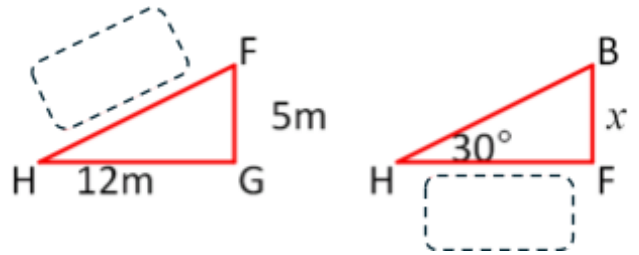
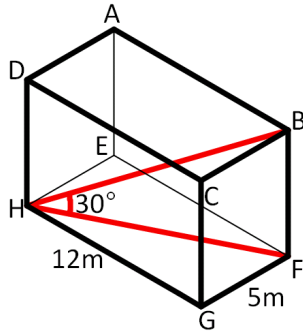


3D Trigonometry & Pythagoras – Cuboid Problems

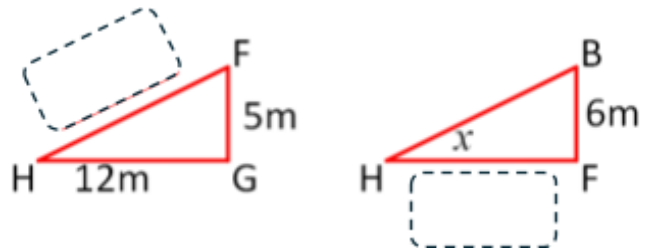
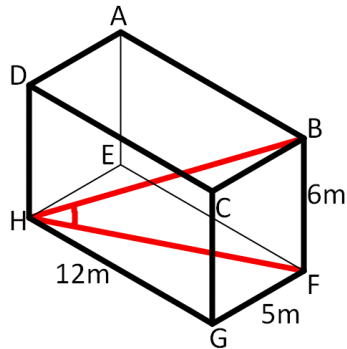
1

$GH = 12m$
 $GF = 5m$
 Angle $\angle BHF = 30^\circ$
 Find the length BF .



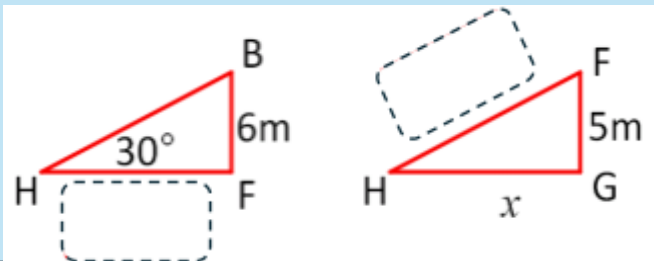
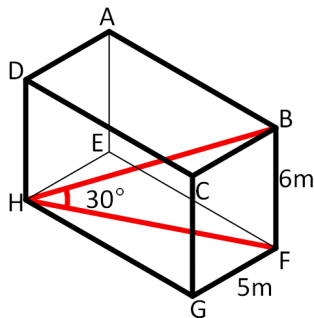
2

$GH = 12m$
 $GF = 5m$
 $BF = 6m$
 Find the size of angle $\angle BHF$.

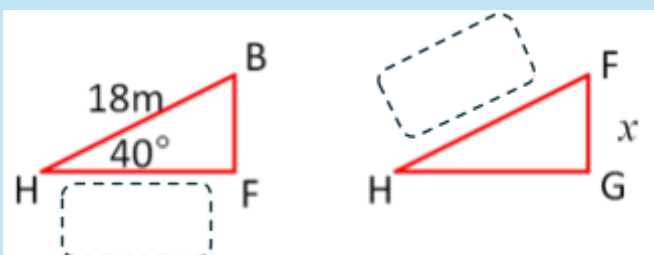


3

$BF = 6m$
 $GF = 5m$
 Angle $\angle BHF = 30^\circ$
 Find the length GH .



