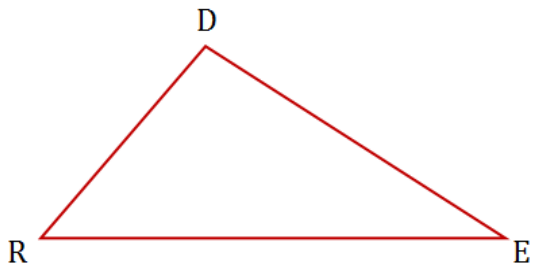
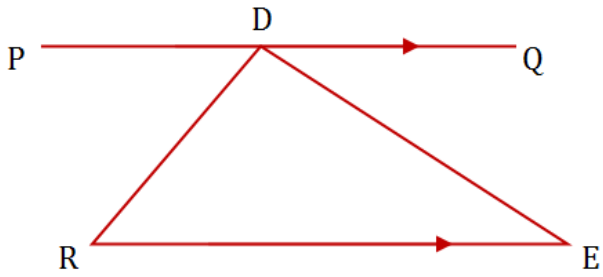
## Sect. 2.3 Angle Properties in a Triangle

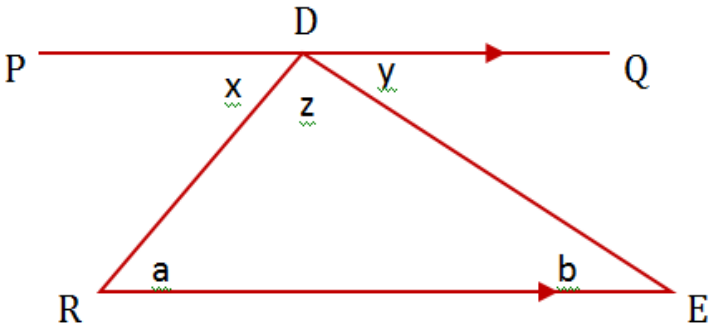
Ex: Prove that the sum of the angles in a triangle is 180°.




Draw a line parallel to RE and tangent at D. Label the line PQ.



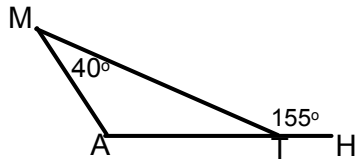

Prove a + b + z = 180°.




| Statement | Reason |
|---|---|
| | |

Note: we could redo this proof for vertex R or E with the same result!

Exterior Angle of a Polygon – the angle that is formed by a side of a polygon and the extension of an adjacent side.




<M and <A are called non-adjacent interior angles.

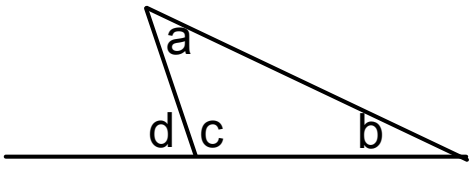
Non-adjacent interior angles - two angles of a triangle that do not have the same vertex as an exterior angle.

Ex: In the diagram, <MTH is an exterior angle in △MAT. Determine the measures of the unknown angles in △MAT.

The exterior angle of a triangle will always equal:

In this example: <M + <A =

Ex: Using a two-column proof, prove that ∠d = ∠a + ∠b.




| Statement | Reason |
| --- | --- |
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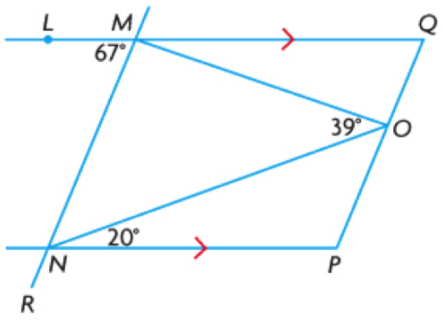
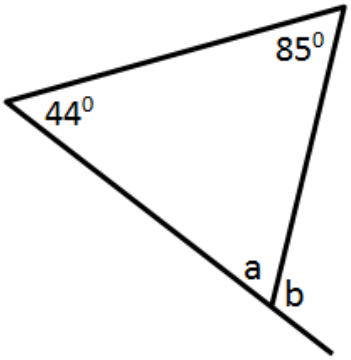
Ex: Determine the measures of <NMO, <MNO, and <QMO.



