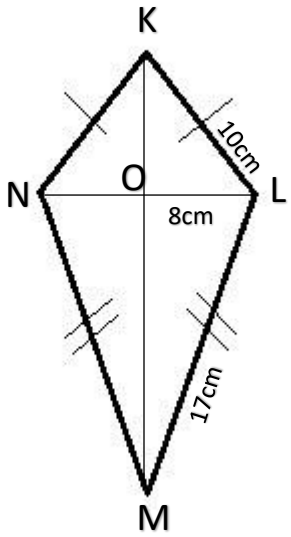
Grade 9 - Mathematics

Revision of Geometric Figures

Memo

1. Calculate the lengths of the lines: NO; KO; NM; NK; MO; KM



NO = 8cm (long diagonal of a kite
Bisects shorter one)

$KL^2 = LO^2 + KO^2$ (Pythag)
$10^2 = 8^2 + KO^2$
$100 = 64 + KO^2$
$100 - 64 = KO^2$
$36cm^2 = KO^2$
6cm = KO

NM = 17cm (Adjacent long sides of kite=)

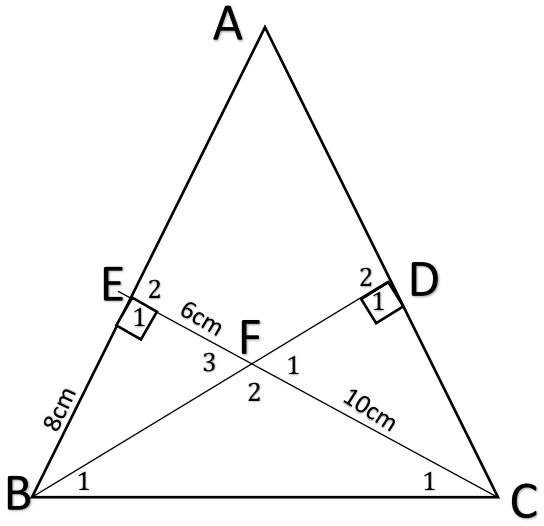
NK = 10cm (Adjacent short sides of kite =)

$LM^2 = LO^2 + MO^2$ (Pythag)
$17^2 = 8^2 + MO^2$
$289 = 64 + MO^2$
$289 - 64 = MO^2$
$225cm^2 = MO^2$
15cm = MO

KM = KO + MO
= 6cm + 15cm
= 21cm

WorksheetCloud

2. Work out the following:
   The length of BF.
   Prove that ΔBEF ≡ ΔCDF
   The length of FD and DC

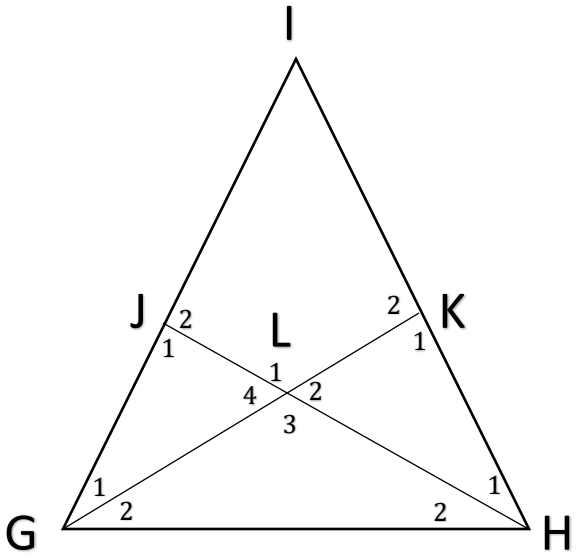


$BF^2 = EB^2 + EF^2$ (Pythag)
$BF^2 = 8^2 + 6^2$
$BF^2 = 64 + 36$
$BF^2 = 100cm^2$
$BF = 10cm$

$BF = FC$ (proved above)
$F_1 = F_3$ (Opp angles)
$E_1 = D_1$ (Given)
So ΔBEF ≡ ΔCDF

So $FD = EF = 6cm$ (ΔBEF ≡ ΔCDF)
And $BE = DC = 8cm$ (ΔBEF ≡ ΔCDF)

3. ΔGHI is an isosceles triangle with GI = HI and IJLK is a Kite
   Prove that ΔGKI ≡ ΔHJI



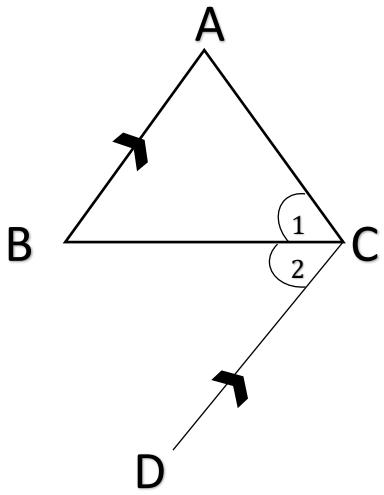
$\hat{I} = \hat{I}$ (common angle)
GI = HI (given)

$J_2 = K_2$ (opp angles of a kite)
So $J_1 = K_1$ (angles on a straight line and $J_2 = K_2$)

$L_4 = L_2$ (Opp angles)
So $G_1 = H_1$ (3rd angle in triangle)

Therefore ΔGKI = ΔHJI (SAA)

4. Prove that ΔABC is an isosceles triangle



C_2 = B (alt angles; AB//CD)

But $C_2 = C_1$ (given)

So B = C_1

ΔABC is isosceles (base angles =)