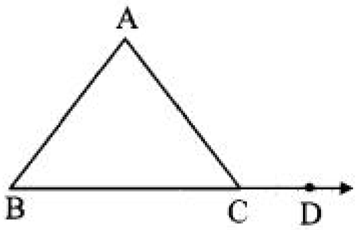
Practice Set 3.1 Geometry 9th Std Maths Part 2 Answers Chapter 3 Triangles

Practice Set 3.1 Geometry 9th Standard Question 1.
In the adjoining figure, ∠ACD is an exterior angle of ΔABC. ∠B = 40°, ∠A = 70°. Find the measure of ∠ACD.



Solution:
∠A = 70° , ∠B = 40° [Given]
∠ACD is an exterior angle of ΔABC. [Given]
∴ ∠ACD = ∠A + ∠B
= 70° + 40°
∴ ∠ACD = 110°

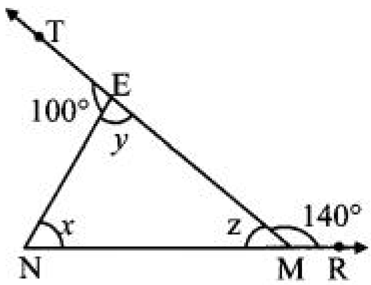
Question 2.
In ΔPQR, ∠P = 70°, ∠Q = 65°, then find ∠R.
Solution:
∠P = 70°, ∠Q = 65° [Given]
In ΔPQR,
∠P + ∠Q + ∠R = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 70° + 65° + ∠R = 180°
∴ ∠R = 180° – 70° – 65°
∴ ∠R = 45°

Practice Set 3.1 Geometry 9th Question 3.
The measures of angles of a triangle are x°, (x – 20)°, (x – 40)°. Find the measure of each angle.
Solution:
The measures of the angles of a triangle are x°, (x – 20)°, (x – 40)°. [Given]
∴ x°+ (x – 20)° + (x – 40)° = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 3x – 60 = 180
∴ 3x = 180 + 60
∴ 3x = 240
∴ x = 240
∴ x = 2403
∴ x = 80°
∴ The measures of the remaining angles are
x – 20° = 80° – 20° = 60°,

x – 40° = 80° – 40° = 40°
∴ The measures of the angles of the triangle are 80°, 60° and 40°.

9th Class Geometry Practice Set 3.1 Question 4.
The measure of one of the angles of a triangle is twice the measure of its smallest angle and the measure of the other is thrice the measure of the smallest angle. Find the measures of the three angles.
Solution:
Let the measure of the smallest angle be x°.
One of the angles is twice the measure of the smallest angle.
∴ Measure of that angle = 2x°
Another angle is thrice the measure of the smallest angle.
∴ Measure of that angle = 3x°
∴ The measures of the remaining two angles are 2x° and 3x°.
Now, x° + 2x° + 3x° = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 6x = 180
∴ x = 180
∴ x = 1806
∴ x° = 30°
The measures of the remaining angles are 2x° = 2 x 30° = 60°
3x° = 3 x 30° = 90°
The measures of the three angles of the triangle are 30°, 60° and 90°.

Question 5.
In the adjoining figure, measures of some angles are given. Using the measures, find the values of x, y, z.

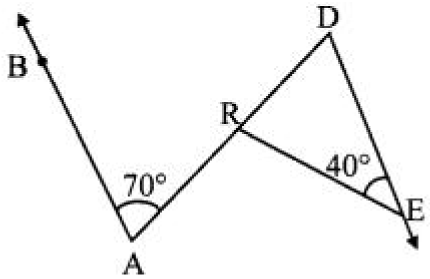


Solution:
i. ∠NET = 100° and ∠EMR = 140°
∠EMN + ∠EMR = 180°
∴ z +140° =180°
∴ z = 180° -140°
∴ z = 40°

ii. Also, ∠NET + ∠NEM = 180° [Angles in a linear pair]
∴ 100° + y = 180°
∴ y = 180° – 100°
∴ y = 80°

iii. In ΔENM,
∴ ∠ENM + ∠NEM + ∠EMN = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ x +80°+ 40°= 180°
∴ x = 180° – 80° – 40°
∴ x = 60°
∴ x = 60°, = 80°, z = 40°

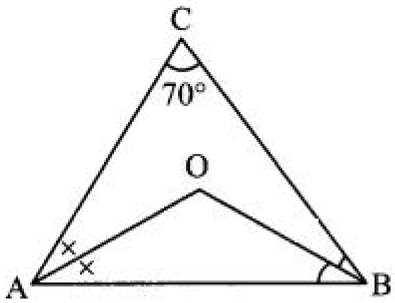
Question 6.
In the adjoining figure, line AB || line DE. Find the measures of ∠DRE and ∠ARE using given measures of some angles.



