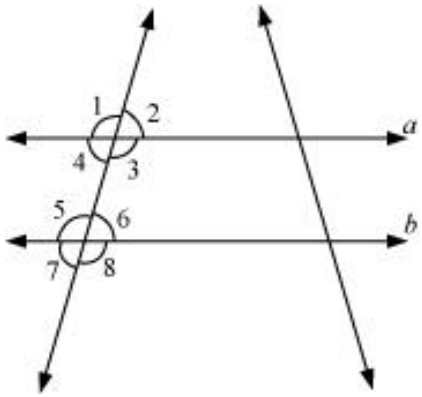
NCERT Solutions For Class 7 Lines And Angles Exercise 5.2

Q1. State the property that is used in each of the following statements?

(i) If $a \| b$, then $\angle 1 = \angle 5$

(ii) If $\angle 4 = \angle 6$, then $a \| b$

(iii) If $\angle 4 + \angle 5 = 180°$, then $a \| b$



Ans:

(i) Corresponding angles property

(ii) Alternate interior angles property

(iii) Interior angles on the same side of transversal are supplementary.

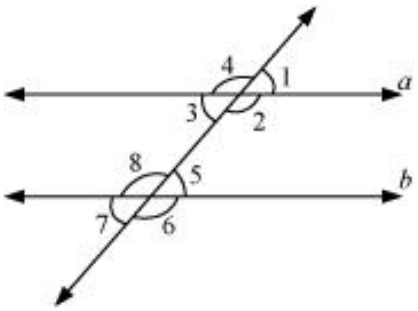
Q2. In the adjoining figure, identify

(i) The pairs of corresponding angles

(ii) The pairs of alternate interior angles

(iii) The pairs of interior angles on the same side of the transversal

(iv) The vertically opposite angles



Ans:

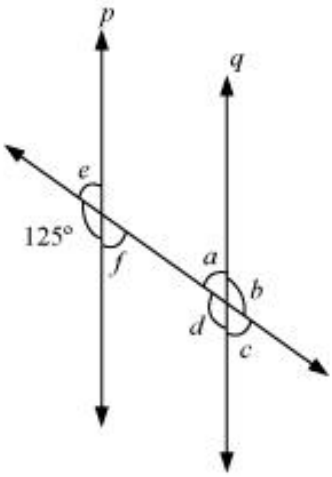
(i) ∠1 and ∠5, ∠2 and ∠6, ∠3 and ∠7, ∠4 and ∠8

(ii) ∠2 and ∠8, ∠3 and ∠5

(iii) ∠2 and ∠5, ∠3 and ∠8

(iv) ∠1 and ∠3, ∠2 and ∠4, ∠5 and ∠7, ∠6 and ∠8

Q3. In the adjoining figure, $p \| q$. Find the unknown angles.



Ans:

$\angle d = 125°$ (Corresponding angles)

$\angle e = 180° - 125° = 55°$ (Linear pair)

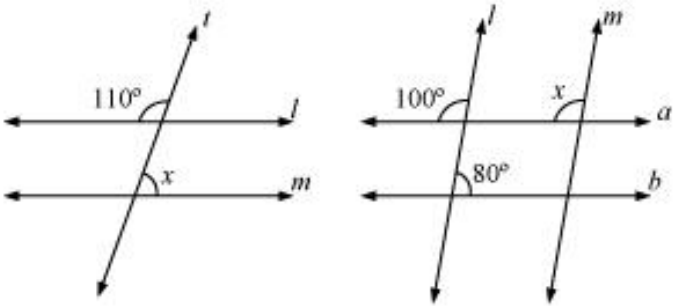
$\angle f = \angle e = 55°$ (Vertically opposite angles)

$\angle c = \angle f = 55°$ (Corresponding angles)

$\angle a = \angle e = 55°$ (Corresponding angles)

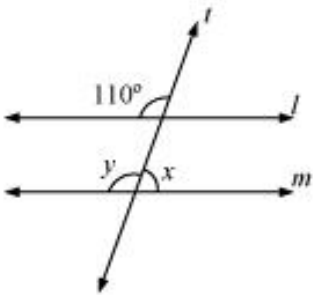
$\angle b = \angle d = 125°$ (Vertically opposite angles)

Q4. Find the value of x in each of the following figures if $l || m$.



Ans:

(i)



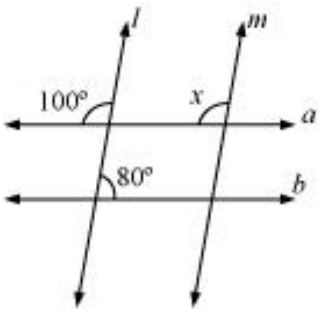
$\angle y = 110°$ (Corresponding angles)

$\angle x + \angle y = 180°$ (Linear pair)

$\angle y = 180° - 110°$

$= 70°$

(ii)



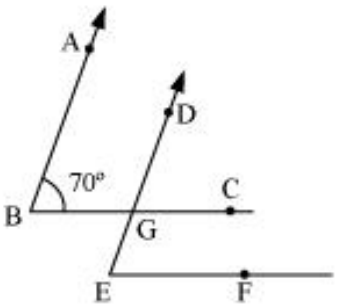
$\angle x = 100°$ (Corresponding angles)

Q5. In the given figure, the arms of two angles are parallel.

