1.2. Angle Relationship and Similar Triangles
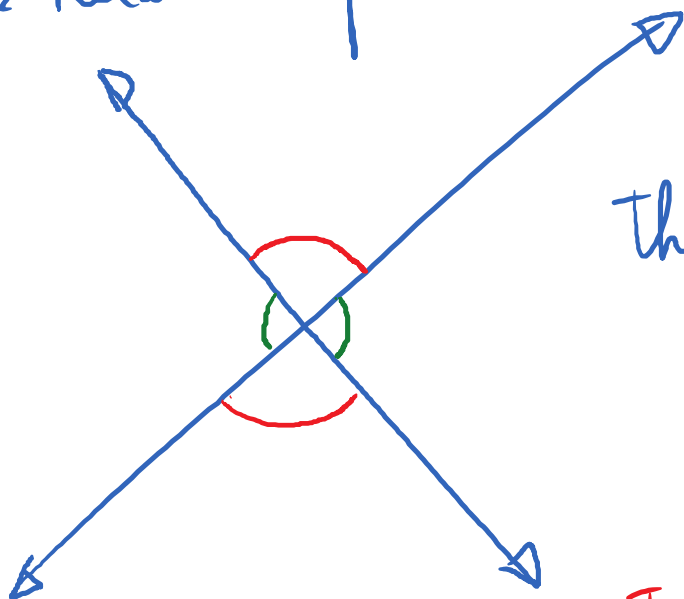
Angle Relationship

These are called vertical angles

Transversal line

1 2
3 4

5 6
7 8

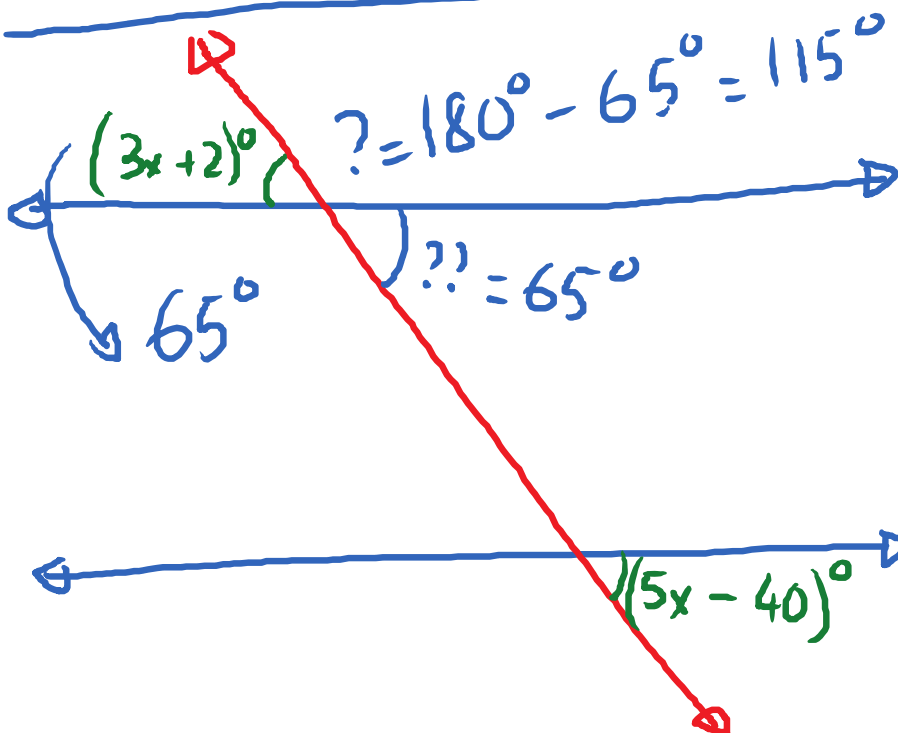4,5 : alternate interior angles