Solution:
i. ∠B AD = 70°, ∠DER = 40° [Given]
line AB || line DE and seg AD is their transversal.
∴ ∠EDA = ∠BAD [Alternate Angles]
∴ ∠EDA = 70° ….(i)
In ΔDRE,
∠EDR + ∠DER + ∠DRE = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 70°+ 40° +∠DRE = 180° [From (i) and D – R – A]
∴ ∠DRE = 180° -70° -40°
∴ ∠DRE = 70°

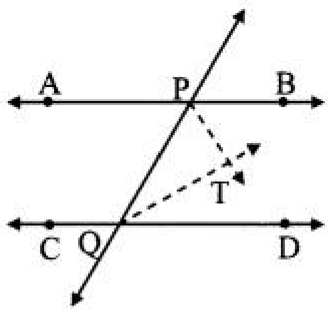
ii. ∠DRE + ∠ARE = 180° [Angles in a linear pair]
∴ 70° + ∠ARE = 180°
∴ ∠ARE = 180°-70°
∴ ∠ARE =110°
∴ ∠DRE = 70°, ∠ARE = 110°

Triangles Class 9 Practice Set 3.1 Question 7.
In ΔABC, bisectors of ∠A and ∠B intersect at point O. If ∠C = 70°, find the measure of ∠AOB.
Solution:
∠OAB = ∠OAC = – ∠BAC ….(i) [Seg AO bisects ∠BAC]
∠OBA = ∠OBC = – ∠ABC …..(ii) [Seg RO bisects ∠ABC]
In AABC,
∠BAC + ∠ABC + ∠ACB = 180° [Sum of the measures of the angles of a triangle is 180°]



∴ ∠BAC + ∠ABC + 70° = 180°
∴ ∠BAC + ∠ABC = 180°- 70°
∴ ∠BAC + ∠ABC = 110°
∴ 12(∠BAC) + 12 (∠ABC) = 12 x 110° [Multiplying both sides by 12]
∴ ∠OAB + ∠OBA = 55° ….(iii) [From (i) and (ii)]
In AOAB,
∠OAB + ∠OBA + ∠AOB = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 55° + ∠AOB = 180° [From (iii)]
∴ ∠AOB = 180°- 55°
∴ ∠AOB = 125°

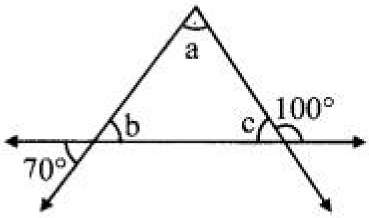
Question 8.
In the adjoining figure, line AB || line CD and line PQ is the transversal. Ray PT and ray QT are bisectors of ∠BPQ and ∠PQD respectively. Prove that m ∠PTQ = 90°.



Given: line AB || line CD and line PQ is the transversal.
ray PT and ray QT are the bisectors of ∠BPQ and ∠PQD respectively.
To prove: m∠PTQ = 90°
Solution:
Proof:
∠TPB = ∠TPQ = 12∠BPQ …(i) [Ray PT bisects ∠BPQ]
∠TQD = ∠TQP = 12∠PQD ….(ii) [Ray QT bisects ∠PQD]
line AB || line CD and line PQ is their transversal. [Given]
∴∠BPQ + ∠PQD = 180° [Interior angles]
∴ 12 (∠BPQ) + 12 (∠PQD) = 12 x 180° [Multiplying both sides by 12]
∠TPQ + ∠TQP = 90°
In ΔPTQ,
∠TPQ + ∠TQP + ∠PTQ = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 90° + ∠PTQ = 180° [From (iii)]
∴ ∠PTQ = 180° – 90°

= 90°
∴ m∠PTQ = 90°

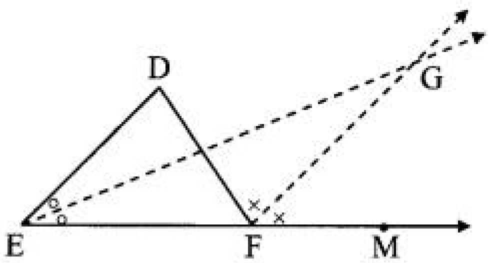
Triangle Practice Set 3.1 Question 9.
Using the information in the adjoining figure, find the measures of ∠a, ∠b and ∠c.



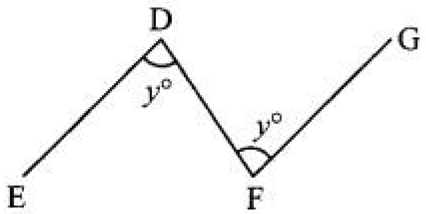
Solution:
i. ∠c + 100° = 180° [Angles in a linear pair]
∴ ∠c = 180° – 100°
∴ ∠c = 80°

ii. ∠b = 70° [Vertically opposite angles]
iii. ∠a + ∠b +∠c = 180° [Sum of the measures of the angles of a triangle is 180°]
∠a + 70° + 80° = 1800
∴ ∠a = 180° – 70° – 80°
∴ ∠a = 30°
∴ ∠a = 30°, ∠b = 70°,∠ c = 80°

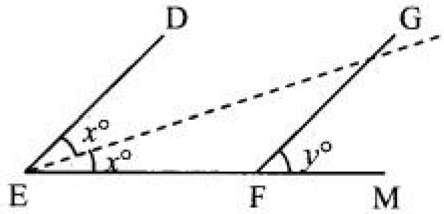
Practice Set 3.1 Geometry Question 10.
In the adjoining figure, line DE || line GF, ray EG and ray FG are bisectors of ∠DEF and ∠DFM respectively. Prove that,



i. ∠DEG = 12 ∠EDF
ii. EF = FG
Solution:
i. ∠DEG = ∠FEG = x° ….(i) [Ray EG bisects ∠DEF]
∠GFD = ∠GFM = y° …..(ii) [Ray FG bisects ∠DFM]
line DE || line GF and DF is their transversal. [Given]

