Properties of Triangles

Names of Triangles - Based on Angles

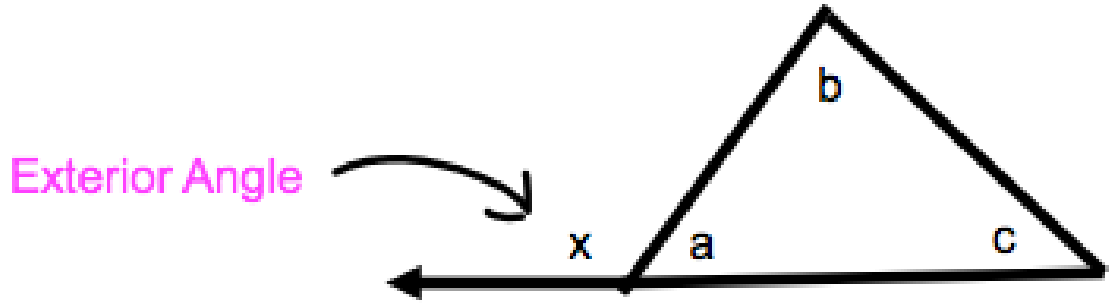
1) Acute: all angles are acute, less than 90°
2) Right: has one right angle, 90°
3) Obtuse: has one obtuse angle, larger than 90°

Names of Triangles - Based on Sides

1) Scalene: no congruent sides
2) Isosceles: 2 congruent sides
3) Equilateral: all congruent sides

Triangle Sum Property: all three angles must sum to 180°.

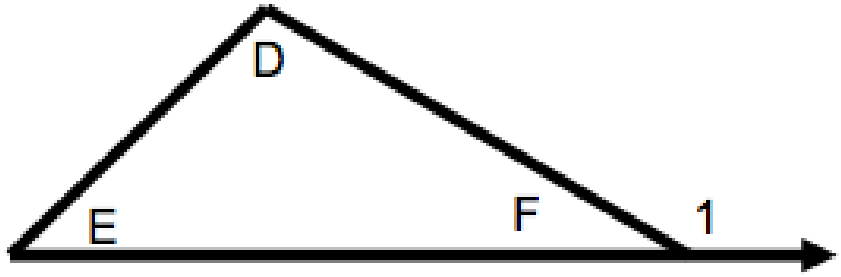
Exterior Angle: an angle that is adjacent to and supplementary to an interior angle of a triangle.
: the measure of the exterior angle of a triangle equals the sum of the remote interior angles.



$m\angle x = m\angle b + m\angle c$

$m\angle x + m\angle a = 180^{\circ}$

1) The measurement of angle 1 is 150^0. Angle D is twice that of Angle E. Find the measurements of all three angles.



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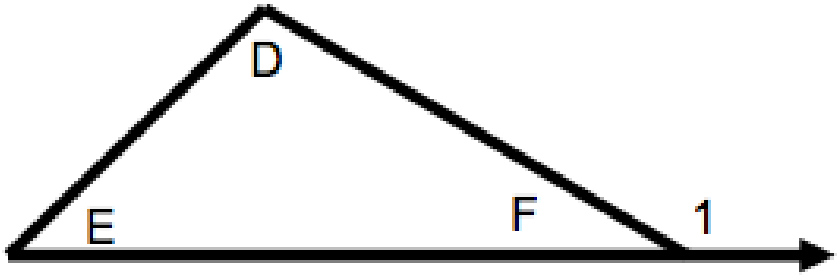


If $\angle 1 = 150$, then

$\angle F = 30$ because supplementary angles.