If $\angle ABC = 70°$, then find

(i) $\angle DGC$

(ii) $\angle DEF$



Ans:

(i) Consider that AB|| DG and a transversal line BC is intersecting them.

$\angle DGC = \angle ABC$ (Corresponding angles)

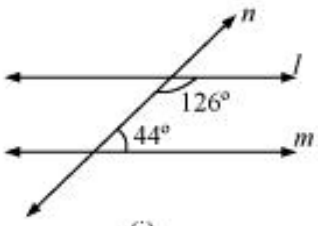
$\angle DGC = 70°$

(ii) Consider that BC|| EF and a transversal line DE is intersecting them.

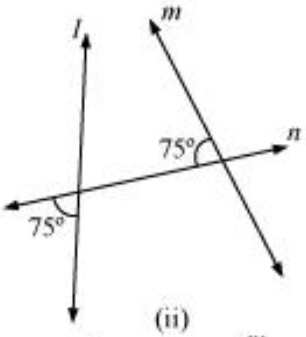
$\angle DEF = \angle DGC$ (Corresponding angles)

$\angle DEF = 70°$

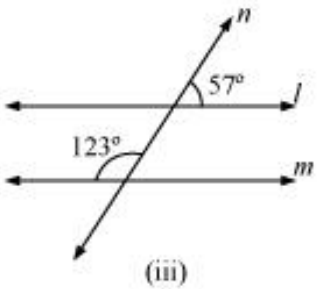
Q6. In the given figures below, decide whether l is parallel to m.



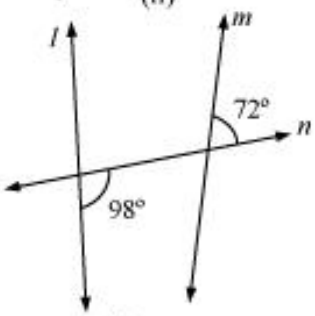
(i)



(ii)



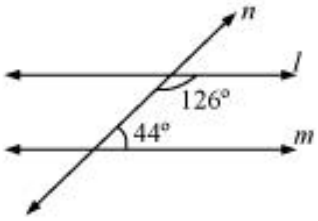
(iii)



(iv)

Ans:

(i)

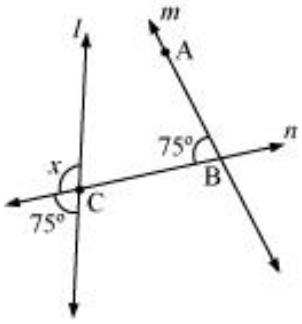


Consider two lines,l and m, and a transversal line n which is intersecting them.

Sum of the interior angles on the same side of transversal = $126^0 + 44^0 = 170^\circ$

As the sum of interior angles on the same side of transversal is not 180^0, therefore,l is not parallel to$m$.

(ii)

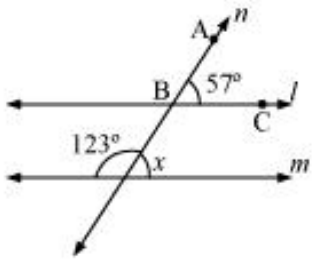


$x + 75^\circ = 180^\circ$ (Linear pair on line l)

$x = 180^\circ - 75^\circ = 105^\circ$

For l and m to be parallel to each other, corresponding angles ($\angle$ABC and $\angle x$)should be equal. However, here their measures are 75^0 and 105^0 respectively. Hence, these lines are not parallel to each other.

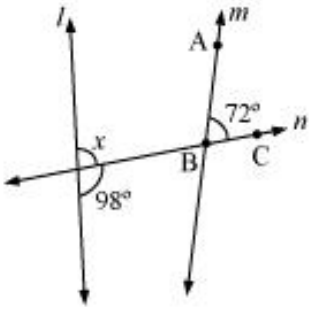
(iii)



$\angle x + 123° = 180°$ (Linear pair)

$\angle x = 180° - 123° = 57°$

For l and m to be parallel to each other, corresponding angles ($\angle ABC$ and $\angle x$)should be equal. Here, their measures are 57° and 57° respectively. Hence, these lines are parallel to each other.



$98 + \angle x = 180°$ (Linear pair)

$\angle x = 82°$

For l and m to be parallel to each other, corresponding angles ($\angle ABC$ and $\angle x$)should be equal. However, here their measures are 72° and 82° respectively. Hence, these lines are not parallel to each other.

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