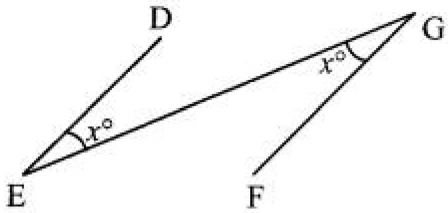


∴ ∠EDF = ∠GFD [Alternate angles]
∴ ∠EDF = y° ….(iii) [From (ii)]
line DE || line GF and EM is their transversal. [Given]



∴ ∠DEF = ∠GFM [Corresponding angles]
∴ ∠DEG + ∠FEG = ∠GFM [Angle addition property]
∴ x°+ x° = y° [From (i) and (ii)]
∴ 2x° = y°
∴ x° = 12y°
∴ ∠DEG = 12∠EDF [From (i) and (iii)]

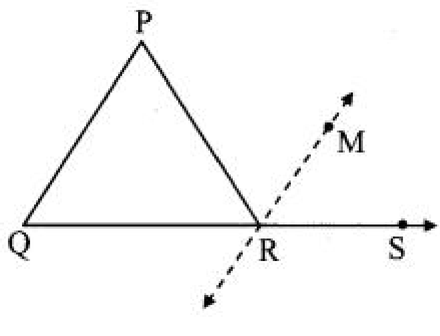
ii. line DE || line GF and GE is their transversal. [Given]



∴ ∠DEG = ∠FGE …(iv) [Alternate angles]
∴ ∠FEG = ∠FGE ….(v) [From (i) and (iv)]
∴ In ΔFEG,
∠FEG = ∠FGE [From (v)]
∴ EF = FG [Converse of isosceles triangle theorem]

Maharashtra Board Class 9 Maths Chapter 3 Triangles Practice Set 3.1 Intext Questions and Activities

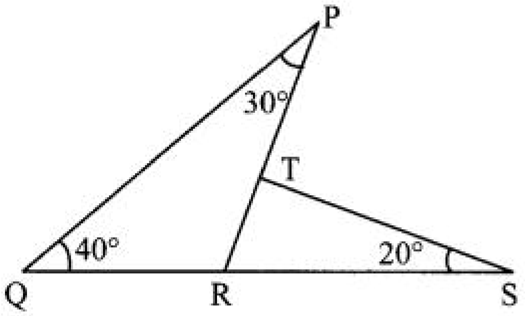
Class 9 Geometry Practice Set 3.1 Question 1. Can you give an alternative proof of the above theorem by drawing a line through point R and parallel to seg PQ in the above figure? (Textbook pg. no. 25)



Solution:

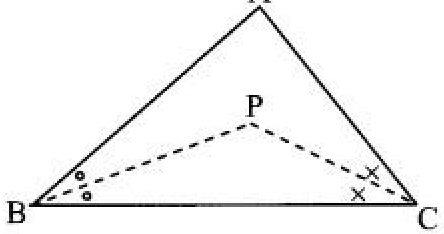
Yes.
Construction: Draw line RM parallel to seg PQ through a point R.
Proof:
seg PQ || line RM and seg PR is their transversal. [Construction]
∴ ∠PRM = ∠QPR ……..(i) [Alternate angles]
seg PQ || line RM and seg QR is their transversal. [Construction]
∴ ∠SRM = ∠PQR ……..(ii) [Corresponding angles]
∴ ∠PRM + ∠SRM = ∠QPR + ∠PQR [Adding (i) and (ii)]
∴ ∠PRS = ∠PQR + ∠QPR [Angle addition property]

3 Triangles Question 2. Observe the given figure and find the measures of ∠PRS and ∠RTS. (Textbook pg. no.25)



Solution:
∠PRS is an exterior angle of ΔPQR.
So from the theorem of remote interior angles,
∠PRS = ∠PQR + ∠QPR
= 40° + 30°
∴ ∠PRS = 70°
∴ ∠TRS=70° …[P – T – R]
In ΔRTS,
∠TRS + ∠RTS + ∠TSR = 180° …[Sum of the measures of the angles of a triangle is 180°]
∴ 70° + ∠RTS + 20° = 180°
∴ ∠RTS + 90° = 180°
∴ ∠RTS = 180°
∴ ∠RTS = 90°

9th Class Geometry Triangles Question 3. In the given figure, bisectors of ∠B and ∠C of ΔABC intersect at point P. Prove that ∠BPC = 90° + 12∠BAC.
Complete the proof by filling in the blanks. (Textbook pg. no.27)



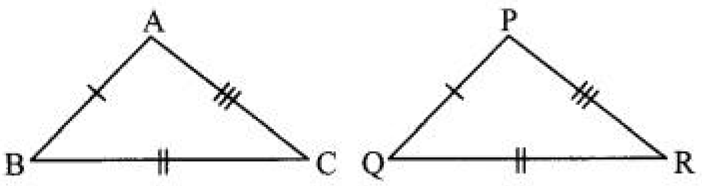
Solution:

