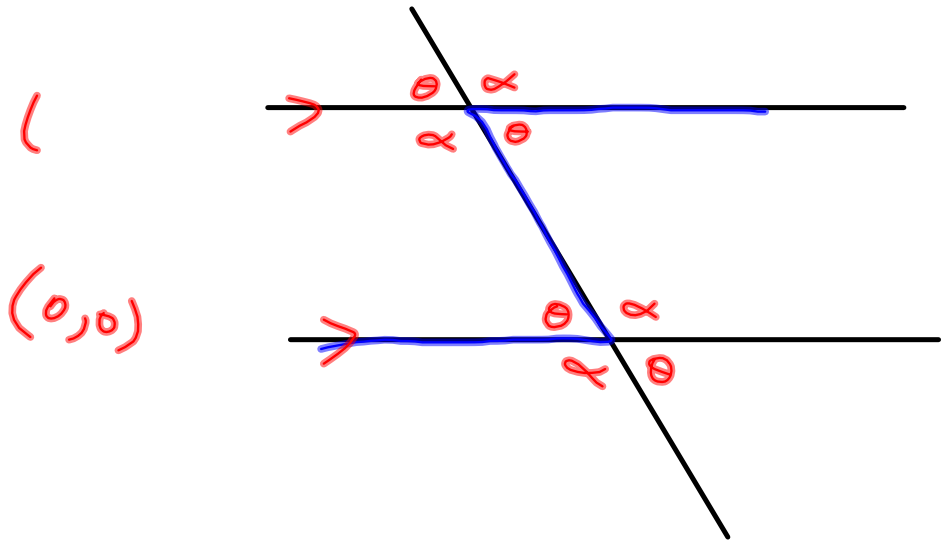
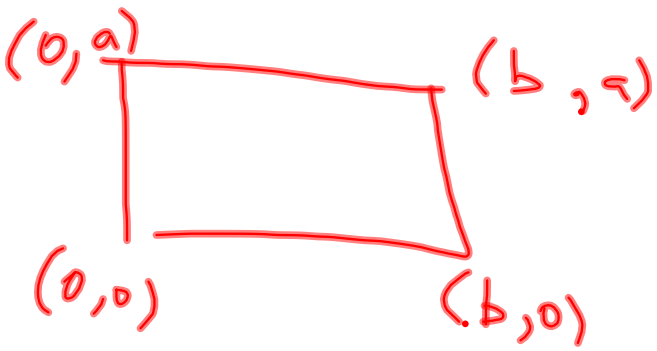
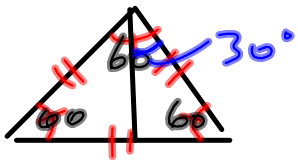
$\alpha + \theta = 180^\circ$




(0,a)
(b,a)
(0,0)
(b,0)

regular polygon

equilateral triangle.

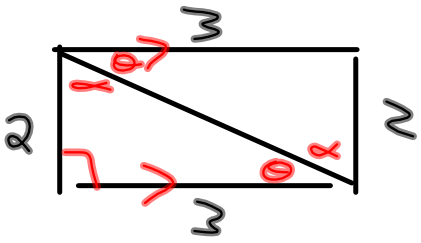


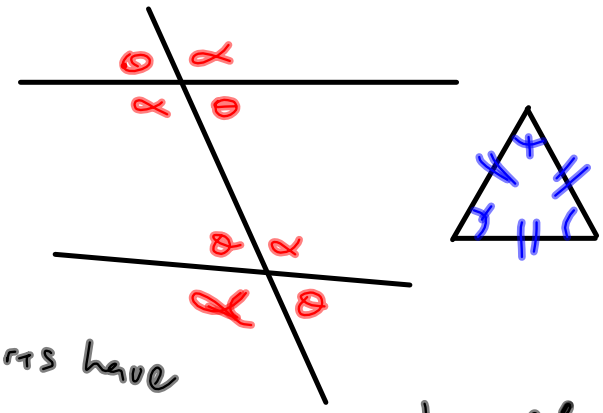
Unit 14: Solving Geometry

SOH CAH TOA Problems

$c^2 = a^2 + b^2$

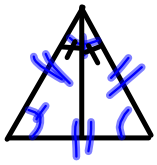
$\theta + \alpha = 180$

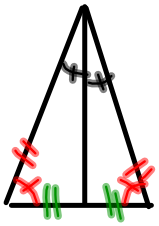




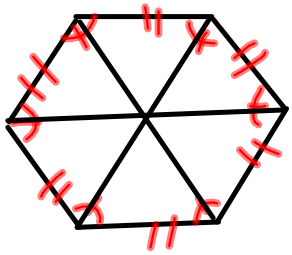
- equivalent 2D figures have same area.
- equivalent 3D figures have same volumes.

