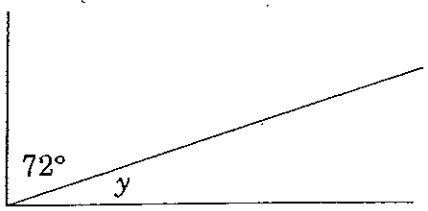
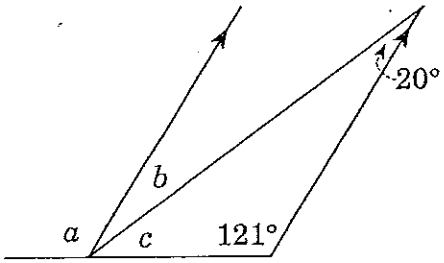
Geometry

Question 1 Find the value of each pronumeral in the following questions, stating the reasons:

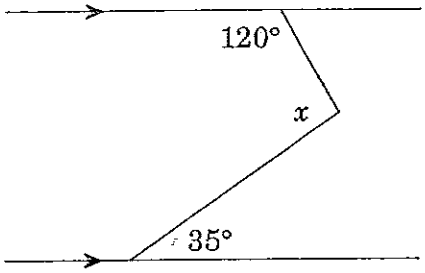
(a)



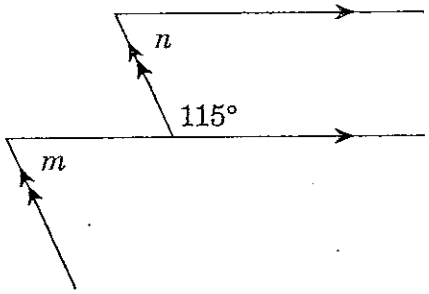
(b)



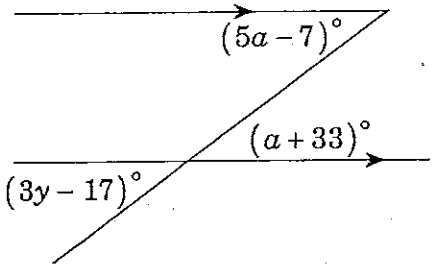
(c)



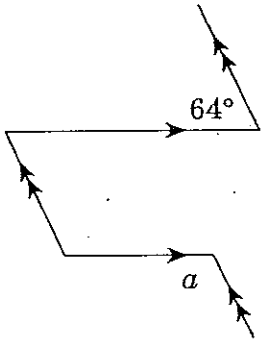
(d)



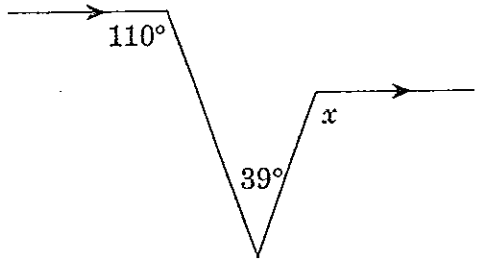
(e)



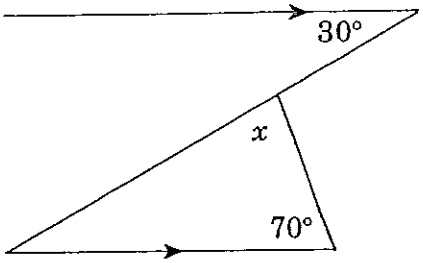
(f)



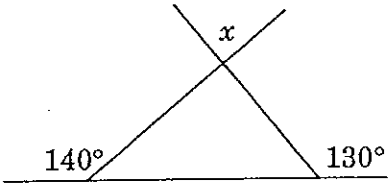
(g)



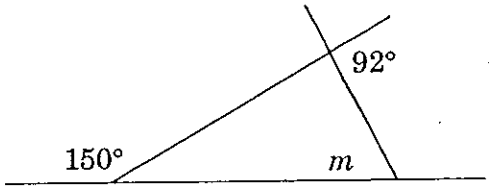
(h)



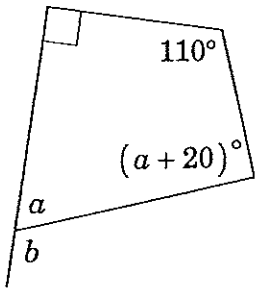
(i)



