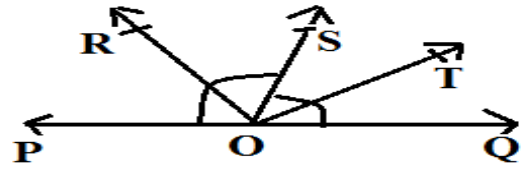


9th Lines and Angles study guide

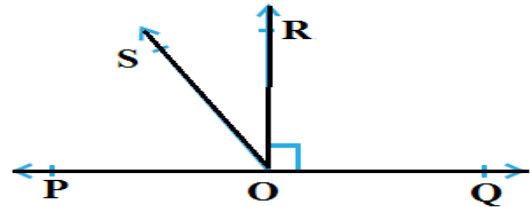
- ⇒ A minimum of two points are required to draw a line.
- ⇒ A part (or portion) of a line with two end points is called a line-segment
- ⇒ A part of a line with one end point is called a ray.
- ⇒ If three or more points lie on the same line, they are called collinear points; otherwise they are called non-collinear points.
- ⇒ An angle is formed when two rays originate from the same end point.
- ⇒ The rays making an angle are called the arms of the angle and the end point is called the vertex of the angle
- ⇒ An angle which is greater than 180° but less than 360° is called a reflex angle.
- ⇒ Two angles whose sum is 90° are called complementary angles .
- ⇒ Two angles whose sum is 180° are called supplementary angles.
- ⇒ Two angles are said to be adjacent angle, if they have a common vertex, a common arm and their non-common arms are on different sides of the common arm.
- ⇒ When two angles are adjacent, then their sum is always equal to the angle formed by the two non common arms.
- ⇒ If non-common arms of adjacent angle form a line then adjacent angle is called linear pair of angles.
- ⇒ Vertically opposite angles are formed only when two lines, intersect each other at the point.
- ⇒ The perpendicular distance between two parallel lines is same everywhere.
- ⇒ If a ray stands on a line, then the sum of two adjacent angles so formed is 180° .
- ⇒ If the sum of two adjacent angles is 180° , then a ray stands on a line (that is, the non-common arms form a line).

Q. Prove that if two lines intersect each other, then the vertically opposite angles are equal.

Q. In Fig. ray OS stands on a line POQ. Ray OR and ray OT are angle bisectors of $\angle POS$ and $\angle SOQ$, respectively. If $\angle POS = x$, find $\angle ROT$.



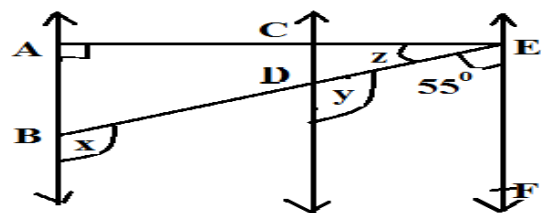
Q. In fig. POQ is a line, Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2} (\angle QOS - \angle POS)$.



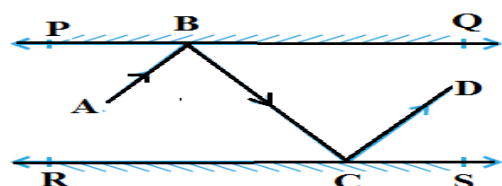
Q. Prove that if two lines are parallel to the same line, will they be parallel to each other.

Q. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel, then prove that the two lines are parallel.

Q. In Fig., $AB \parallel CD$ and $CD \parallel EF$. Also $EA \perp AB$. If $\angle BEF = 55^\circ$, find the values of x , y and z .



Q. In Fig., PQ and RS are two mirrors placed parallel to each other. An incident ray AB strikes the mirror PQ at B, the reflected ray moves along the path BC and strikes the mirror RS at C and again reflects back along CD. Prove that $AB \parallel CD$.

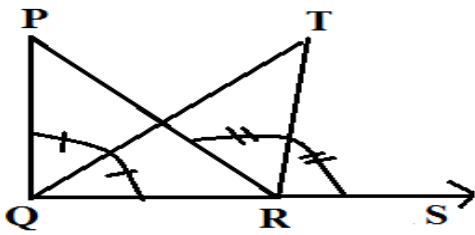


Q. Prove that the sum of the angles of a triangle is 180°

Q. Prove that If a side of a triangle is produced, then the exterior angle so formed is equal to the sum of the two interior opposite angles.

