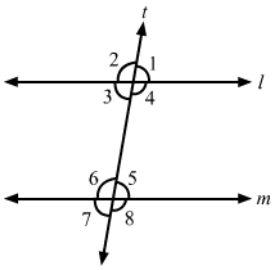
Question:1

In the given figure, *l* || *m* and *t* is a transversal.

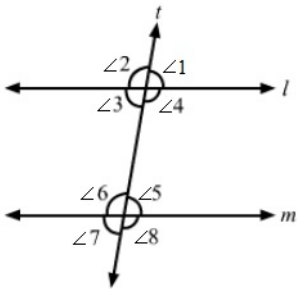
If ∠5 = 70°, find the measure of each of the angles

∠1, ∠3, ∠4 and ∠8.



Solution:

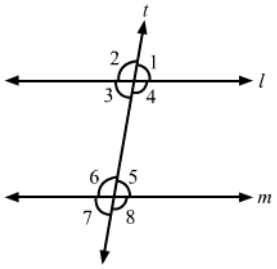
$\text{Given}: l \parallel m\text{t is a transversal.} \angle 5 = 70^\circ \angle 5 = \angle 3 = 70^\circ \quad (\text{alternate interior angles}) \angle 5 + \angle 8 = 180^\circ \quad (\text{linear pair}) \text{or } 70^\circ + \angle 8 = 180^\circ \angle 8 = 1$



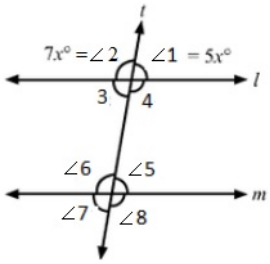
Question:2

In the given figure, *l* || *m* and *t* is a transversal. If ∠1 and ∠2 are in the ratio 5 : 7, find the measure of each of the angles

∠1, ∠2, ∠3 and ∠8.



Solution:



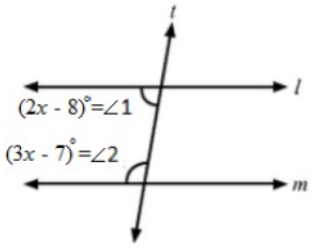
$\text{Given}: l \parallel m\text{t is a transversal.} \angle 1 : \angle 2 = 5 : 7 \text{Let the angles measure 5x and 7x.} \angle 1 + \angle 2 = 180^\circ \quad (\text{linear pair}) \therefore 5\text{x} + 7\text{x} = 180$

Question:3

Two parallel lines *l* and *m* cut by a transversal *t*. If the interior angles of the same side of *t* be (2*x* – 8)° and (3*x* – 7)°, find the measure of each of these angles.

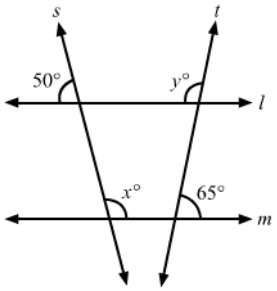
Solution:

$\text{Given}: l \parallel m\text{t is a transversal. Let}: \angle 1 = (2\text{x} - 8)^\circ \angle 2 = (3\text{x} - 7)^\circ \text{We know that the consecutive interior angles are supplementary.} \therefore \angle 1 + \angle 2$



Question:4

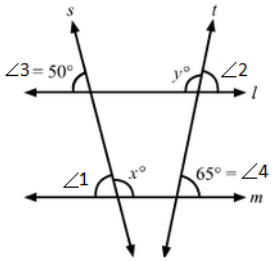
In the given figure, *l* || *m*. If *s* and *t* be transversals such that *s* is not parallel to *t*. find the values of *x* and *y*.



Solution:

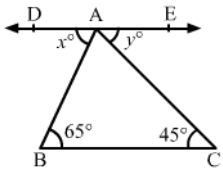
From the given figure:

$\angle 1 = \angle 3 = 50^{\circ}$ (corresponding angles) and $\angle 1 + x^{\circ} = 180^{\circ}$ (linear pair) or $x^{\circ} = 180^{\circ} - 50^{\circ} = 130^{\circ}$ or $x = 130 \angle 2 = \angle 4 = 65^{\circ}$ (correspondi



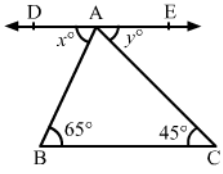
Question:5

In the given figure, ∠*B* = 65° and ∠*C* = 45° in Δ*ABC* and *DAE* || *BC*. If ∠*DAB* = *x*° and ∠*EAC* = *y*°, find the values of *x* and *y*.