Proof:
In ΔABC,
∠BAC + ∠ABC + ∠ACB = 180° ...[Sum of the measures of the angles of a triangle is 180°]
∴ ∠BAC + – ∠ABC + ∠ACB = 180 ... [Multiplying each term by 12]
∴ ∠BAC + ∠PBC + ∠PCB = 90°
∴ ∠PBC + ∠PCB = 90° – 1 ∠BAC ....(i)
InΔBPC,
∠BPC + ∠PBC + ∠PCB = 180° ....[Sum of measures of angles of a triangle]
∴ ∠BPC + 90° – 12∠BAC = 180° ......[From (i)]
∴ ∠BPC = 180° – 90°12∠BAC
= 180°- 90°+ 12∠BAC
= 90°+ 12∠BAC

Practice Set 3.2 Geometry 9th Std Maths Part 2 Answers Chapter 3 Triangles

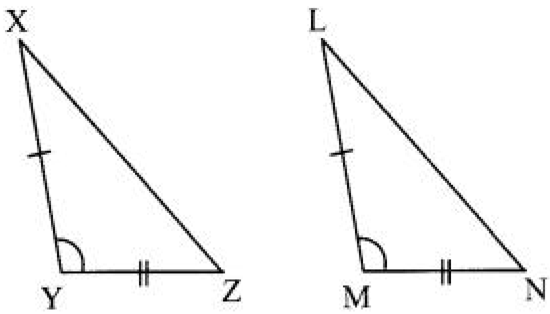
Question 1.
In each of the examples given below, a pair of triangles is shown. Equal parts of triangles in each pair are marked with the same signs. Observe the figures and state the test by which the triangles in each pair are congruent.

i.



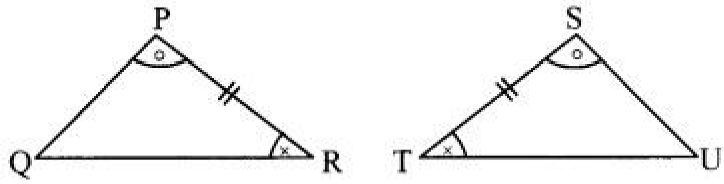
By SSS test
ΔABC ≅ ΔPQR

ii.



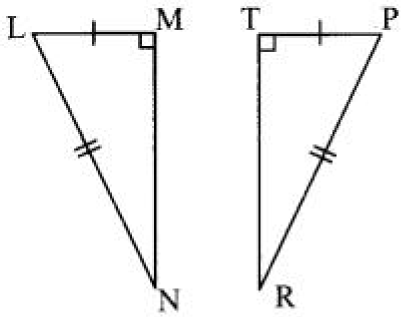
By SAS test
Δ XYZ ≅ ΔLMN

iii.



By ASA test
ΔPRQ ≅ ΔSTU

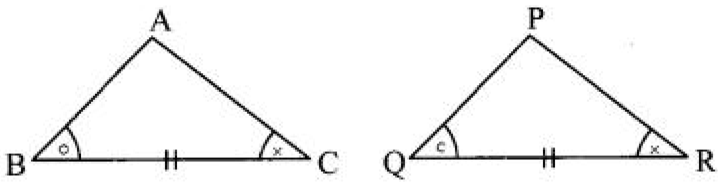
iv.



By hypotenuse side test
ΔLMN ≅ ΔPTR

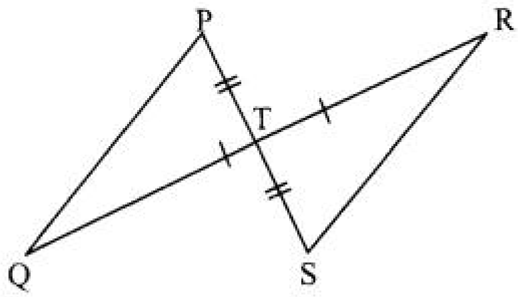
Question 2.
Observe the information shown in pairs of triangles given below. State the test by which the two triangles are congruent. Write the remaining congruent parts of the triangles.
Solution:

i.



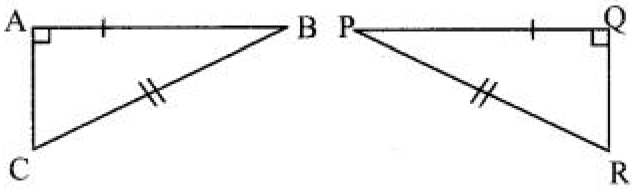
From the information shown in the figure,
In ΔABC and ΔPQR,
∠ABC ≅ ∠PQR
seg BC ≅ seg QR
∠ACB ≅ ∠PRQ
∴ ΔABC ≅ ΔPQR [ASA test]
∴ ∠BAC ≅ ∠QPR [Corresponding angles of congruent triangles]
seg AB ≅ segPQ and segAC ≅ seg PR [Corresponding sides of congruent triangles]

ii.