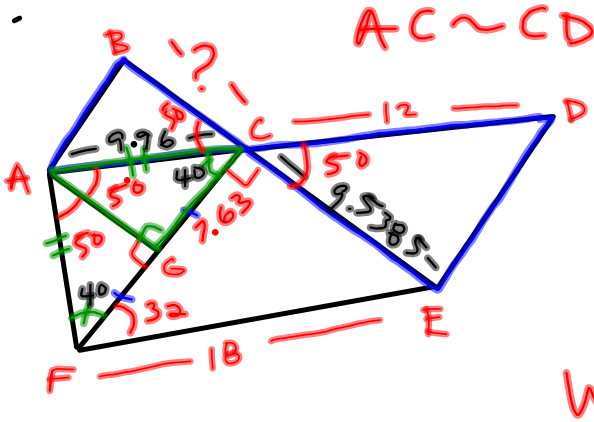
Regular Polygon





regular hexagon





$AC \sim CD$ what's k?

similar

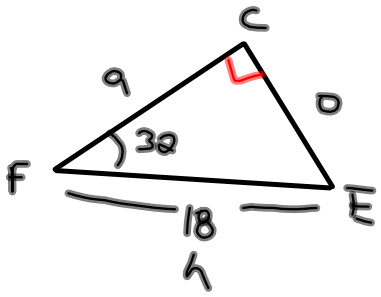
$\triangle ABC \sim \triangle CDE$

$\triangle ACF$ is isosceles

$\angle FAC = 50°$

$\angle CFE = 32°$

What's BC



$\sin\theta = \frac{o}{h}$ $\cos\theta = \frac{a}{h}$

$18 \cdot \sin 32 = \left(\frac{o}{18}\right)18$ $\cos 32 = \frac{a}{18}$

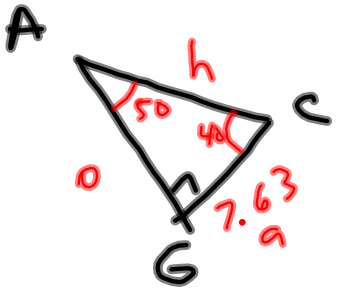
CE: $o = 18 \cdot \sin 32$

CE: $o = 9.5385$

$a = 18\cos 32$

FC: $a = 15.2648$

GC: $\frac{a}{2} = 7.63$



$\cos\theta = \frac{a}{h}$

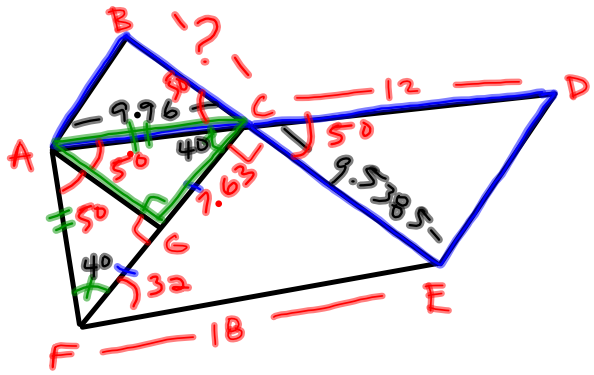
$\frac{\cos}{1}40 = \frac{7.63}{h}$

$\frac{h\cos 40}{\cos 40} = \frac{7.63}{\cos 40}$

$h = 9.96$

For similar Δ's

$$k = \frac{\text{Side length of Big } \Delta}{\text{Side length of the corresponding Side of small } \Delta}$$



