Q.1 A) **Select the correct alternative answer and write it.**   **4**

1) A circle touches all sides of the parallelogram. So the parallelogram must be a _____

    a) rectangle   b) rhombus

    c) square   d) trapezium

2) If $\triangle ABC \sim \triangle DEF$ and $\angle A = 45°$, $\angle E = 87°$, then $\angle C = $ _____

    a) 45°   b) 87°

    c) 48°   d) cannot be determined

3) What is the length of a diagonal of square of side 10 cm? _____

    a) $10\sqrt{2}\ cm$ b) 10 cm

    c) $5\sqrt{2}\ cm$ d) $10\sqrt{3}\ cm$

4) The number of tangent that can be drawn to a circle at a point on the circle is _____

    a) 1   b) 3

    c) 2   d) infinite

B) **Solve the following sub-questions.**   **4**

1) If $\triangle ABC \sim \triangle XYZ$ then complete the following boxes.

$$\frac{AB}{XY} = \frac{\boxed{\ \ }}{YZ} = \frac{AC}{\boxed{\ \ }}$$

2) In the right angled triangle, sides making right angle are 9 cm and 12 cm. Find the length of the hypotenuse.

3) Two circles of radii 5.5 cm and 4.2 cm touch each other externally. Find the distance between their centres.

4) Draw a segment AB of length 6 cm and bisect it.

Q.2 A) **Complete the following activities: (any two)**   **4**

1) In the adjoining figure
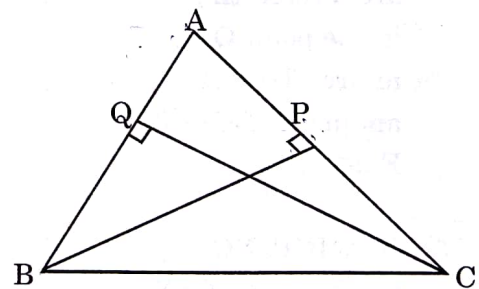BP $\perp$ AC, CQ $\perp$ AB,
A – P – C, A – Q – B,
then prove that
$\triangle APB$ and $\triangle AQC$ are similar.
Solution: In $\triangle APB$ and $\triangle AQC$

$\angle APB = \boxed{\quad}°$ .... (I)

$\angle AQC = \boxed{\quad}°$ .... (II)

$\angle APB \cong \angle AQC$ .... $\boxed{\quad}$

$\triangle APB \sim \triangle AQC$ .... $\boxed{\quad}$

P.T.O.

2) Complete the following activity to prove "Tangent segments drawn from an external point to a circle are congruent.

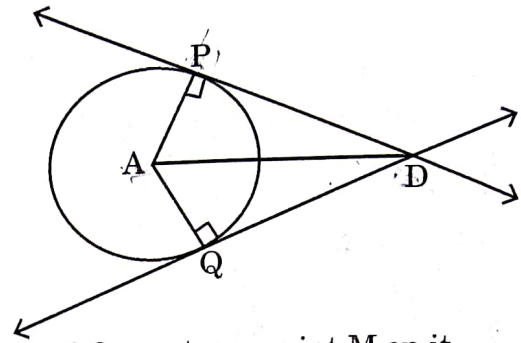   **Proof** : In $\triangle PAD$ and $\triangle QAD$

   Seg PA $\cong$ ☐ ..... radii of the same circle

   Seg AD $\cong$ Seg AD ..... ☐

   $\angle APD \cong \angle AQD = 90°$ .... tangent theorem

   $\therefore \triangle PAD \cong \triangle QAD$ .... ☐

   $\therefore$ Seg DP $\cong$ Seg ☐ .... c.s.c.t

3) Construct a tangent to a circle with centre P and radius 3.2 cm at any point M on it.