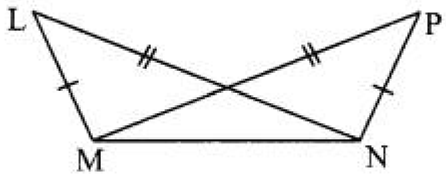
From the information shown in the figure,
In ΔPTQ and ΔSTR,
seg PT ≅ seg ST
∠PTQ ≅ ∠STR [Vertically opposite angles]
seg TQ ≅ seg TR
∴ ΔPTQ ≅ ΔSTR [SAS test]
∴ ∠TPQ ≅ ∠TSR and ∠TQP ≅ ∠TRS [Corresponding angles of congruent triangles]
seg PQ ≅ seg SR [Corresponding sides of congruent triangles]

Question 3.
From the information shown in the figure, state the test assuring the congruence of ΔABC and ΔPQR. Write the remaining congruent parts of the triangles.



Solution:
In ΔBAC and ΔPQR,
seg BA ≅ seg PQ
seg BC ≅ seg PR
∠BAC ≅ ∠PQR = 90° [Given]
∴ ΔBAC ≅ ΔPQR [Hypotenuse side test]
∴ seg AC ≅ seg QR [c.s.c.t.]
∠ABC ≅ ∠QPR and ∠ACB ≅ ∠QRP [c.a.c.t.]

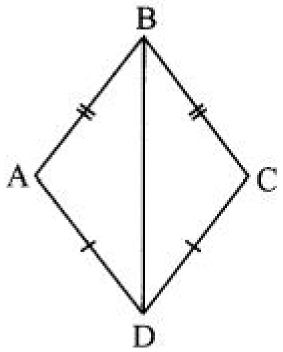
Question 4.
As shown in the adjoining figure, in ΔLMN and ΔPNM, LM = PN, LN = PM. Write the test which assures the congruence of the two triangles. Write their remaining congruent parts.



Solution:
In ΔLMN and ΔPNM,
seg LM ≅ seg PN
seg LN ≅ seg PM [Given]
seg MN ≅ seg NM [Common side]

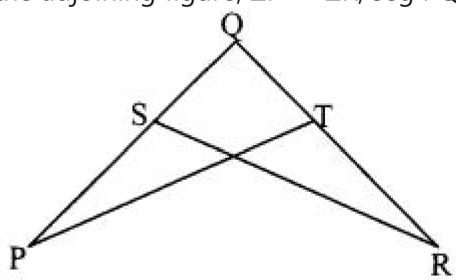
∴ ΔLMN ≅ ΔPNM [SSS test]
∴ ∠LMN ≅ ∠PNM,
∴ ∠MLN ≅ ∠NPM, and ∠LNM ≅ ∠PMN [c.a.c.t.]

Question 5.
In the adjoining figure, seg AB ≅ seg CB and seg AD ≅ seg CD. Prove that ΔABD ≅ ΔCBD.



Solution:
proof:
In ΔABD and ΔCBD,
seg AB ≅ seg CB
seg AD ≅ seg CD [Given]
seg BD ≅ seg BD [Common side]
∴ ΔABD ≅ ΔCBD [SSS test]

Question 6.
In the adjoining figure, ZP ≅ ZR, seg PQ ≅ seg RQ. Prove that APQT ≅ ARQS.



Proof:
In ΔPQT and ΔRQS,
∠P ≅ ∠R
seg PQ ≅ seg RQ [Given]
∠Q ≅ ∠Q [Common angle]
∴ ΔPQT ≅ ΔRQS [ASA test]

Practice Set 3.3 Geometry 9th Std Maths Part 2 Answers Chapter 3 Triangles

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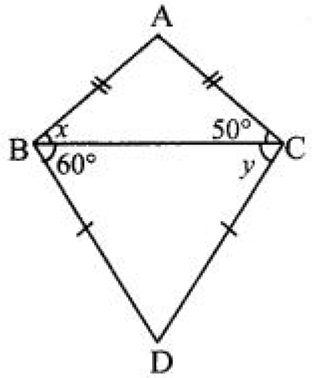
Digvijay
Arjun

Question 1.
Find the values of x and y using the information shown in the given figure. Find the measures of ∠ABD and ∠ACD.



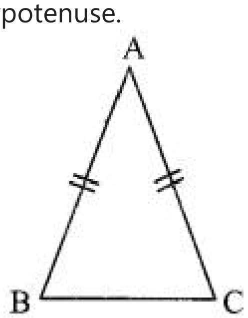
Solution:
i. ∠ACB = 50° [Given]
In ΔABC, seg AC ≅ seg AB [Given]
∴ ∠ABC ≅ ∠ACB [Isosceles triangle theorem]
∴ x = 50°

ii. ∠DBC = 60° [Given]
In ABDC, seg BD ≅ seg DC [Given]
∴ ∠DCB ≅ ∠DBC [Isosceles triangle theorem]
∴ y = 60°

iii. ∠ABD = ∠ABC + ∠DBC [Angle addition property]
= 50° + 60°
∴ ∠ABD = 110°

iv. ∠ACD = ∠ACB + ∠DCB [Angle addition property]
= 50° + 60°
∴ ∠ACD = 110°
∴ x = 50°, y = 60°,
∠ABD = 110°, ∠ACD = 110°

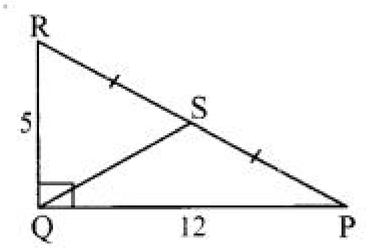
Question 2.
The length of hypotenuse of a right angled triangle is 15. Find the length of median on its hypotenuse.