Solution:

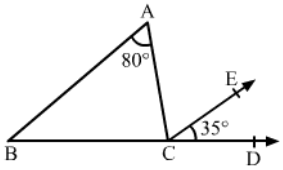
Given: $\angle B = 65^{\circ} \angle C = 45^{\circ} DAE \parallel BC$ The given lines are parallel. $\therefore x^{\circ} = \angle B = 65^{\circ}$ (alternate angles when AB is taken as the transver



Question:6

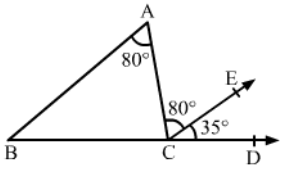
In the adjoining figure, it is given that *CE* || *BA*, ∠*BAC* = 80° and ∠*ECD* = 35°.

Find i ∠*ACE*, ii ∠*ACB*, iii ∠*ABC*.



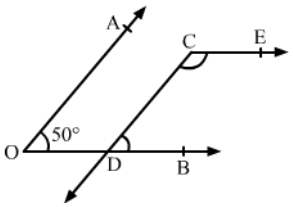
Solution:

Given : CE $\parallel$ BA $\angle BAC = 80^\circ, \angle ECD = 35^\circ$ (i) $\angle BAC = \angle ACE = 80^\circ$ (alternate angles with AC as a transversal) (ii) $\angle ACB + \angle ACD =$



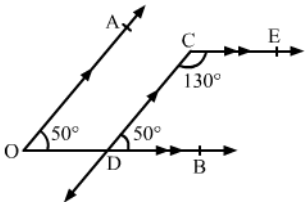
Question:7

In the adjoining figure, it is being given that *AO* || *CD, OB* || *CE* and $\angle AOB = 50°$
Find the measure of $\angle ECD$.



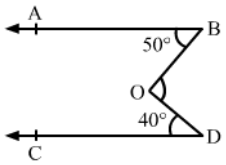
Solution:

Given : AO $\parallel$ CD OB $\parallel$ CE $\angle AOB = 50^\circ \angle AOD = \angle CDB = 50^\circ$ (when AO $\parallel$ CD and OB is the transversal) $\angle ECD + \angle C$



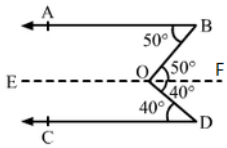
Question:8

In the adjoining figure, it is given that *AB* || *CD,* $\angle AOB = 50°$ and $\angle CDO = 40°$.
Find the measure of $\angle BOD$.



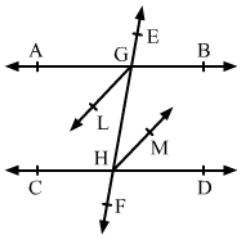
Solution:

Given : AB $\parallel$ CD $\angle ABO = 50^\circ$ $\angle CDO = 40^\circ$ Construction : Through O, draw EOF $\parallel$ AB. $\angle ABO = \angle BOF = 50^\circ$ (alternate a



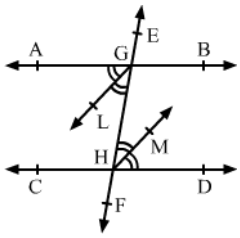
Question:9

In the given figure, *AB* || *CD* and a transversal *EF* cuts them at *G* and *H* respectively.
If *GL* and *HM* are the bisectors of the alternate angles $\angle AGH$ and $\angle GHD$ respectively, prove that *GL* || *HM*.



Solution:

Given : AB $\|$ CD GL and HM are angle bisectors of $\angle$AGH and $\angle$GHD, respectively. $\angle$AGH = $\angle$GHD $\left(\text{alternate angles}\right)$ or $\frac{1}{2}$ $\angle$AGH =

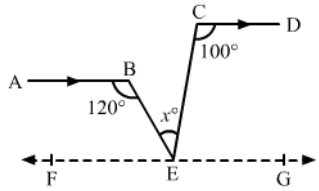


Question:10

In the given figure, *AB* || *CD*,

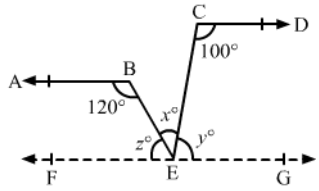
$\angle ABE = 120°$, $\angle ECD = 100°$ and $\angle BEC = x°$

Find the value of *x*.