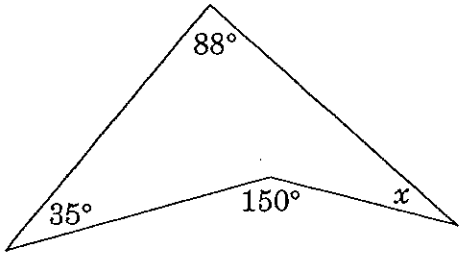
(j)



(k)

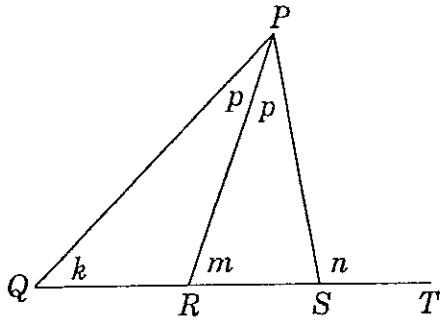


(l)



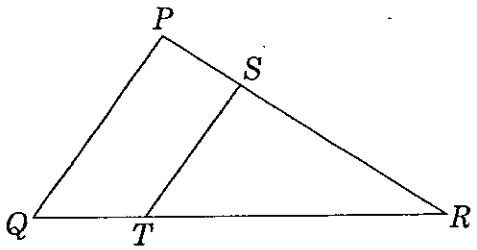
Question 2 **Reasoning**

(a)



Prove that $k + n = 2m$

(b)

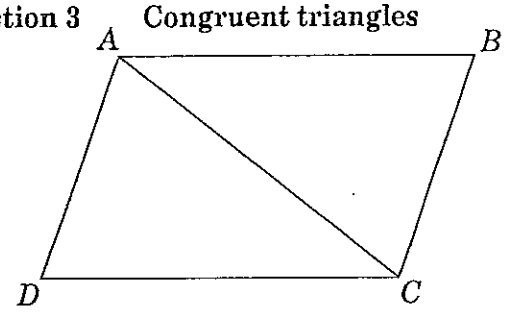


$\angle STQ = \angle PRQ + \angle QPR$

Prove that $PQ \| ST$

Question 3 Congruent triangles

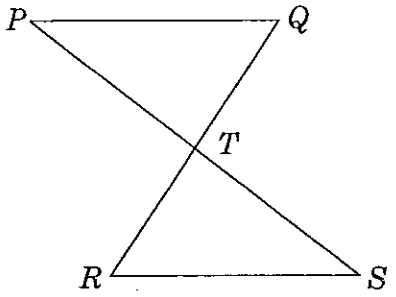
(a)



$ABCD$ is a parallelogram

Prove that $\Delta ABC \equiv \Delta CDA$

(b)



PS and QR bisect each other.