Solution:
Length of hypotenuse = 15 [Given]

Length of median on the hypotenuse = 12 x length of hypotenuse [In a right angled triangle, the length of the median on the hypotenuse is half the length of the hypotenuse]
= 12 x 15 = 7.5
∴ The length of the median on the hypotenuse is 7.5 units.

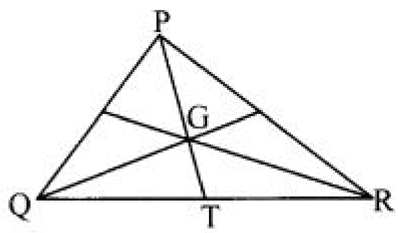
Question 3.
In ΔPQR, ∠Q = 90°, PQ = 12, QR = 5 and QS is a median. Find l(QS).



Solution:
i. PQ = 12, QR = 5 [Given]
In APQR, ∠Q = 90° [Given]
∴ $PR^2 = QR^2 + PQ^2$ [Pythagoras theorem]
= 25 + 144
∴ PR^2 =169
∴ PR = 13 units [Taking square root of both sides]

ii. In right angled APQR, seg QS is the median on hypotenuse PR.
∴ QS = 12PR [In a right angled triangle, the length of the median on the hypotenuse is half the length of the hypotenuse]
= 12 x 13
∴ l(QS) = 6.5 units

Question 4.
In the given figure, point G is the point of concurrence of the medians of ΔPQR. If GT = 2.5, find the lengths of PG and PT.



Solution:
i. In ΔPQR, G is the point of concurrence of the medians. [Given]
The centroid divides each median in the ratio 2 : 1.
PG : GT = 2 : 1

$$\therefore \quad \frac{PG}{GT} = \frac{2}{1}$$

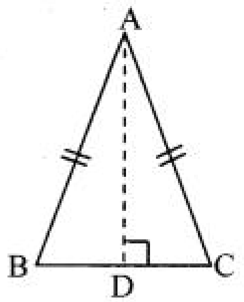
$$\therefore \quad \frac{PG}{2.5} = \frac{2}{1}$$

∴ PG = 2 x 2.5
∴ PG = 5 units

ii. Now, PT = PG + GT [P – G – T]
= 5 + 2.5
∴ l(PG) = 5 units, l(PT) = 7.5 units

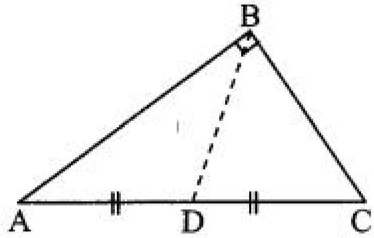
Maharashtra Board Class 9 Maths Chapter 3 Triangles Practice Set 3.3 Intext Questions and Activities

Question 1.
Can the theorem of isosceles triangle be proved by doing a different construction? (Textbook pg. no.34)



Solution:
Yes
Construction: Draw seg AD ⊥ seg BC.
Proof:
In ΔABD and ΔACD,
seg AB ≅ seg AC [Given]
∠ADB ≅ ∠ADC [Each angle is of measure 90°]
seg AD ≅ seg AD [Common side]
∴ ΔABD ≅ ΔACD [Hypotenuse side test]
∴ ∠ABD ≅ ∠ACD [c.a.c.t.]
∴ ∠ABC ≅ ∠ACB [B-D-C]

Question 2.
Can the theorem of isosceles triangle be proved without doing any construction? (Textbook pg, no.34)



Solution:
Yes
Proof:
In ΔABC and ΔACB,

seg AB ≅ seg AC [Given]
∠BAC ≅ ∠CAB [Common angle]
seg AC ≅ seg AB [Given]
∴ ΔABC ≅ ΔACB [SAS test]
∴ ∠ABC ≅ ∠ACB [c. a. c. t.]

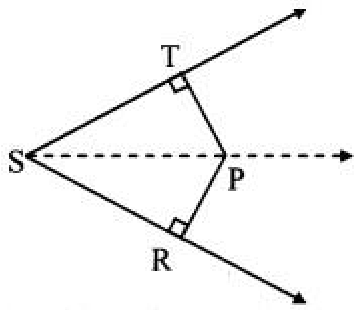
Question 3.
In the given figure, ΔABC is a right angled triangle, seg BD is the median on hypotenuse.
Measure the lengths of the following segments.
i. AD
ii. DC
iii. BD
From the measurements verify that BD = 12AC. (Textbook pg. no. 37)
Solution:
AD = DC = BD= 1.9 cm
AC = AD + DC [A – D – C]
= 1.9 + 1.9
= 2 x 1.9 cm
∴ AC = 2 x BD
∴ BD = 12 AC

Practice Set 3.4 Geometry 9th Std Maths Part 2 Answers Chapter 3 Triangles

Question 1.
In the adjoining figure, point A is on the bisector of ∠XYZ. If AX = 2 cm, then find AZ.