$\angle E = x$

$\angle D = 2x$

$2x + x + 30 = 180$ $\triangle$ Sum Property

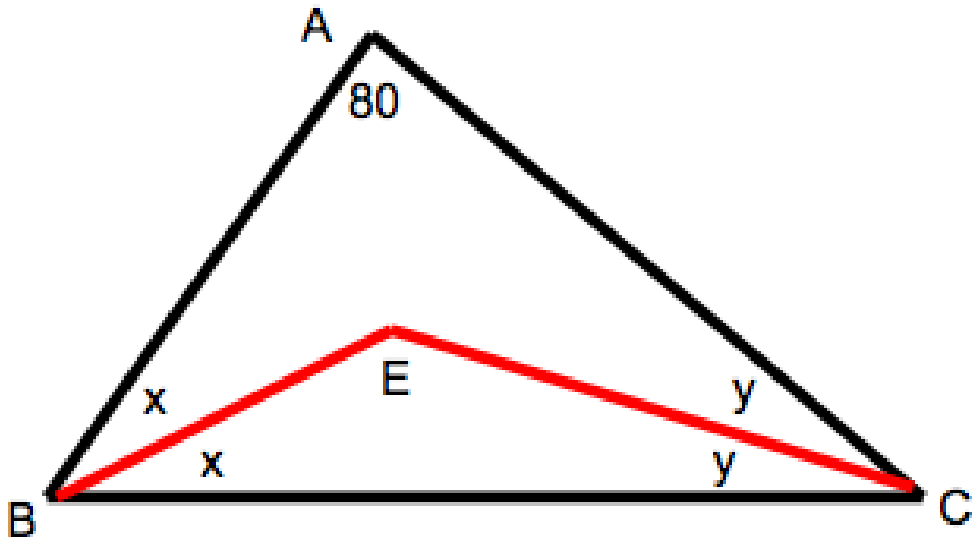
$3x = 150$

$x = 50$

$\angle D = 100°$
$\angle E = 50°$
$\angle F = 30°$

$180°$ ✓

2) Find the measurement of Angle E.



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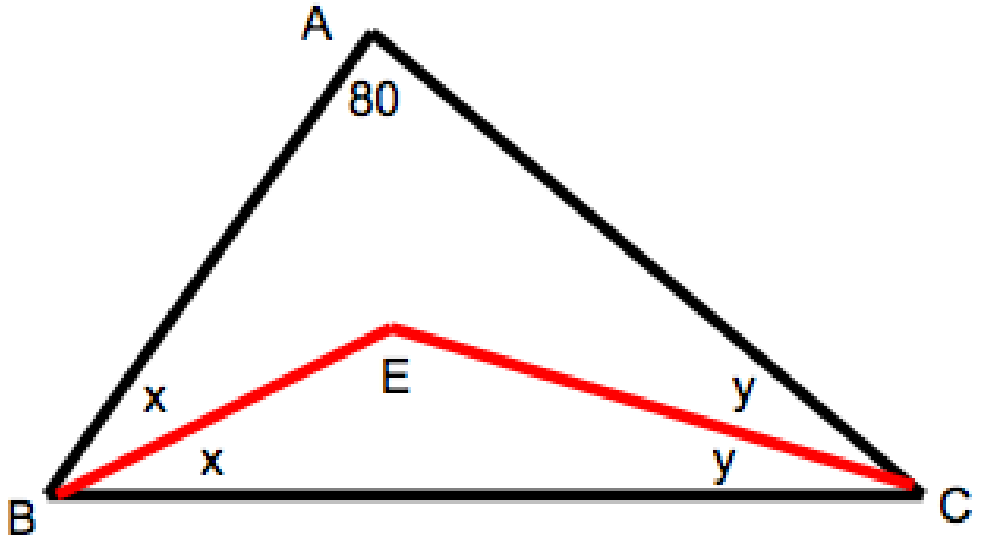

Δ Sum Property ΔABC

$2x+2y+80=180$

$2x+2y=100$

reduce by 2

$x+y=50$

Triangle Sum Property ΔBEC

$x+y+\angle E=180$

Substitute 50 for $x+y$

$50+\angle E=180$

$\angle E=130°$