. EFGH is a rhombus. Find ∠EFG.



Exercise 2:

(7) 51°

(8) 80°

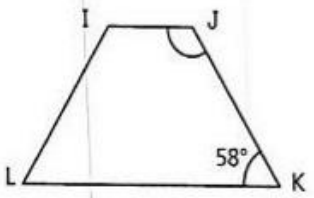
(9) 15°

(10) 9°

(1) 50°

(2) 128°

3. IJKL is a trapezium. Find ∠IJK.



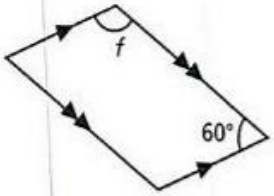
(3) 122°

(4) 120°

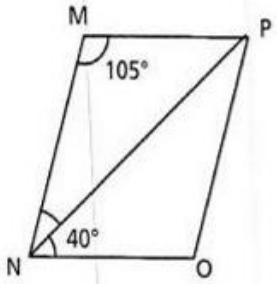
(5) 35°

(6) 34°

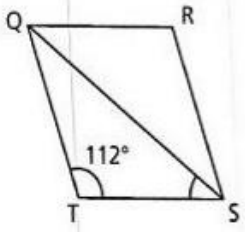
4. Find ∠f.



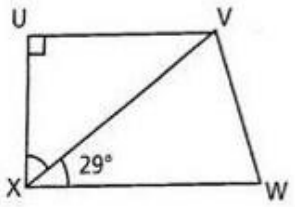
5. MNOP is a parallelogram. Find ∠MNP.



6. QRST is a rhombus. Find ∠QST.



7. UVWX is a trapezium. Find ∠UXV.



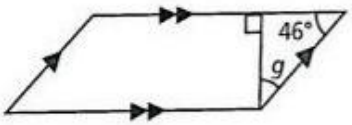
(7) 61°

(8) 44°

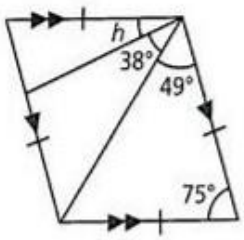
(9) 18°

(10) 36°

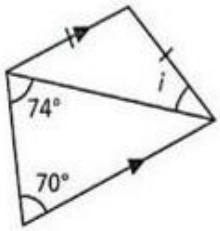
8. Find ∠g.



9. Find ∠h.



10. Find ∠i.



11.2

Level 2

Exercise 1

1. Draw a triangle ABC in which AB = 7 cm, ∠CAB = 30° and ∠ABC = 60°.

2. Draw a triangle DEF in which EF = 6 cm, DE = 4 cm and ∠DEF = 45°.

3. Draw an isosceles triangle GHI in which GH = GI, HI = 8 cm and ∠HGI = 100°.

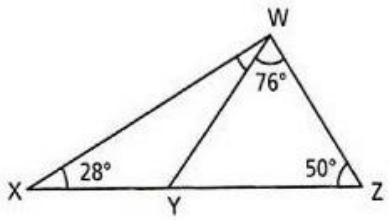
4. Draw a square JKLM of side 4.5 cm.

5. Draw a rectangle NOPQ in which NO = 3 cm and OP = 8 cm.

6. Draw a rhombus RSTU of side 5 cm and ∠RST = 70°.

7. Draw a parallelogram WXYZ in which WX = 6 cm, XY = 3 cm and ∠WXY = 140°.

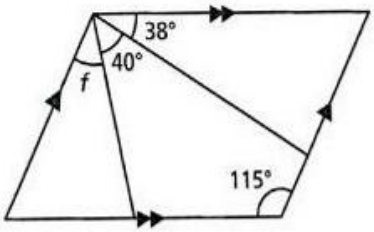
4. Find ∠XWY.



(1) 14°
(2) 26°
(3) 28°
(4) 34°
( )

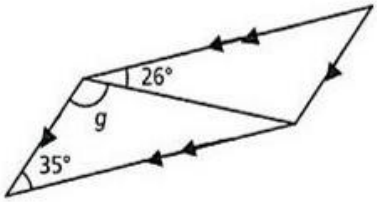
(4) 2
(5) 2
(6) 3
(7) 2

5. Find ∠f.



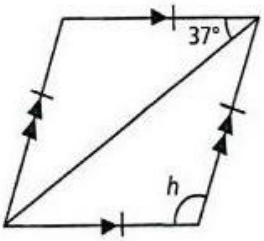
(1) 36°
(2) 37°
(3) 42°
(4) 49°
( )

6. Find ∠g.



(1) 154°
(2) 145°
(3) 119°
(4) 61°
( )

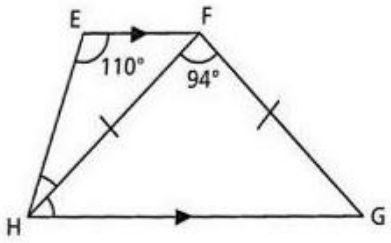
7. Find ∠h.



(1) 143°
(2) 106°
(3) 74°
(4) 53°
( )

In the figure below, EFGH is a trapezium and FGH is an isosceles triangle. Use it to answer questions 8 and 9.