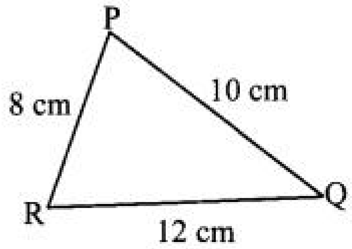
Solution:
AX = 2 cm [Given]
Point A lies on the bisector of ∠XYZ. [Given]
Point A is equidistant from the sides of ∠XYZ. [Every point on the bisector of an angle is equidistant from the sides of the angle]
∴ A Z = AX
∴ AZ = 2 cm

Question 2.
In the adjoining figure, ∠RST = 56°, seg PT ⊥ ray ST, seg PR ⊥ ray SR and seg PR ≅ seg PT. Find the measure of ∠RSP.
State the reason for your answer.



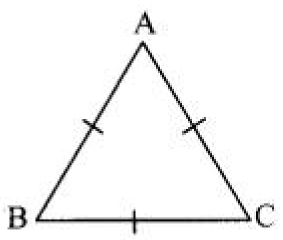
Solution:
seg PT ⊥ ray ST, seg PR ⊥ ray SR [Given]
seg PR ≅ seg PT
∴ Point P lies on the bisector of ∠TSR [Any point equidistant from the sides of an angle is on the bisector of the angle]
∴ Ray SP is the bisector of ∠RST.
∠RSP = 56° [Given]
∴ ∠RSP = 12∠RST
= 12 x 56°
∴ ∠RSP = 28°

Question 3.
In ΔPQR, PQ = 10 cm, QR = 12 cm, PR triangle. 8 cm. Find out the greatest and the smallest angle of the triangle.



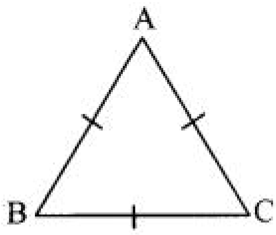
Solution:
In ΔPQR,
PQ = 10 cm, QR = 12 cm, PR = 8 cm [Given]
Since, 12 > 10 > 8
∴ QR > PQ > PR
∴ ∠QPR > ∠PRQ > PQR [Angle opposite to greater side is greater]
∴ In ΔPQR, ∠QPR is the greatest angle and ∠PQR is the smallest angle.

Question 4.
In ΔFAN, ∠F = 80°, ∠A = 40°. Find out the greatest and the smallest side of the triangle. State the reason.



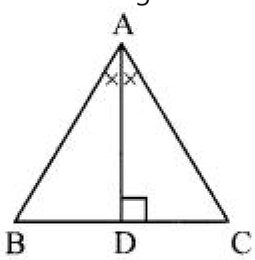
Solution:
In ΔFAN,
∠F + ∠A + ∠N = 180° [Sum of the measures of the angles of a triangle is 180°]
∴ 80° + 40° + ∠N = 180°
∴ ∠N = 180° – 80° – 40°
∴∠N = 60°
Since, 80° > 60° > 40°
∴ ∠F > ∠N > ∠A
∴ AN > FA > FN [Side opposite to greater angle is greater]
∴ In ΔFAN, AN is the greatest side and FN is the smallest side.

Question 5.
Prove that an equilateral triangle is equiangular.



Given: ΔABC is an equilateral triangle.
To prove: ΔABC is equiangular
i.e. ∠A ≅ ∠B ≅ ∠C ...(i) [Sides of an equilateral triangle]
In ΔABC,
seg AB ≅ seg BC [From (i)]
∴ ∠C = ∠A (ii) [Isosceles triangle theorem]
In ΔABC,
seg BC ≅ seg AC [From (i)]
∴ ∠A ≅ ∠B (iii) [Isosceles triangle theorem]
∴ ∠A ≅ ∠B ≅ ∠C [From (ii) and (iii)]
∴ ΔABC is equiangular.

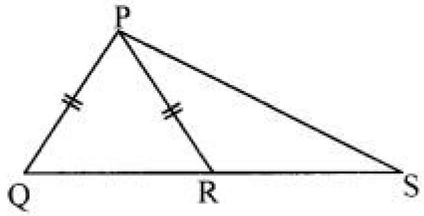
Question 6.
Prove that, if the bisector of ∠BAC of ΔABC is perpendicular to side BC, then AABC is an isosceles triangle.



Given: Seg AD is the bisector of ∠BAC.
seg AD ⊥ seg BC
To prove: AABC is an isosceles triangle.
Proof.
In ΔABD and ΔACD,

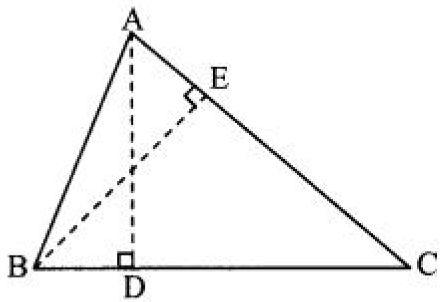
∠BAD ≅ ∠CAD [seg AD is the bisector of ∠BAC]
seg AD ≅ seg AD [Common side]
∠ADB ≅ ∠ADC [Each angle is of measure 90°]
∴ ΔABD ≅ ΔACD [ASA test]
∴ seg AB ≅ seg AC [c. s. c. t.]
∴ ΔABC is an isosceles triangle.

