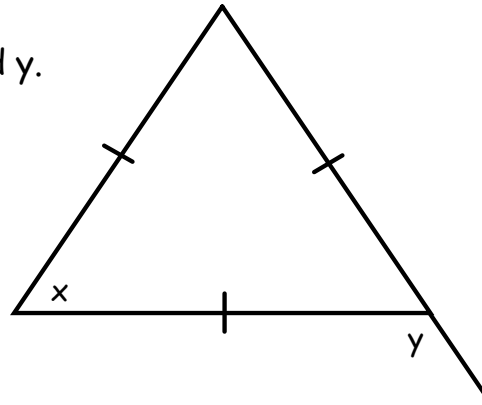


Warm Up:

Determine the value of x and y .



MPM 1DI Unit 6 Geometric Relationships

7.2 Angle Relationships in Quadrilaterals

7.2 Angle Relationships in Quadrilaterals

Common Terms:

Adjacent: adjoining or next to

Complementary: adding to 90 degrees

Supplementary: adding to 180 degrees

Transversal: a line intersecting two parallel lines

Obtuse Angle: angle greater than 90 degrees

Acute Angle: angle less than 90 degrees

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)

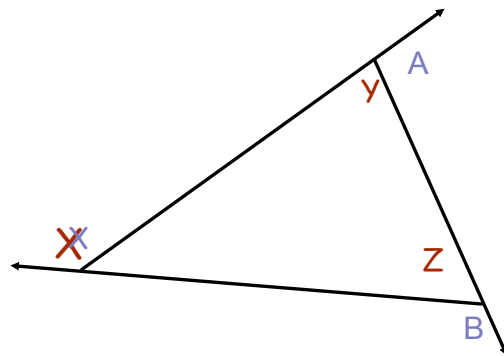
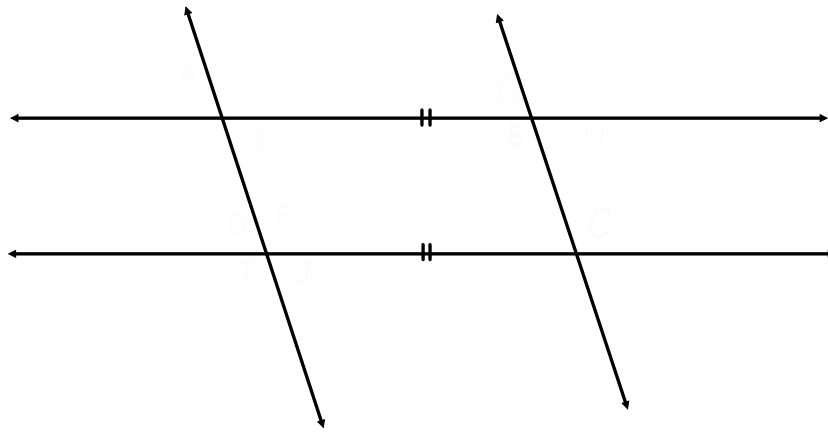
O.A.T. - Opposite Angle Theorem

S.A.T. - Supplementary Angles Theorem

E.A.T. - Exterior Angle Theorem

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

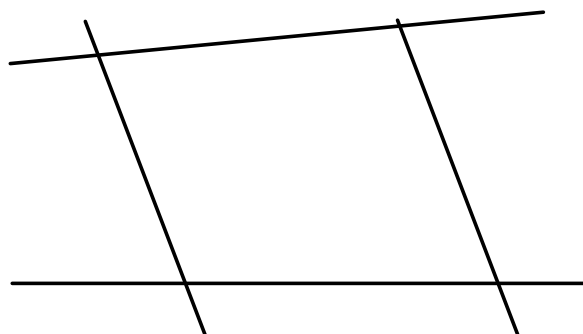
A.S.Q.T. - Angle Sum Quadrilateral Theorem
(Or you may just say ...
sum of interior angles of quadrilateral)



QUADRILATERAL:

Triangle.gsp

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

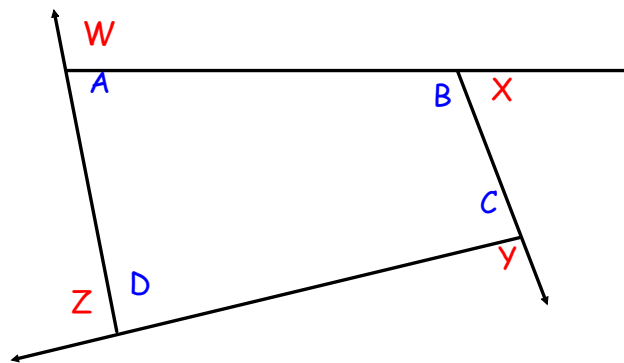
(Or you may just say ...

sum of interior angles of quadrilateral)

$A + B + C + D = 360^\circ$

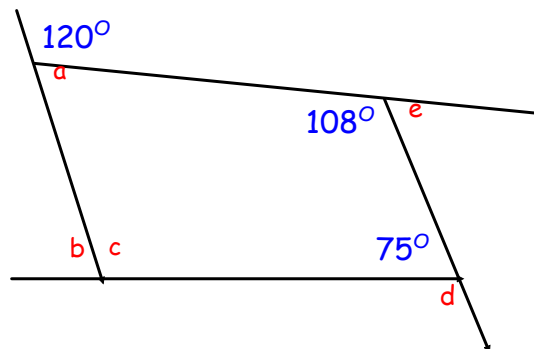
2. The sum of the exterior angles of a quadrilateral is 360 degrees. (P.E.A.S.T)

$W + X + Y + Z = 360^\circ$

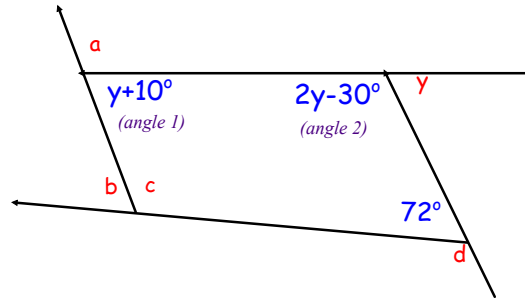


Examples:

1. Find each of the unknown angles:



2. Find the measure of each unknown angle:



Steps:

1. Calculate y :

2. Calculate interior angles:

$$\begin{aligned} (y + 10) + (2y - 30) + 72 &= 360 && (\text{Sum}) \\ 3y - 20 + 72 &= 360 && (\text{Substitution}) \\ 3y + 52 &= 360 && (\text{Substitution}) \\ 3y &= 360 - 52 && (\text{Subtraction}) \\ 3y &= 308 && (\text{Simplify}) \\ y &= \frac{308}{3} && (\text{Divide}) \end{aligned}$$

3. Calculate exterior angles:

$$\begin{aligned} a &= 180 - (y + 10) && (\text{Supp}) \\ b &= 180 - (2y - 30) && (\text{Supp}) \\ c &= 180 - 72 && (\text{Supp}) \\ d &= 180 - 72 && (\text{Supp}) \end{aligned}$$

Today's Practice Questions:

pg. 381 # 1 - 7, 9 - 13, 16, 18

Attachments

Triangle.gsp