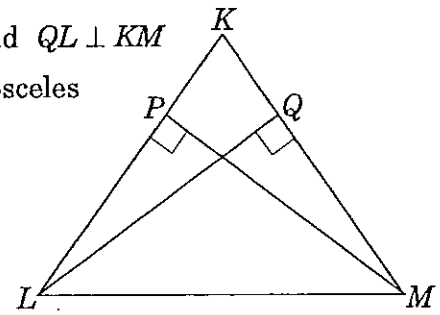
Prove that $PQ = RS$ and $PQ \| RS$

(c) $PM \perp KL$ and $QL \perp KM$

ΔKLM is isosceles

Prove that

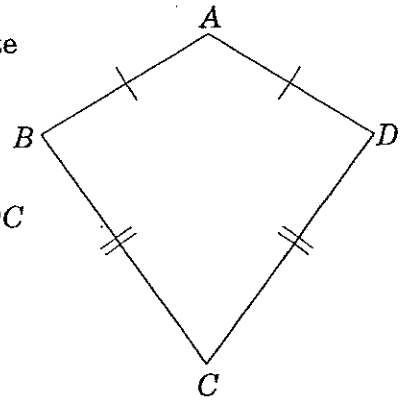
$PM = QL$



(d) $ABCD$ is a kite

Prove that

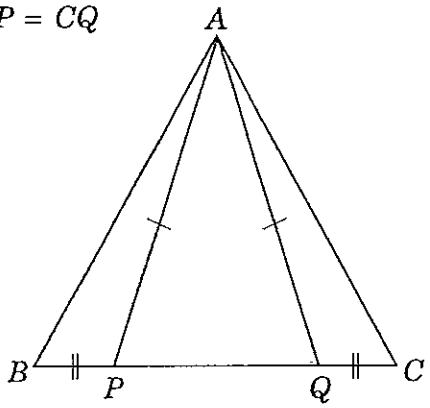
$\angle ABC = \angle ADC$



(e) $AP = AQ$, $BP = CQ$

Prove that

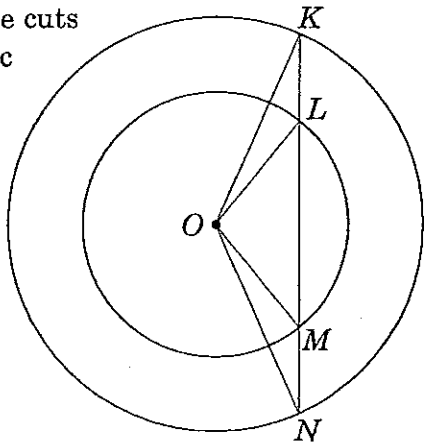
$AB = AC$



(f) A straight line cuts two concentric circles at K, L, M, N, as shown.

Prove that

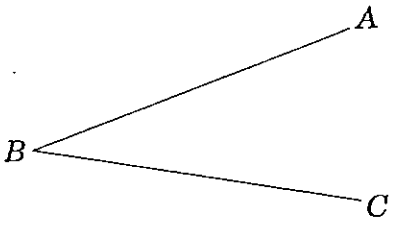
$KL = MN$



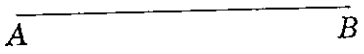
Question 4 **Constructions using compass and ruler only**

(a) Bisect interval AB

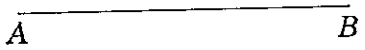
(b) Bisect $\angle ABC$



(c) Construct an angle of 60° on AB at A.

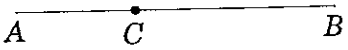


(d) Construct an angle of 30° on AB at A.



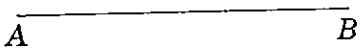
(e) Construct an angle of 90° on AB at A.

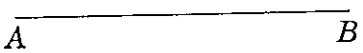
(f) Construct a perpendicular to AB at C.



(g) Construct a perpendicular from C to AB.

(h) Construct a line through P parallel to AB.





Question 5

(a) Construct a square inside a circle of radius 2 cm.

(b) Construct a regular hexagon inside a circle of radius 3 cm.

(c) Construct a regular octagon inside a circle of diameter 4 cm.

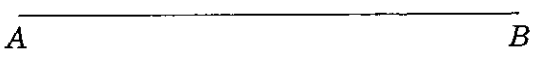
(d) Construct $\angle ABC$ if $AB = 5{\cdot}3$ cm, $BC = 3{\cdot}7$ cm, $AC = 4{\cdot}1$ cm.

(e) Construct a square of side 4 cm.

(f) Construct a parallelogram with sides 5 cm and 3 cm, and acute angle of 60°.

(g) Construct an angle of 120°.

(h) Divide interval AB into 5 equal parts using compass and ruler only.



25 Geometry

1 (a) $x = 18°$, complementary angles

(b) $a = 121°$, corresponding; $b = 20°$, alternate;
$c = 20°$, angles in a Δ sum to 180°

(c) $x = 95°$, cointerior to 120° and alternate to 35°

(d) $n = 65°$, cointerior to 115°;
$m = 65°$, corresponding to n

(e) $a = 10°$, alternate; $y = 20°$, vertically opposite

(f) $a = 116°$, alt. / corres. / alt.

(g) $x = 109°$, alt. / coint.

(h) $x = 80°$, angles in a Δ sum to 180°

(i) $x = 90°$, supp. / vert. opp.

(j) $m = 62°$, supp. and ext. angle

(k) $a = 70°$, $\angle$s in a quadrilateral sum to 360°;
$b = 110°$, supplementary

(l) $x = 27°$, $\angle$s in a quadrilateral sum to 360°

2 } A variety of proofs could
3 } be applied with accuracy.

4 Constructions.