H.W

Exercise → 6.3

Q1) It is given the TQR is a straight line and so, the linear pairs (i.e. TQP and PQR) will add up to 180°.

So, TQP + PQR = 180°

Putting the value of TQP = 110°
PQR = 70°
Consider the ΔPQR,
Here, the side QP is extended to S and so, SPR form the exterior angle.
Thus, SPR (SPR = 135°) is equal to the sum of interior opposite angles.

PQR + PRQ = 135°

Putting the value of PQR = 70°, we get,
PRQ = 135° − 70°
Hence, PRQ = 65°

Q2) We know that the sum of interior angles of the Δ.
So, X + XYZ + XZY = 180°
Putting the values as given in the question we get,

62° + 54° + XZY = 180°
or
XZY = 64°

We know that ZO is the bisector, so,
OZY = $\frac{1}{2}$ XZY
$\therefore$ OZY = 32°

Similarly, YO is a bisector and so,

$OYZ = \frac{1}{2} XYZ$

or

$OYZ = 27^\circ$ (as $XYZ = 54^\circ$)

Now as the sum of the ~~exterior~~ interior angles of the triangle.

$OZY + OYZ + O = 180^\circ$

Putting their respective values we get,

$O = 180^\circ - 32^\circ - 27^\circ$

$O = 121^\circ$

Q3) we know that AE is a transversal since AB DE.

Here BAC and AED are alternate interior angles.

Hence, BAC = AED

It is given that $BAC = 35^\circ$

$AED = 35^\circ$

Considering Δ CDE. we know that the sum of the interior angles of a triangle is 180°.

$\therefore$ ~~DE~~ $DCE + 35^\circ + 53^\circ = 180^\circ$

Hence, $DCE = 92^\circ$

Q4) ΔPRT

$PRT + RPT + PTR = 180^\circ$

So $PTR = 45^\circ$

In ΔSTQ,

$TSQ + PTR + SQT = 180^\circ$

$SQT = 60^\circ$

Q5) $X + SQR = QRT$

so, $x + 28^\circ = 65^\circ$

$\therefore x = 37^\circ$

$QSR = x = 37^\circ$ (alternate interior angles)

Now,

$QRS + QRT = 180^\circ$ (linear pair)

$QRS + 65^\circ = 180^\circ$

$QRS = 115^\circ$

$P + Q + R + S = 360^\circ$

$S = 360^\circ - 90^\circ - 65^\circ - 115^\circ = 90^\circ$

In ΔSPQ

$\cancel{QRS}$ $\angle SPQ + x + y = 180^\circ$

$90^\circ + 37^\circ + y = 180^\circ$

$y = 180^\circ - 127^\circ = 53^\circ$

Q6) ΔPQR, PRS is exterior angle & QPR & PQR are interior angles.

~~PRQ~~ $PRS = QPR + PQR$

$PRS - PQR = QPR \rightarrow (i)$

ΔQRT,

$TRS = TQR + QTR$

$QTR = TRS - TQR$

~~QT~~ QT & RT bisect PQR & PRS respectively

$PRS = 2TRS$ & $PQR = 2TQR$

Now, $QTR = \frac{1}{2}PRS - \frac{1}{2}PQR$

$QTR = \frac{1}{2}(PRS - PQR)$

(i) from we know that $PRS - PQR = QPR$

$QTR = \frac{1}{2}QPR$.

∴ Hence proved.