1.2. Angle Relationship and Similar Triangles

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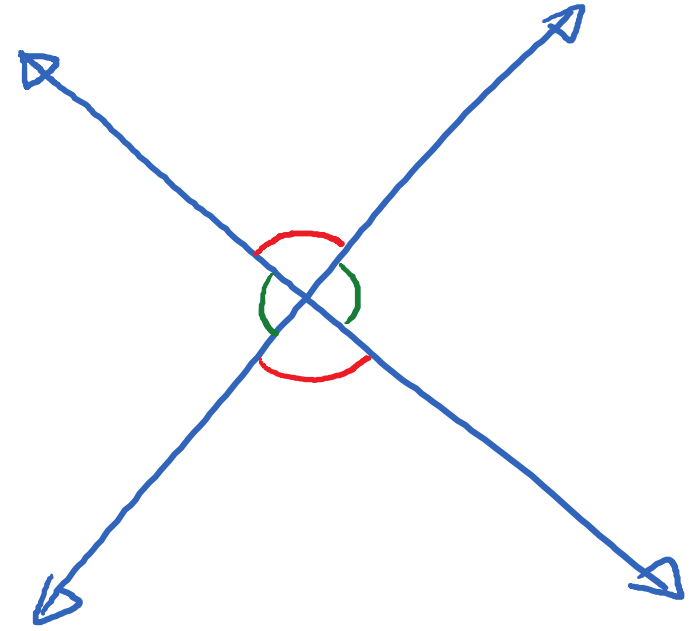
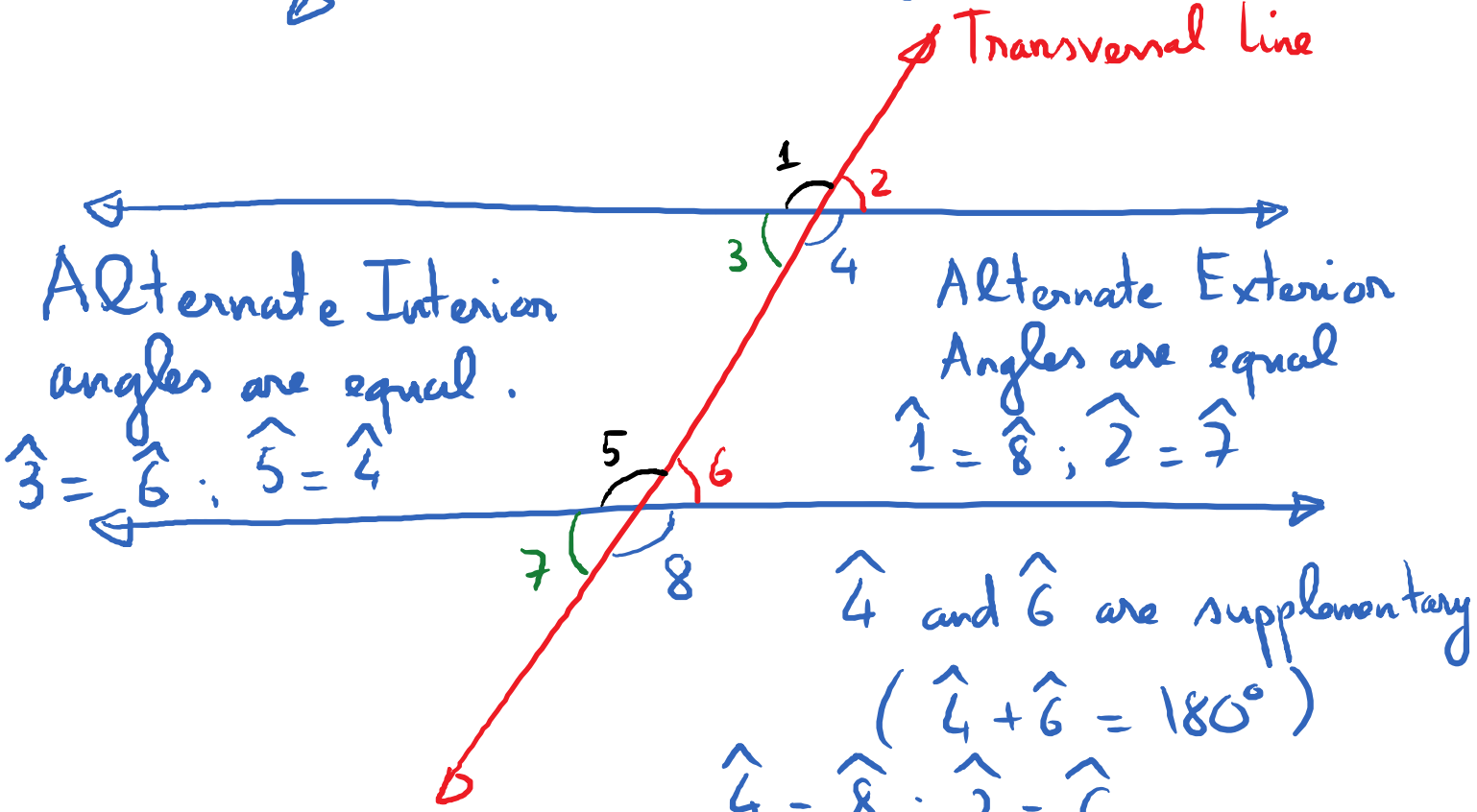
Angle Relationship.