8. Find ∠FHG.

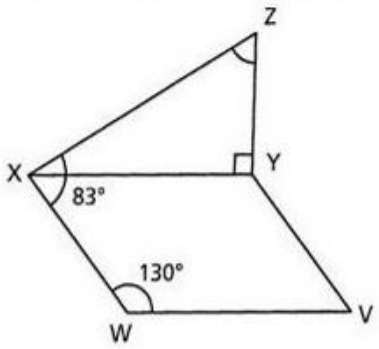


(1) 86°
(2) 70°
(3) 47°
(4) 43° ( )

9. Find ∠EHF.

(1) 16°
(2) 27°
(3) 55°
(4) 67° ( )

10. In the figure below, XYZ is a right-angled triangle and VWXY is a parallelogram. Given that ∠WXZ = 83° and ∠XWV = 130°, find ∠XZY.



(1) 33°
(2) 47°
(3) 50°
(4) 57° ( )

(8) 4

(9) 2

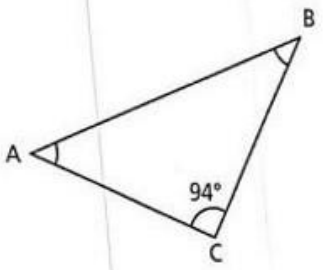
(10) 4

11.3

Level 3

Exercise 1

*1. Given that ∠ACB is twice of ∠BAC, find ∠ABC.



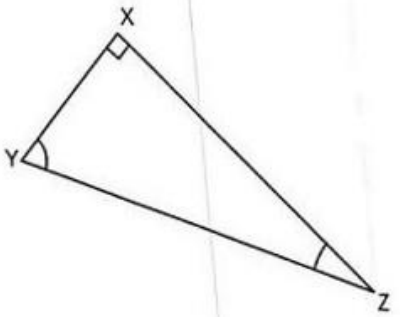
(1) 39°

(2) 72°

(3) 90°

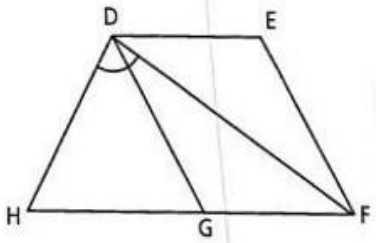
---

*2. XYZ is a right-angled triangle. Given that ∠XYZ is 4 times of ∠XZY, find ∠XYZ.

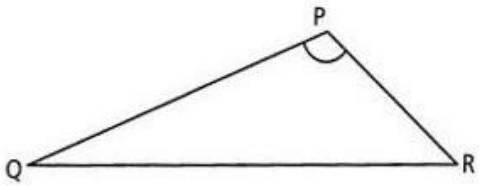


---

*3. In the figure below, DEFG is a rhombus and DGH is an equilateral triangle, find ∠FDH.



4. The ratio of ∠PQR to ∠RPQ to ∠PRQ is 1 : 6 : 2. Find ∠RPQ.



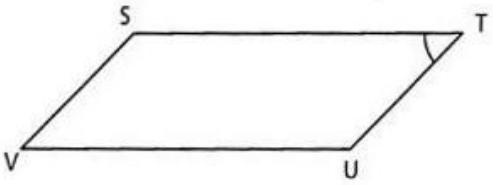
(4) 120°

(5) 54°

(6) 136°

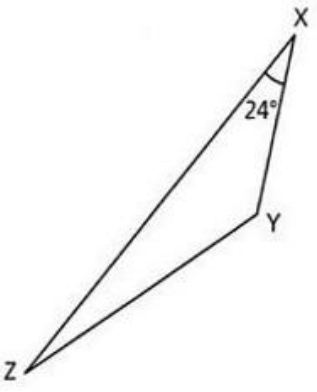
---

5. STUV is a parallelogram. The ratio of ∠SVU to ∠TSV is 3 : 7. Find ∠STU.

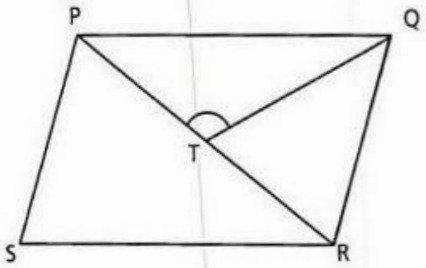


---

*6. ∠XZY is $\frac{5}{6}$ of ∠YXZ. Find ∠XYZ.