3,6 : _____

1,8 : alternate exterior angles

2,7 : _____

2

4

6
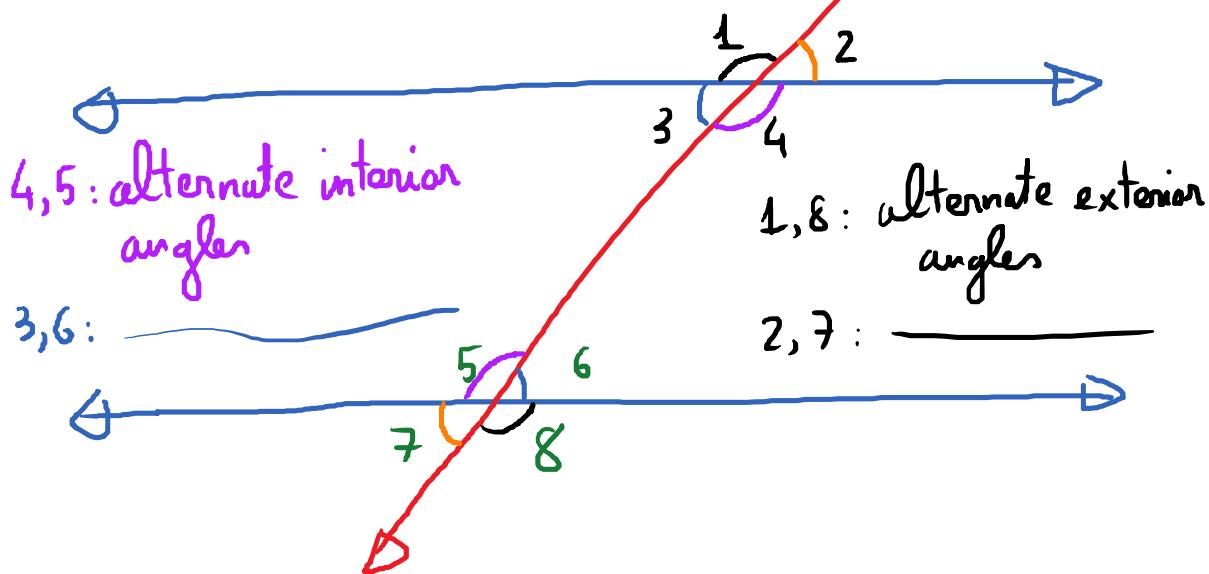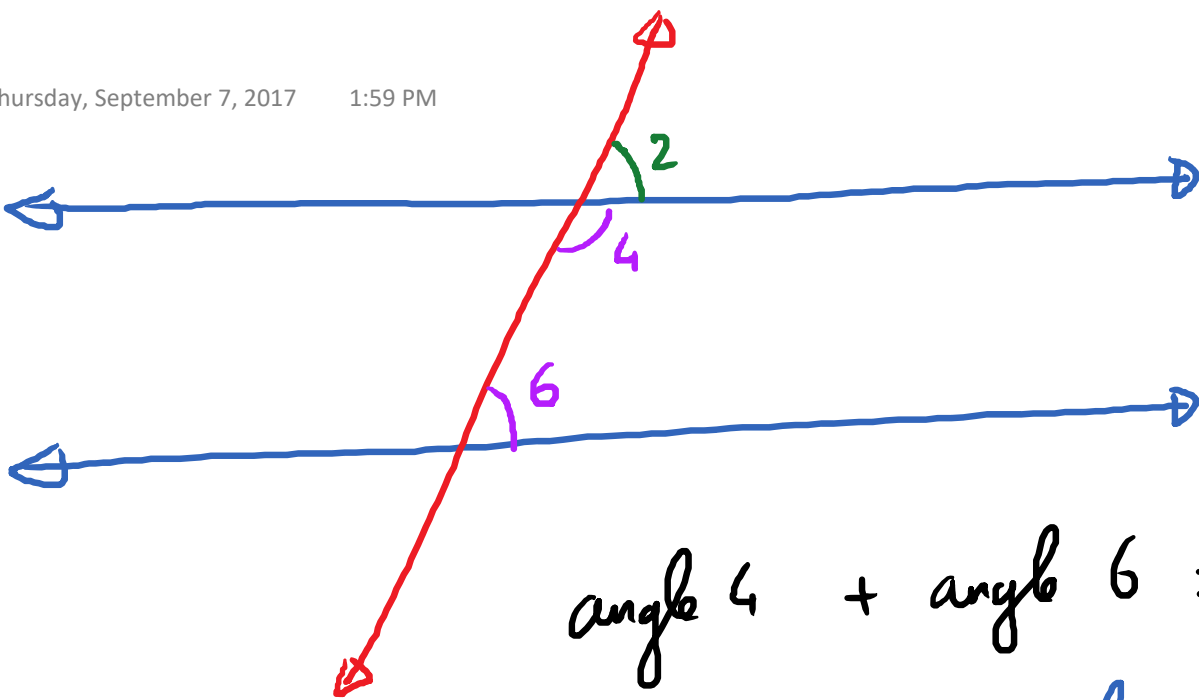
angle 4   +   angle 6 = 180°

2, 6 are called corresponding angles.