These are called Vertical angles.



Alternate Interior angles are equal.

$\hat{3} = \hat{6}$; $\hat{5} = \hat{4}$

Alternate Exterior Angles are equal

$\hat{1} = \hat{8}$; $\hat{2} = \hat{7}$

$\hat{4}$ and $\hat{6}$ are supplementary

$(\hat{4} + \hat{6} = 180°)$

$\hat{4} = \hat{8}$; $\hat{2} = \hat{6}$

(corresponding angles)

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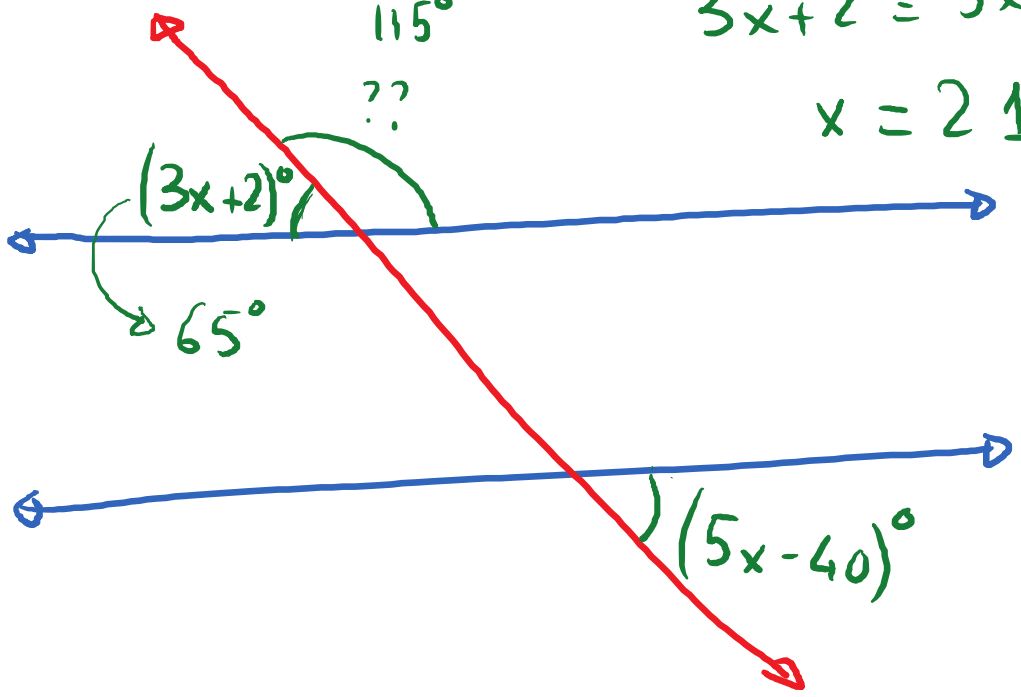
E.g.