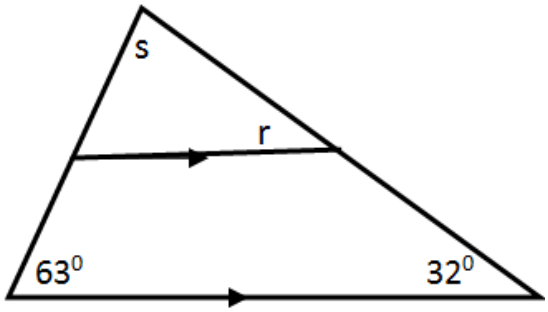

## Angle Properties in Triangles Worksheet

1. Determine the measure of the indicated unknown angles.

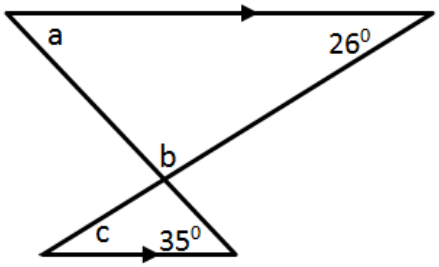
a).



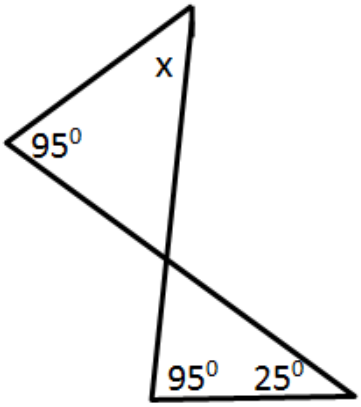

b).



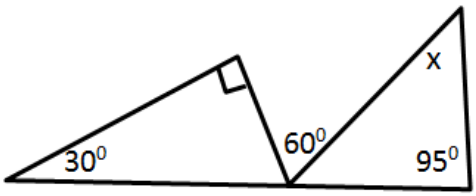

c).



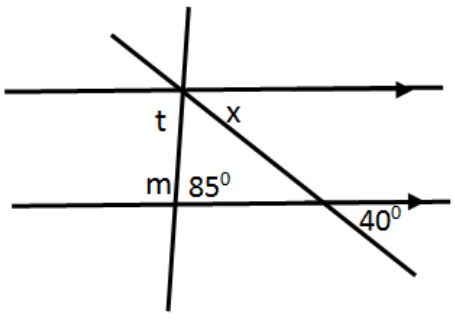

d).




e).

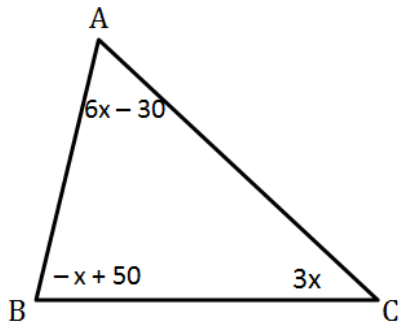



f).

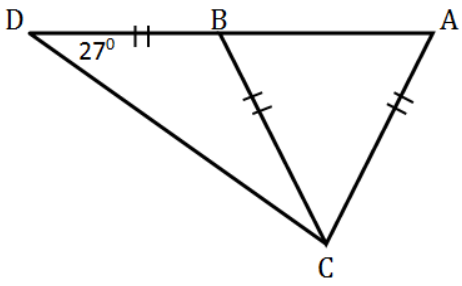


2). What is the measure of ∠A in each triangle below? Explain your reasoning.

a).




b).




Assign

p.90 #1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 14, 15