Acronyms for Justification

T.P.T. - C.A. - Transversal Parallel Line Theorem
Corresponding Angles (F-pattern)

T.P.T. - A.A. - Alternate Angles
(Z-pattern)

T.P.T. - C.I.A. - Co-interior Angles (C-pattern)

O.A.T. - Opposite Angle Theorem

S.A.T. - Supplementary Angles Theorem

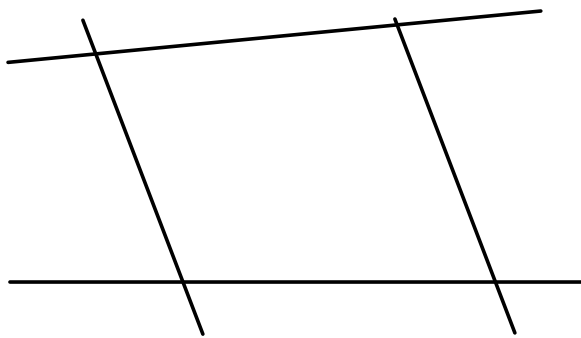E.A.T. - Exterior Angle Theorem

P.E.A.S.T - Polygon Exterior Angle Sum
Theorem

A.S.Q.T. - Angle Sum Quadrilateral Theorem
(Or you may just say ...
sum of interior angles of quadrilateral)
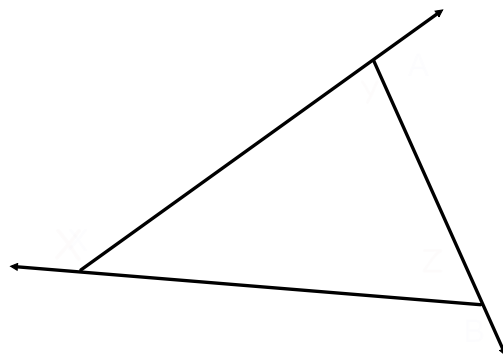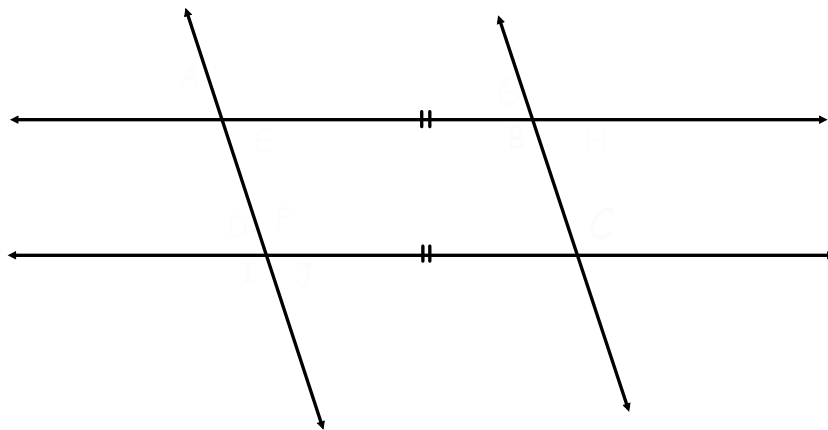
QUADRILATERAL:

1. Draw a large quadrilateral (label vertices).
2. Measure the interior angles.
3. Find the sum of the interior angles
4. Draw a line between two non-adjacent vertices (this is called a diagonal).
5. Notice we have created two triangles inside our quadrilateral.
6. Measure and label the 4 exterior angles, then find their sum.

Summary:

1. The sum of the interior angles of a quadrilateral is 360 degrees.

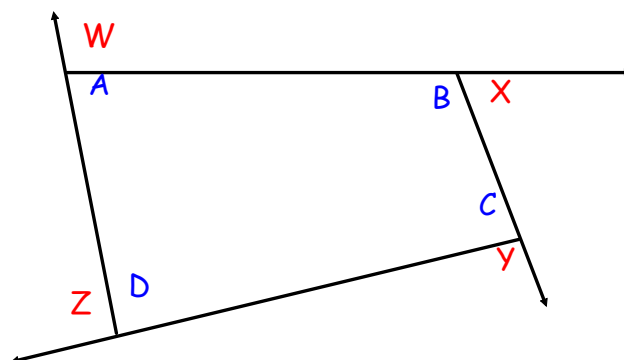   A.S.Q.T. - Angle Sum Quadrilateral Theorem
    (Or you may just say ...
    sum of interior angles of quadrilateral)

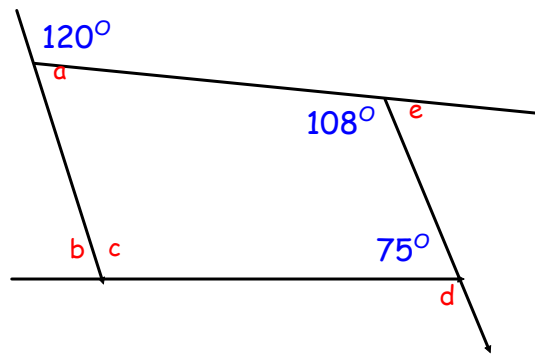   A+B+C+D = 360

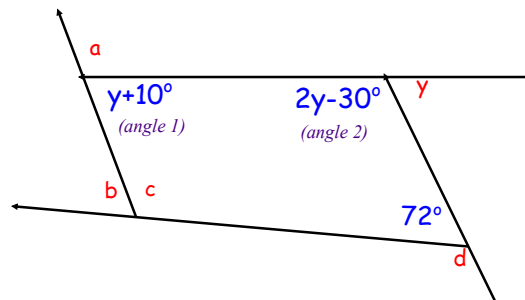2. The sum of the exterior angles of a quadrilateral is 360 degrees. (P.E.A.S.T)

Examples:
1. Find each of the unknown angles:

$\angle e = 180° - 108°$ (supplemen tary angles)
  $= 72°$
$\angle d = 180° - 75°$ (supplemen tary angles)
  $= 105°$
$\angle c = 360° - 60° - 108° - 75°$ (sum of interior angles of quadrilate ral)
  $= 117°$

$\angle b = 180° - 117°$ (supplemen tary angles)
  $= 63°$

2. Find the measure of each unknown angle:

Steps:
1. Calculate y:

2. Calculate interior angles:

$angle\ 1 = y + 10$ $angle\ 2 = 2y - 30$ $angle\ c = 360 - 110 - 80 - 72$
  $= 80°$ $= 110°$ $= 98°$

3. Calculate exterior angles:

$angle\ a = 180 - 80$ $angle\ d = 180 - 72$ $angle\ b = 180 - 98$
  $= 100°$ $= 108°$ $= 82°$

Attachments

Triangle.gsp