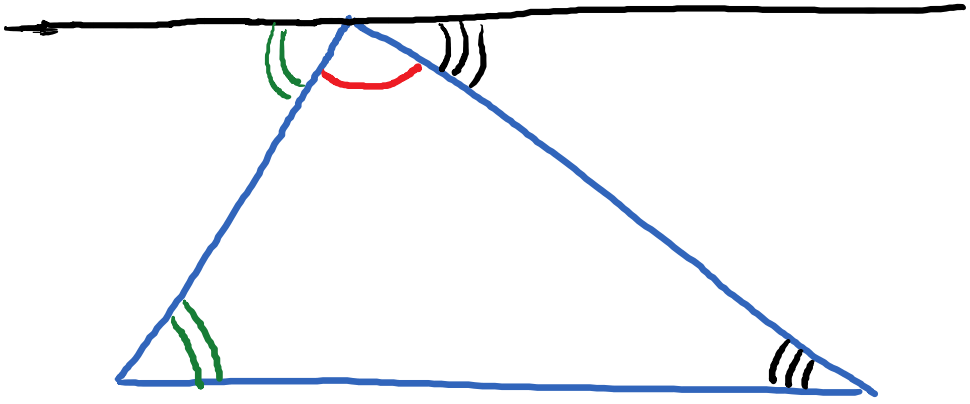


Find x ?

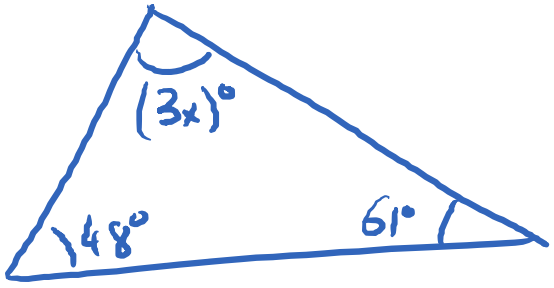
$3x+2 = 5x-40$

$x = 21$

The sum of the measures of the angles in any triangle equals 180°



E.g. Q: Find x ?