Q. The sides AB and AC of $\triangle ABC$ are produced to points E and D respectively. If bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point O, then prove that $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$

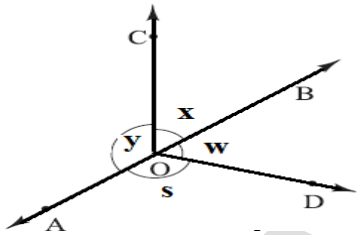
Q. In Fig. 6.44, the side QR of $\triangle PQR$ is produced to a point S. If the bisectors of $\angle PQR$ and $\angle PRS$ meet at point T, and then prove that $\angle QTR = \frac{1}{2} \angle QPR$



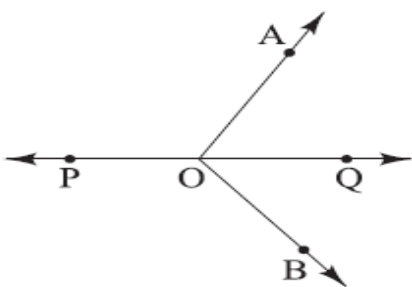
Q. Two lines AB and CD intersect at a point O such that $\angle BOC + \angle AOD = 280^\circ$, Find all the four angles.

Q. Find the measure of an angle if seven times its complement is 10° less than three times its supplement.

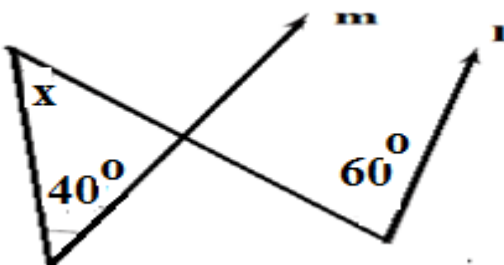
Q. If $x + y = s + w$, prove that AOB is a straight line.



Q. In the figure, OQ bisects $\angle AOB$. OP is a ray opposite to ray OQ. Prove that $\angle POA = \angle POB$.



Q. In the given figure, if $l \parallel m$, then find the value of x.

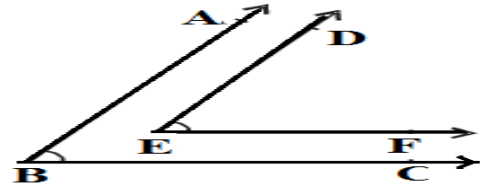


Q. AB and CD are the bisectors of the two alternate interior angles formed by the intersection of a transversal t with parallel lines E L and G m. Show that $AB \parallel CD$

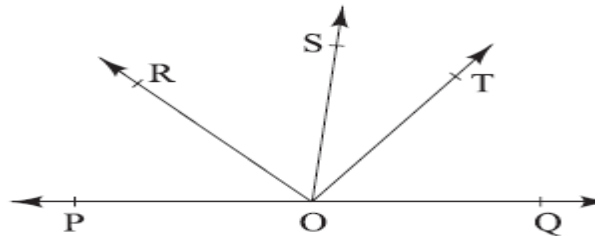
Q. In $\triangle ABC$, if $\angle A - \angle B = 15^\circ$, $\angle B - \angle C = 30^\circ$, find $\angle A$, $\angle B$ and $\angle C$.

Q. A triangle ABC is right angled at A. L is a point on BC such that $AL \perp BC$. Prove that $\angle BAL = \angle ACB$.

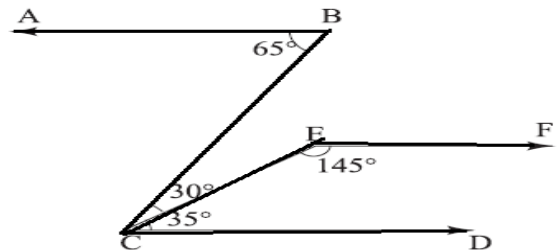
Q. In the figure, $BA \parallel ED$ and $BC \parallel EF$. Show that $\angle ABC = \angle DEF$.



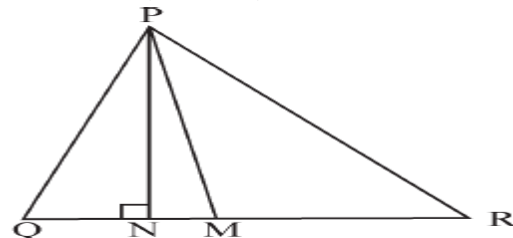
Q. In the figure, ray OS stands on a line POQ. Ray OR and ray OT are angle bisectors of $\angle POS$ and $\angle SOQ$ respectively. If $\angle POS = x$, find $\angle ROT$.