7. PQRS is a parallelogram. PQ = PR = RS and PT = QT.
If ∠PQR = 70°, what is ∠PTQ?



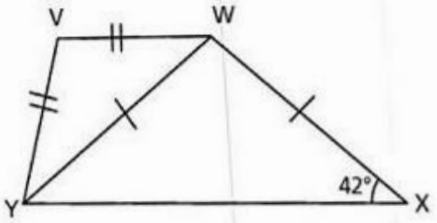
(7) 100°

(8) 96°

(9) 50°

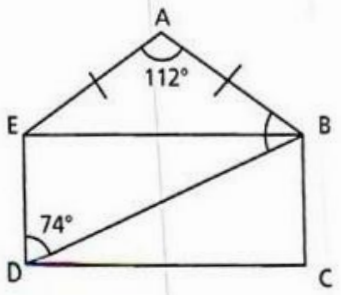
---

8. VWXY is a trapezium which is made up of two isosceles triangles, VWY and WXY. Find ∠WVY.

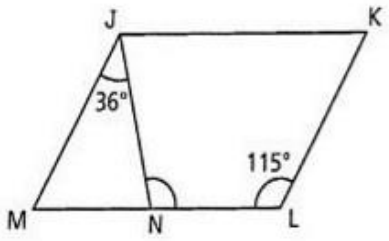


---

*9. ABE is an isosceles triangle and BCDE is a rectangle. Given that ∠BAE = 112° and ∠BDE = 74°, find ∠ABD.



10. JKLM is a parallelogram. Find ∠JNL.



(10) 101°

Exercise 2 :

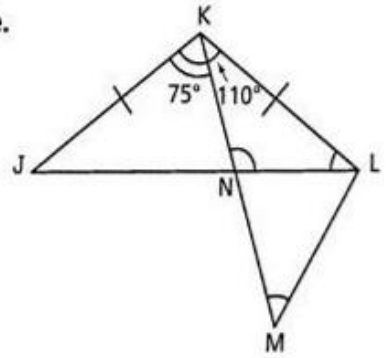
(1) 35°

(2) 110°

(3) 54°

Exercise 2

In the figure below, JKL is an isosceles triangle.
∠JKL = 110° and ∠JKM = 75°.
Use the figure to answer questions 1 to 3.

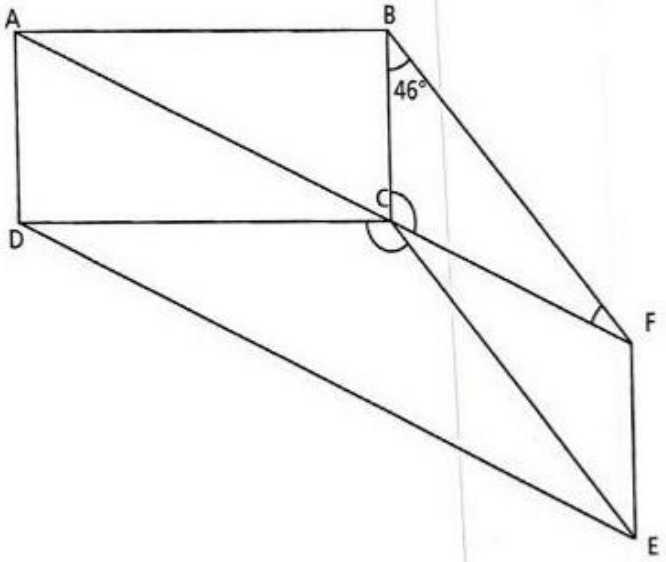


*1. Find ∠KLN.

*2. Hence, find ∠KNL.

*3. If ∠KLN is $\frac{5}{8}$ of ∠MLN, find ∠LMN.

In the figure below, ABCD is a rectangle, ACF is a straight line and ADEF is a parallelogram. AB = BF, CD = CE and ∠CBF = 46°
Use the figure to answer questions 4 to 6.



*4. Find ∠BFC.

(4) 22°

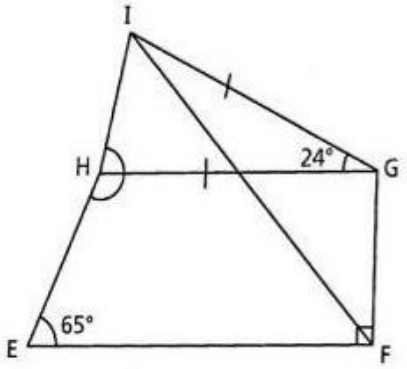
*5. Find ∠BCF.

(5) 112°

*6. Find ∠ECD.

(6) 136°

In the figure below, EFGH is a trapezium and GHI is an isosceles triangle.
$\angle HGI = 24°$ and $\angle FEH = 65°$
Use the figure to answer questions 7 to 9.



*7. Find the sum of $\angle GHI$ and $\angle EHG$.

(7) 193^{o}

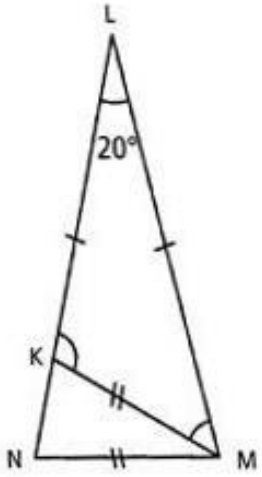
(8) 6 : 5

(9) 52^{o}

*8. What is the ratio of $\angle GHI$ to $\angle FEH$?

*9. If $\angle FIH$ is $\frac{2}{3}$ of $\angle GIH$, what is $\angle FIH$?

*10. In the figure below, LMN and KMN are isosceles triangles.



(10) 3 : 5

Find the ratio of ∠KML to ∠LKM.