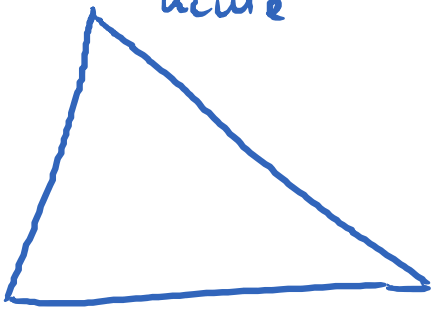
$3x + 48° + 61° = 180°$

$3x = 71°$

$x = \frac{71°}{3} \approx 23.67°$

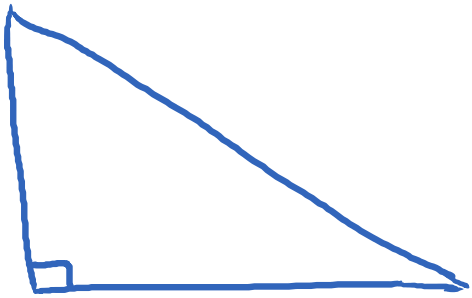
Terminology

All acute

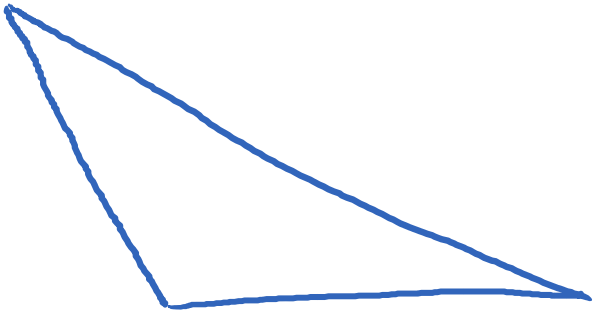


Acute triangle

one right angle

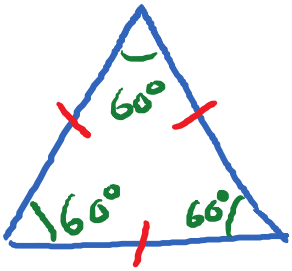


Right triangle



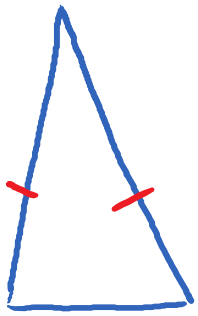
Obtuse triangle

Special Triangles



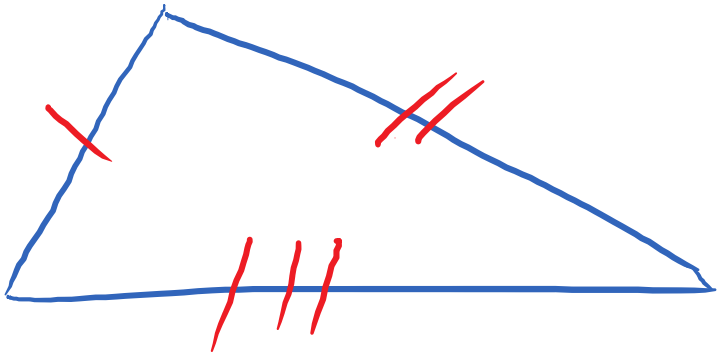
All sides are equal

Equilateral triangle



2 sides are equal

Isosceles Triangle



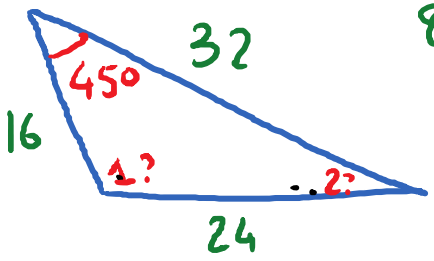
Scalene Triangle

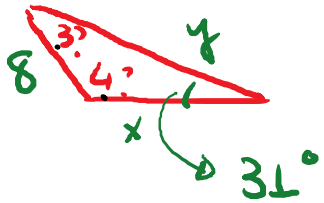
Similar Triangles

1. Corresponding angles must have the same measure
2. Corresponding sides are proportional

Similar Triangles

E.g.



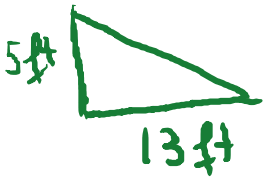


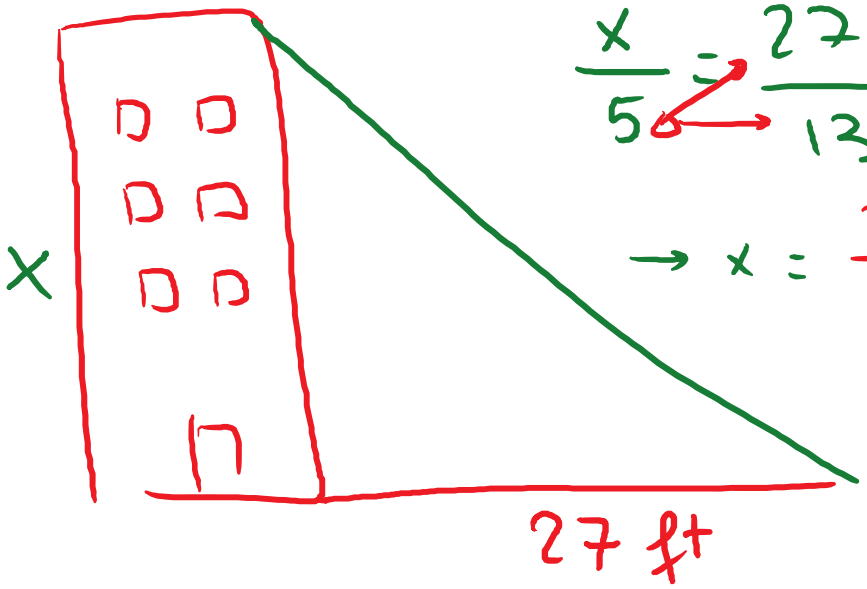
Find all the remaining angles.

$\hat{3} = 45°$ $\quad \hat{1} = 180° - 45° - 31° = 104°$

$\hat{2} = 31°$ $\quad \hat{4} = 104°$

$$\frac{16}{8} = \frac{24}{x} = \frac{32}{y} \rightarrow x = 12 \; ; y = 16$$





$$\frac{x}{5} = \frac{27}{13}$$

$$\rightarrow x = \frac{27 \cdot 5}{13} =$$

16.38 ft