Angle 2 = Angle 6

Find x ?
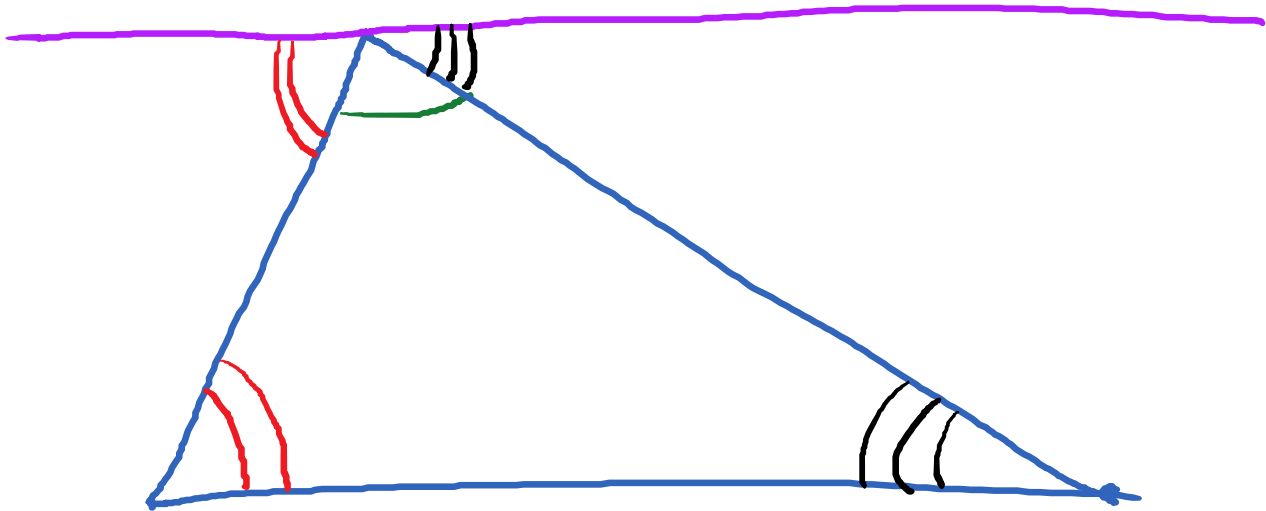
? = 180° - 65° = 115°

(3x + 2)°

?? = 65°

65°

(5x - 40)°

$3x + 2 = 5x - 40$

$2 = 2x - 40$

$42 = 2x$
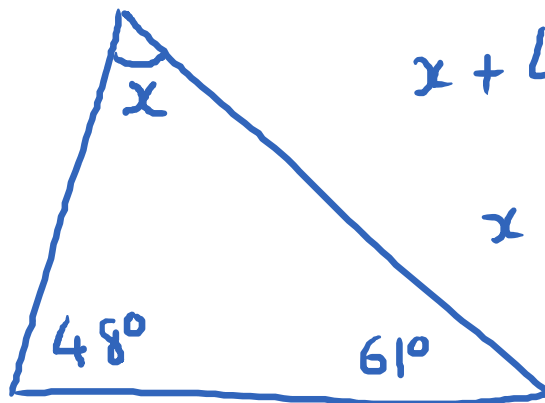
$x = 21$

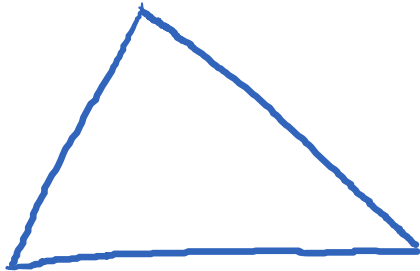The sum of the measures of the angles in any triangle equals $180°$

E.g.