Solution:

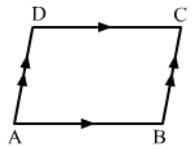
Given : AB $\|$ CD $\angle$ABE = 120° $\angle$ECD = 100° $\angle$BEC = x°Construction : FEG $\|$ ABNow, since *AB* $\|$ *FEG* and *AB* $\|$ *CD*, *FE*



Question:11

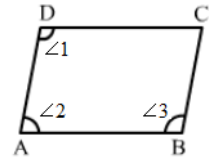
In the given figure, *ABCD* is a quadrilateral in which *AB* || *DC* and *AD* || *BC*.

Prove that $\angle ADC = \angle ABC$.



Solution:

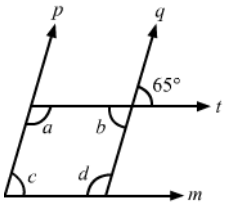
Given : AB $\|$ CD AD $\|$ BC$\angle$1 + $\angle$2 = 180° (AB $\|$ CD and AD is the transversal) ...(i)$\angle$2 + $\angle$3 = 180° (AD $\|$ BC and AB



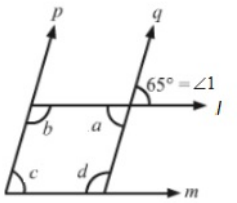
Question:12

In the given figure, *l* || *m* and *p* || *q*.

Find the measure of each of the angles $\angle a$, $\angle b$, $\angle c$ and $\angle d$.

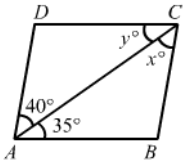


Solution:
Given : $l \parallel m\, p \parallel q \angle 1 = 65^{\circ} \therefore \angle 1 = \angle a = 65^{\circ}$ (vertically opposite angles) $\angle a + \angle d = 180^{\circ}$ (consecutive interior angles on the same

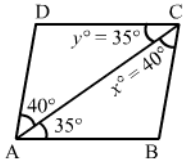


Question:13

In the given figure, *AB* || *DC* and *AD* || *BC,* and *AC* is a diagonal. If ∠*BAC* = 35°, ∠*CAD* = 40°, ∠ACB = *x*° and ∠*ACD* = *y*°, find the value of *x* and *y*

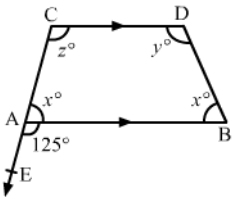


Solution:
Given : $AB \parallel DCAD \parallel BC \angle BAC = 35^{\circ} \angle CAD = 40^{\circ} \therefore \angle BAC = y = 35^{\circ}$ (alternate angles when $AB \parallel DC) \angle CAD = x = 40^{\circ}$

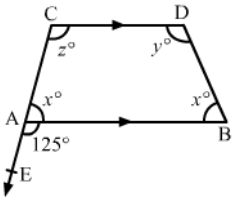


Question:14

In the given figure, *AB* || *CD* and *CA* has been produced to *E* so that ∠*BAE* = 125°.
If ∠*BAC* = *x*°, ∠*ABD* = *x*°, ∠*BDC* = *y*° and ∠*ACD* = *z*°, find the values of *x*, *y*, *z*.

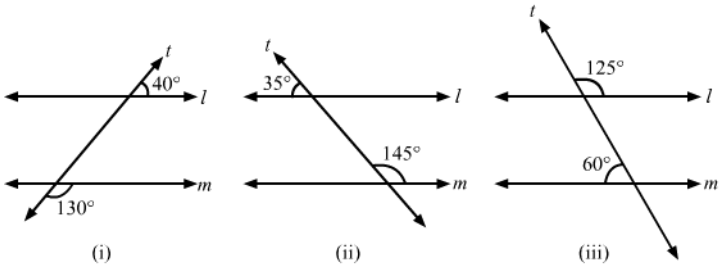


Solution:
Given : $AB \parallel CD \angle BAE = 125^{\circ} \angle CAB + \angle BAE = 180^{\circ}$ or $125^{\circ} + x^{\circ} = 180^{\circ}$ or $x = 55x + z = 180^{\circ}$ (consecutive interior angles on the san



Question:15

In each of the given figures, two lines *l* and m are cut by a transevrsal *t*.
Find whether *l* || *m*.



Solution:

(i) $\angle 1 + \angle 2 = 180$ (linear pair) or $130^\circ + \angle 2 = 180^\circ$ or $\angle 2 = 50^\circ \neq 40^\circ = \angle 3 \therefore l \nparallel m$(ii) $\angle 2 + \angle 3 = 180^\circ$ (linear pair)$35^\circ + \angle 3 = 180^\circ \angle 3 = 14$