Question 7.
In the adjoining figure, if seg PR ≅ seg PQ, show that seg PS > seg PQ.



Solution:
Proof.
In ΔPQR,
seg PR ≅ seg PQ [Given]
∴ ∠PQR ≅ ∠PRQ ....(i) [Isosceles triangle theorem]
∠PRQ is the exterior angle of ΔPRS.
∴ ∠PRQ > ∠PSR ....(ii) [Property of exterior angle]
∴ ∠PQR > ∠PSR [From (i) and (ii)]
i.e. ∠Q > ∠S ....(iii)
In APQS,
∠Q > ∠S [From (iii)]
∴ PS > PQ [Side opposite to greater angle is greater]
∴ seg PS > seg PQ

Question 8.
In the adjoining figure, in AABC, seg AD and seg BE are altitudes and AE = BD. Prove that seg AD = seg BE.

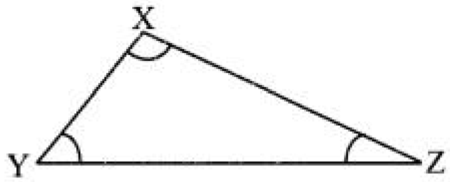


Solution:
Proof:
In ΔADB and ΔBEA,
seg BD ≅ seg AE [Given]
∠ADB ≅ ∠BEA = 90° [Given]
seg AB ≅ seg BA [Common side]

∴ ΔADB ≅ ΔBEA [Hypotenuse-side test]
∴ seg AD ≅ seg BE [c. s. c. t.]

Maharashtra Board Class 9 Maths Chapter 3 Triangles Practice Set 3.4 Intext Questions and Activities

Question 1.
As shown in the given figure, draw ΔXYZ such that side XZ > side XY. Find which of ∠Z and ∠Y is greater. (Textbook pg. no. 41)



Answer:
From the given figure, ∠Z = 25° and ∠Y = 51°
∴ ∠Y is greater.

Practice Set 3.5 Geometry 9th Std Maths Part 2 Answers Chapter 3 Triangles

Question 1.
If ΔXYZ ~ ΔLMN, write the corresponding angles of the two triangles and also write the ratios of corresponding sides.
Solution:
ΔXYZ ~ ΔLMN [Given]
∴ ∠X ≅ ∠L
∠Y ≅ ∠M >
∠Z ≅ ∠N [Corresponding angles of similar triangles]

$\frac{XY}{LM}=\frac{YZ}{MN}=\frac{XZ}{LN}$ [Corresponding sides of similar triangles]

Question 2.
In ΔXYZ, XY = 4 cm, YZ = 6 cm, XZ = 5 cm. If ΔXYZ ~ ΔPQR and PQ = 8 cm, then find the lengths of remaining sides of ΔPQR.
Solution:
ΔXYZ ~ ΔPQR [Given]
∴ $\frac{XY}{PQ}=\frac{YZ}{QR}=\frac{XZ}{PR}$ [Corresponding sides of similar triangles]

∴ PR = 10 cm
∴ QR = 12 cm, PR = 10cm

Question 3.
Draw a sketch of a pair of similar triangles. Label them. Show their corresponding angles by the same signs. Show the lengths of corresponding sides by numbers in proportion.
Solution:

ΔGHI ~ ΔSTU

Maharashtra Board Class 9 Maths Chapter 3 Triangles Practice Set 3.5 Intext Questions and Activities

Question 1.
We have learnt that if two triangles are equiangular then their sides are in proportion. What do you think if two quadrilaterals are equiangular? Are their sides in proportion? Draw different figures and verify. Verify the same for other polygons. (Textbook pg no 50)
Answer:
If two quadrilaterals are equiangular then their sides will not necessarily be in proportion.
Case 1: The two quadrilaterals are of the same type.

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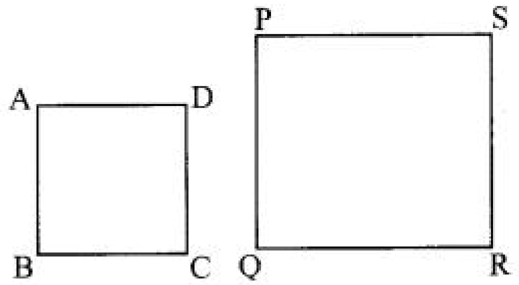
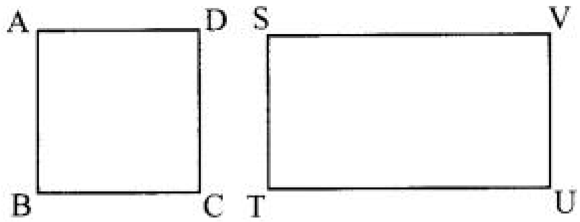


Consider squares ABCD and PQRS.
∠A = ∠P, ∠B = ∠Q, ∠C = ∠R, ∠D = ∠S

ABPQ=BCQR=CDRS=ADPS

Case 2: The two quadrilaterals are of different types.



Consider square ABCD and rectangle STUV.
∠A = ∠S, ∠B = ∠T, ∠C = ∠U, ∠D = ∠V