

PENANG SANGAM HIGH SCHOOL

WORKSHEET 7

YEAR 10 MATHEMATICS

STRAND 4: GEOMETRY

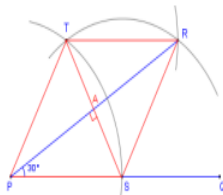
SUB STRAND: CONSTRUCTION

LEARNING OUTCOMES

- Construct angles, mediator of line segment and center of triangles
- Explain the properties of different centers of triangle.

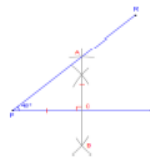
CONSTRUCTING 30

1. Draw a line PQ that will be one leg of the angle
2. With the compass point on P, set it on any width between P and Q
3. Draw an arc crossing PQ at S
4. Move the compass point to S and draw another arc crossing the first one at T
5. Move to T and make an arc crossing the previous one, labelling the intersection point R
6. Draw a straight line from P through R
7. Angle $RPQ = 30^\circ$



CONSTRUCTING 45

1. Draw a line PQ that will be one leg of the angle
2. With the compass point on P, set it on any width of more than half the length of PQ
3. From points P and Q, draw arcs above and below line PQ
4. Draw a straight line joining the arc intersections. The intersection of the two straight lines is the midpoint of line PQ.
5. From the midpoint of PQ, set the compass width to point P
6. Draw an arc across the perpendicular line and label it Point C
7. Draw line PC
8. Angle $PCQ = 45^\circ$



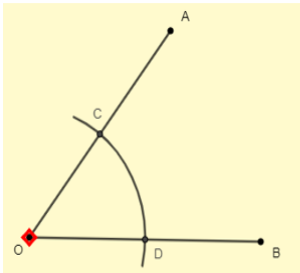
CONSTRUCTING 60

1. Draw a line PQ that will be one leg of the angle
2. With the compass point on P, set its width to about half of PQ
3. Draw an arc from above point P and crossing PQ
4. Place the compass point to where the arc crosses PQ, draw an arc above PQ and ensure that the two arcs cross each other. Label the point of intersection R
5. Draw straight line PR
6. Angle RPQ = 60°

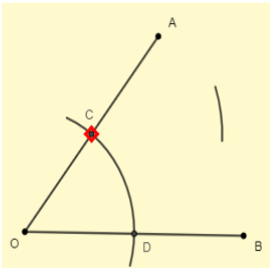
CONSTRUCTING 90

1. Draw a horizontal straight line and label one end A
2. Mark point D somewhere above and between the end points of the line drawn
3. Place the compass point on D and set its width to point A
4. Draw an arc across the line to above point A
5. Draw a diameter through D starting from where the arc crosses the line
6. Draw a straight line from A to the other end of the diameter
7. The angle between the two straight lines is 90°

Angle Bisector



Step 1: Center O, radius less than OA



Step 2: Center C, radius R

Step 3: Center D, radius R

Step 4: Connect O to intersected arcs

Construction of Mid point

Step 1

- Draw line segment AB. Place the compass point at point A and with the width of more than half the length of AB draw an arc from a point above AB right down to a point below A



Step 2

- Draw line segment AB. Place the compass point at point A and with the width of more than half the length of AB draw an arc from a point above AB right down to a point below A



Step 3

- Now place the compass point at B and draw an arc

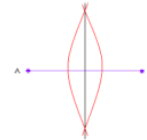


The two arcs should intersect above and below AB

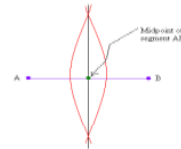


Step 4

- Draw a straight line joining the two point intersection

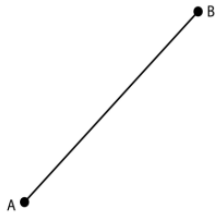


The point of intersection of the vertical line and the line segment AB shown with a green point is the midpoint

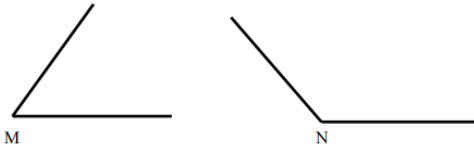


Exercise

1. Bisect a 30° angle
2. Bisect a 45° angle
3. Bisect the line segment AB given below



4. Construct the bisector of $\angle M$ and $\angle N$



Solution