Find x

$$x + 48° + 61° = 180°$$

$$x + 109° = 180°$$

$$x = 71°$$

Terminology

All acute

Acute triangle

one right angle
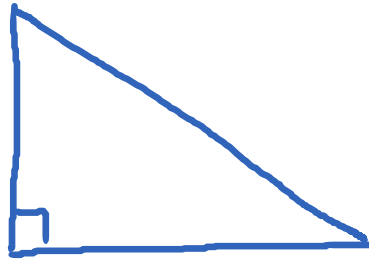
Right triangle

one obtuse angle
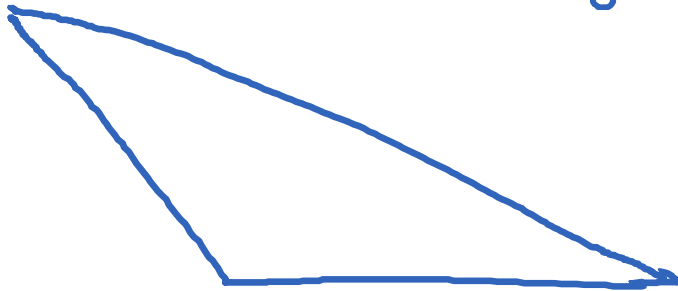
Obtuse triangle

Special Triangles

2 sides are equal

All sides equal

60° 60° 60°
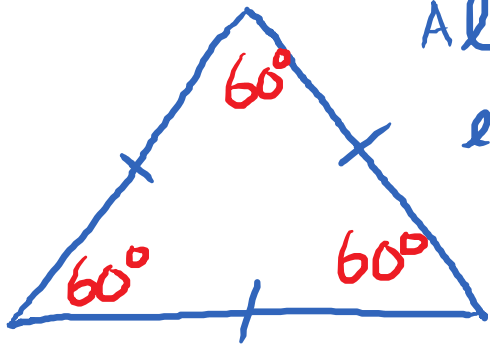
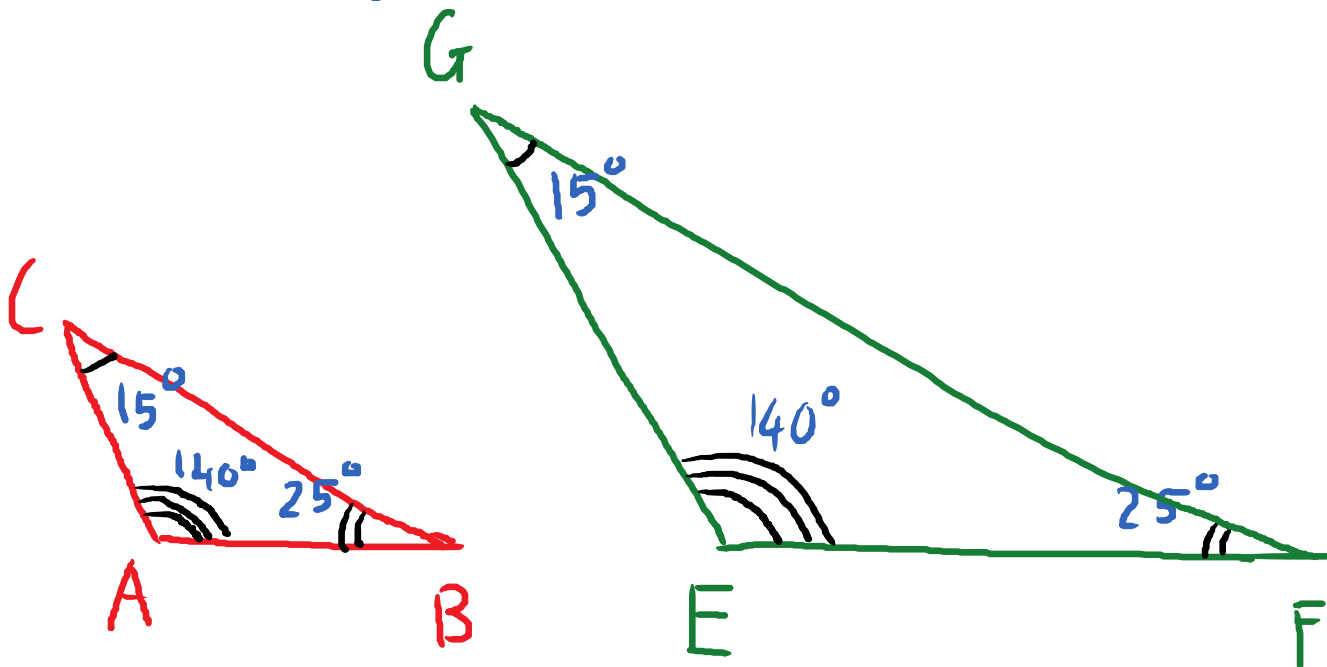equilateral triangle
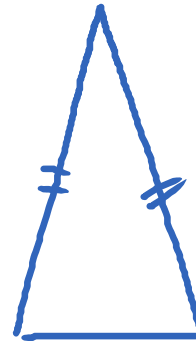
Isoceles triangle