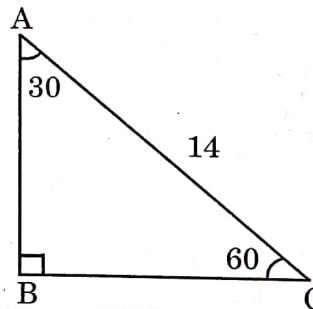**B) Solve the following questions. (any four)**   **8**

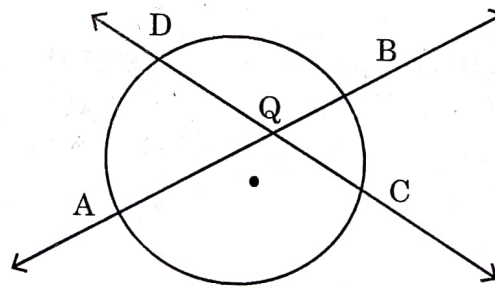1) In isosceles right angled $\triangle ABC$, hyp AC = 8. Find the $l(AB)$ and $l(BC)$.

2) In the given figure,
   ray PQ touches
   the circle at point Q.
   PQ = 12 , PR = 8,
   Find PS
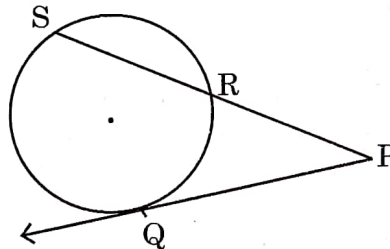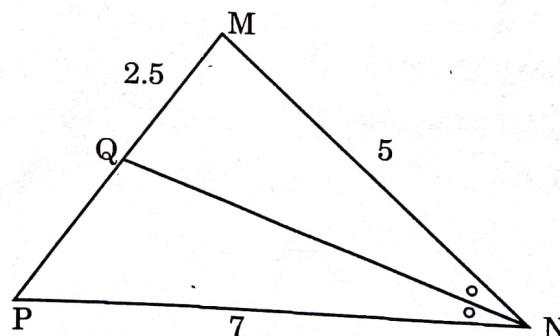
3) In $\triangle ABC$,
   $\angle B = 90°$, $\angle A = 30°$,
   AC = 14,
   then find AB and BC

4) Secants AB and CD
   are intersecting
   in the point Q.
   m(arc AD) = 25°
   and m(arc BC) = 36°.
   Find $\angle BQC$

5) In $\triangle MNP$, NQ
   is a bisector of $\angle N$
   If MN = 5 ; PN = 7, MQ = 2.5
   then Find QP.

Q.3 A) Complete the following activities: (any one)   **3**

1) In example small letters are shows the length of sides, complete the activity for prove the given triangle are right angled triangle

$p = 17$, $q = 8$, $r = 15$

$p^2 = 17^2 = \boxed{289}$ .... (I)

$q^2 = 8^2 = \boxed{}$, $r^2 = 15^2 = \boxed{}$

$q^2 + r^2 = 64 + \boxed{} = 289$ .... (II)

$\therefore p^2 \boxed{} q^2 + r^2$ .... From I and II

$\therefore$ The given triangle is $\boxed{}$ triangle

2) In the figure,

PM = 10 cm,

A ($\triangle$PQS) = 100 sq.cm,

A ($\triangle$QRS) = 110 sq.cm then

Find NR.

Solution:

$\dfrac{A(\triangle PQS)}{A(\triangle QRS)} = \dfrac{\boxed{}}{\boxed{}}$ --- Bases are equal

$\therefore \dfrac{\boxed{}}{\boxed{}} = \dfrac{10}{NR}$

$\therefore NR = \dfrac{\boxed{} \times 110}{100}$

$\therefore NR = \boxed{}$
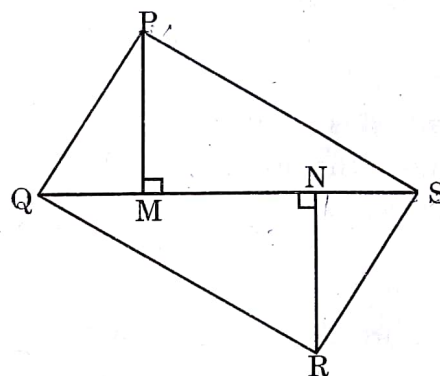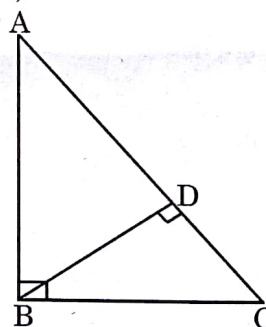