$k = \frac{CE}{BC}$

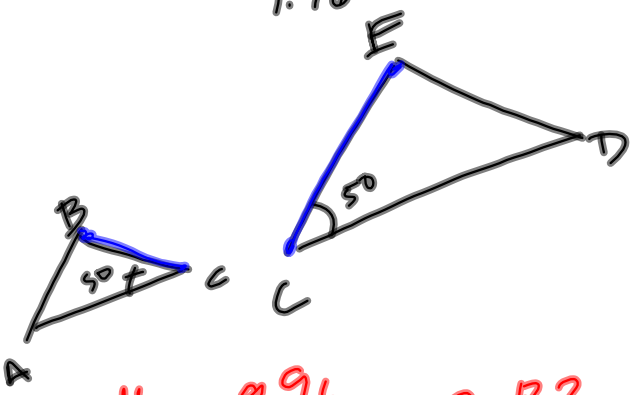
$\frac{1.204}{1} = \frac{9.5385}{BC}$

$\frac{BC \cdot 1.204}{1.204} = \frac{9.5385}{1.204}$

$BC = 7.92$

$k = \frac{Big}{small}$

$k = \frac{12}{9.96} = 1.204$

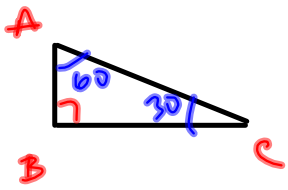


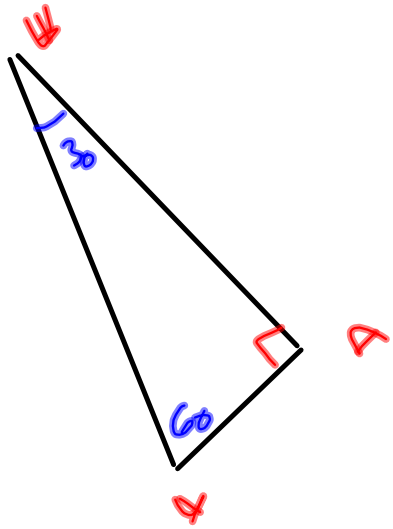
$k = \frac{small}{big} = \frac{9.96}{12} = 0.83$

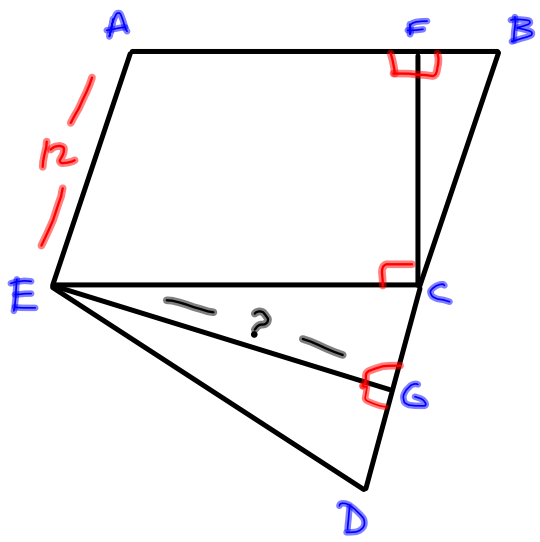
$k = \frac{BC}{CE} \Rightarrow 0.83 = \frac{BC}{9.5385}$

$BC = 0.83 \cdot 9.5385$

$k = 7.92$


A
60
30
B
C


W
30
60
D
Y



ABCE is a parallogram

$\triangle BCF$ is congruent to $\triangle EDG$

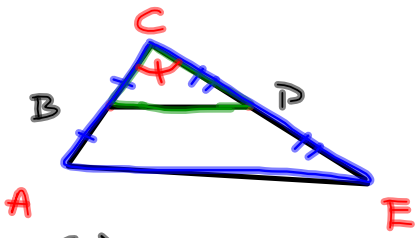
$\angle DEG = 27°$

$\overline{AE} = 12$

What's the length of EG?

Recall: Ex 5 p13.5 Prove the when you join the midpoints of any 2 sides in a triangle, you form a similar Δ.

Hypothesis



$CD = DE$

$CB = BA$

Conclusion: Prove: $A = A$ $\frac{\text{Side}}{\text{Small}} = \frac{\text{Side}}{\text{Small}}$

Statements	Justification
$\angle BCD = \angle ACE$	shared angle
$\frac{BC}{AC} = \frac{BC}{AB+BC} = \frac{BC}{BC+BC}$	hypothesis
$\frac{BC}{2BC} = \frac{1}{2}$	simplifying
$\frac{CD}{CE} = \frac{CD}{CD+DE} = \frac{CD}{CD+CD}$	hypothesis
$= \frac{CD}{2CD} = \frac{1}{2}$	simplifying
$\therefore \Delta BCD \sim \Delta ACE$	$A = A$ $\frac{S}{S} = \frac{S}{S}$ ✓

∎

Congruent

- SAS = SAS
- SSS = SSS
- ASA = ASA

Similar

- $\frac{S_{Big}}{S_{small}} = \frac{S_{Big}}{S_{small}}$ $A = A$
- $\frac{S_{Big}}{S_{small}} = \frac{S_{Big}}{S_{small}} = \frac{S_{Big}}{S_{small}}$
- $\check{A}A = \check{A}A$