Scalene Triangle.

Similar Triangles

2 triangles are similar if
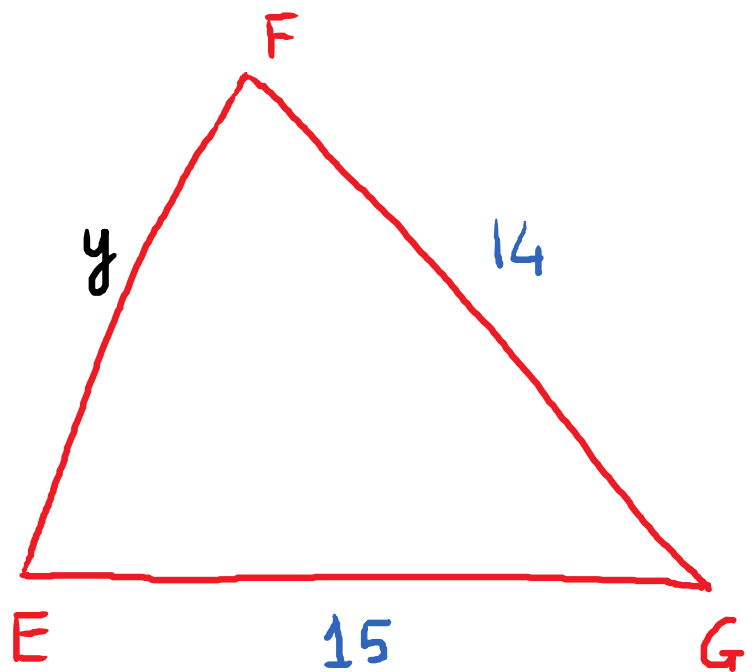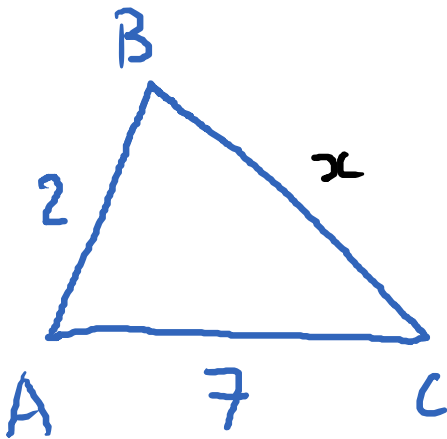
① Corresponding angles must have the same measures.

② Corresponding sides are proportional.

E.g.

$$\widehat{A} = 180° - 15° - 25° = 140°$$

B

2

x

A   7   C

F

y 14

E   15   G

Find x and y.

$$\frac{7}{15} = \frac{2}{y} \longrightarrow y = \frac{30}{7}$$

$$\frac{x}{14} = \frac{7}{15} \longrightarrow x = \frac{14 \cdot 7}{15} = \frac{98}{15}$$
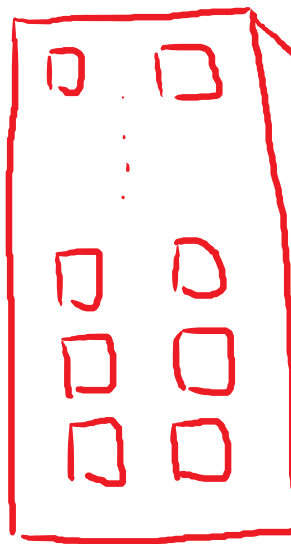
vertical pole

5 ft

2 ft → shadow

$$\frac{2}{50} = \frac{5}{x} \implies x = 75 \text{ ft.}$$

?
x

shadow of building

50 ft