Q. In the the figure, prove that $AB \parallel EF$.



Q. In the figure, $\angle Q > \angle R$ and M is a point on QR such that PM is the bisector of $\angle QPR$. If the perpendicular from P on QR meets QR at N, prove that $\angle MPN = \frac{1}{2} (\angle Q - \angle R)$



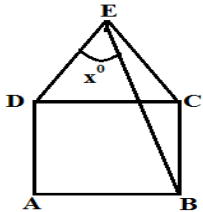
Q. P is a point equidistant from two lines l and m intersecting at a point A. Show that AP bisects the angle between them.

Q. If two parallel lines are intersected by a transversal, then prove that the bisectors of the interior angles form a rectangle.

Q. If the bisectors of two adjacent angles form a right angle prove that their non common angles are in the same straight line.

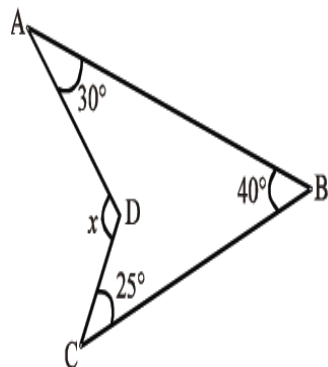
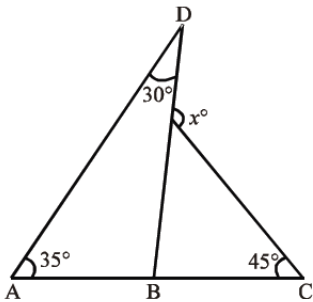
Q. Prove that if the arms of an angle are, respectively, parallel to the arms of another angle, then the angles either have equal measure or they are supplementary.

Q. A square ABCD is surmounted by an equilateral triangle EDC. Find x .

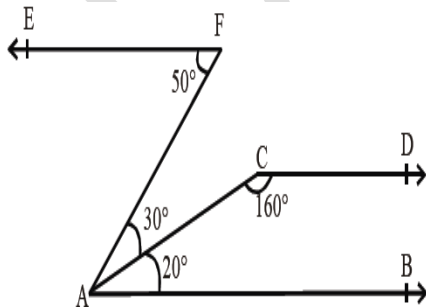


Q. If two parallel lines are intersected by a transversal, prove that the bisectors of two interior alternate angles are parallel.

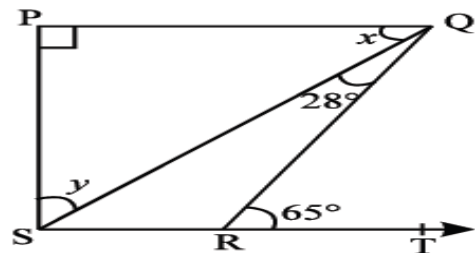
Q. Find the value of x° in fig.01 and fig.02



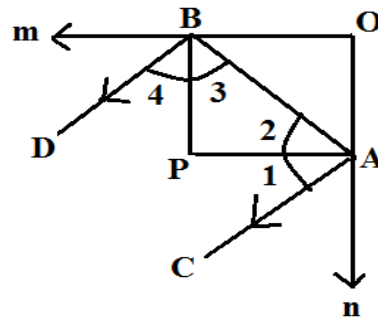
Q. In given figure show that $AB \parallel CD$



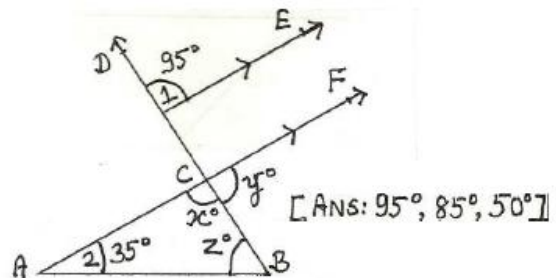
Q. In the given figure, if $PQ \perp PS$, $PQ \parallel SR$, $\angle SQR = 28^\circ$ and $\angle QRT = 65^\circ$, then find the values of x and y .



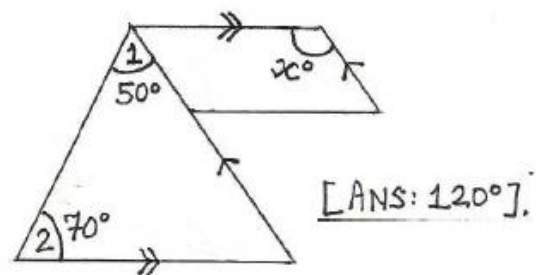
Q. m and n are two plane mirrors perpendicular to each other. Show that incident ray CA is parallel to reflected ray BD.



Q. In given figure find value of x, y and Z



Q. In given figure find value of x



Q. In given figure find value of x, y and Z