B) Solve the following questions: (any two)   **6**

1) In a right angled $\triangle$,

Given : In $\triangle$ABC,

$\angle$ABC = 90°, then

to prove : $AC^2 = AB^2 + BC^2$

2) Draw a circle with radius 4.1 cm. Construct tangents to the circle from a point at a distance 7.3 cm from the centre.

3) In $\triangle$ABC seg AP is a medium. If BC = 18 $AB^2 + AC^2 = 260$. Find AP.
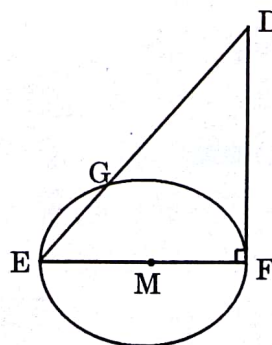
4) In the given figure,
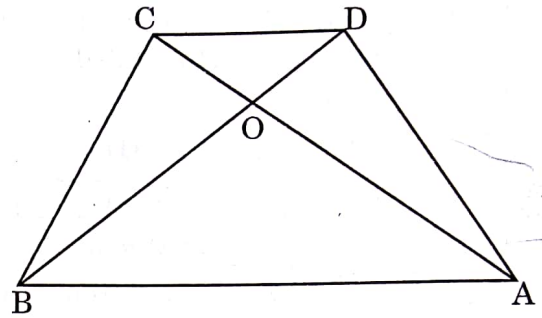
Seg EF is a diameter

and Seg DF is a

tangent segment.

The radius of the circle is 'r'.

Prove that DE $\times$ GE = $4r^2$.

8

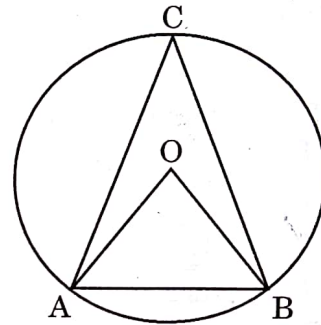**Q.4   Solve the following sub-questions: (any two)**

1) In trapezium ABCD,
    side AB ∥ side DC,
    diagonal AC and BD
    intersect in point O.
    If AB = 20, DC = 6,
    OB = 15, then find OD.

2) ΔSHR ~ ΔSVU. In ΔSHR , SH = 4.5 cm, HR = 5.2 cm, SR = 5.8 cm and then draw ΔSVU.

3) In the given figure,
    in a circle with
    centre O, length of
    chord AB is equal to
    radius of the circle.
    Find measure of each of the
    following
    1) ∠AOB   2) ∠ACB
    3) m(arc AB)   4) m(arc ACB)

Q.5   Attempt any one: **3**

1) In the figure, X
    is any point in
    the interior of triangle.
    Point X is joined to vertices
    of triangle Seg PQ ∥ Seg DE.
    Seg QR ∥ Seg EF.
    Prove : Seg PR ∥ Seg DF.
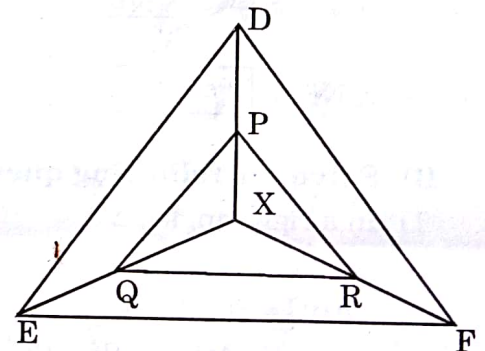
2) In figure,
    A – D – C
    and B – E – C
    Seg DE ∥ Side AB.
    If AD = 5, DC = 3,
    BC = 6.4 then find BE.