4



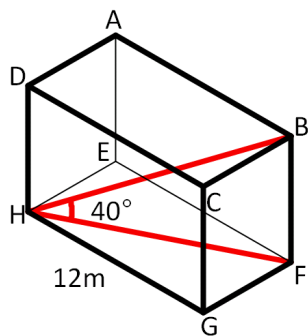
$$BH = 18m$$

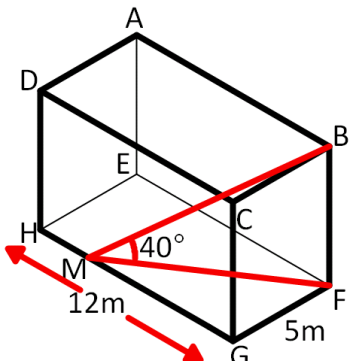
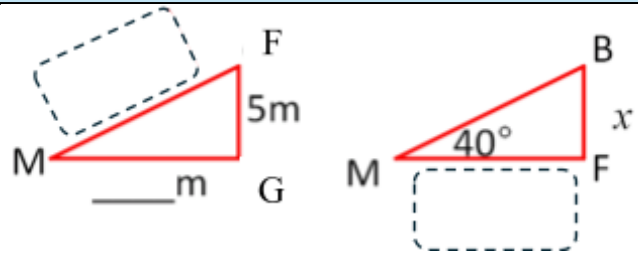
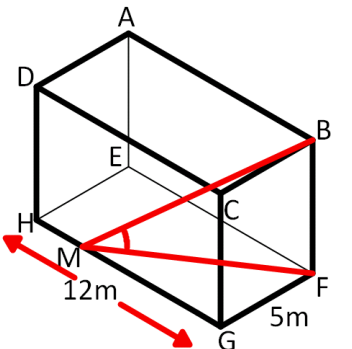
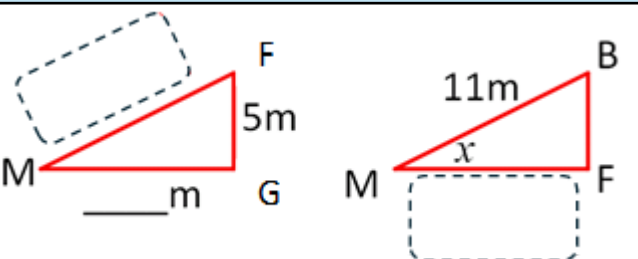
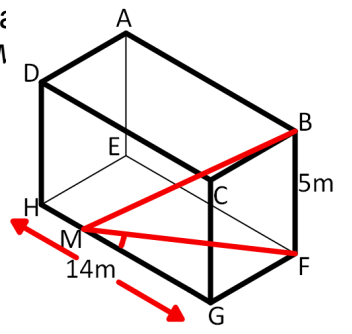
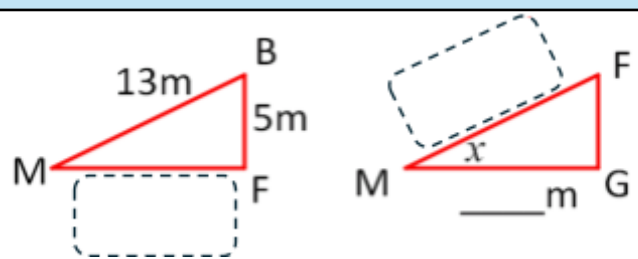
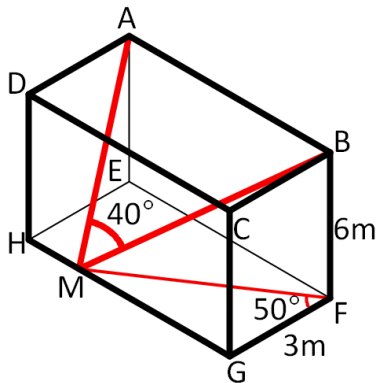
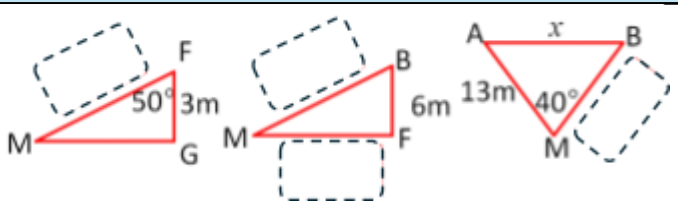
$$GH = 12m$$

Angle

$$\angle BHF = 40^\circ$$

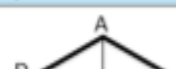
Find the length GF .



5 M is the point such that $HM \perp BF$ $GH = 12m$ $GF = 5m$ Angle $\angle BMF = 40^\circ$ Find the length BF. 	
6 M is the point such that $HM \perp BF$ $GH = 12m$ $GF = 5m$ $BM = 11m$ Find the size of angle $\angle BMF$. 	
7 M is the point such that $HM \perp BF$ $BM = 13m$ $GH = 14m$ $BF = 5m$ Find angle $\angle GMF$ 	
8 $AM = 13m$ $GF = 3m$ $BF = 6m$ Angle $\angle MFG = 50^\circ$ Angle $\angle AMB = 40^\circ$ Find the length AB HINT: cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$ 	

1	2	3	4	5	6	7	8
7.51	24.8	9.11	6.79	8.64	27.3	33.6	8.68

[ANSWERS]

1
$GH = 12m$ $GF = 5m$ 

Pythag: $HF^2 = 12^2 + 5^2$

5

M is the point such that $HM : MG = 1 : 3$
 $GH = 12m$
 $GF = 5m$
Angle $\angle BMF = 40^\circ$
Find the length BF .

10.29

$MF^2 = 9^2 + 5^2$
 $MF^2 = 106$
 $MF = \sqrt{106}$
 $= 10.29...$

$\tan 40 = \frac{x}{10.29...}$
 $x = 10.29... \times \tan 40$
 $x = 8.64m$

6

M is the point such that $HM : MG = 3 : 7$
 $GH = 12m$
 $GF = 5m$
 $BM = 11m$
Find the size of angle $\angle BMF$.

9.77

$MF^2 = 5^2 + 8.4^2$
 $MF^2 = 95.58$
 $MF = 9.77...$

$\cos x = \frac{9.77...}{11}$
 $x = \cos^{-1}(\text{ANS})$
 $x = 27.3^\circ$

7

M is the point such that $HM : MG = 2 : 5$
 $BM = 13m$
 $GH = 14m$
 $BF = 5m$
Find angle $\angle GMF$

$FM^2 = 13^2 - 5^2$
 $FM^2 = 144$
 $FM = 12$

$\cos x = \frac{10}{12}$
 $x = \cos^{-1}(\text{ANS})$
 $x = 33.6^\circ$

8

$AM = 13m$
 $GF = 3m$
 $BF = 6m$
Angle $\angle MFG = 50^\circ$
Angle $\angle AMB = 40^\circ$
Find the length AB

HINT:
cosine rule
 $a^2 = b^2 + c^2 - 2bc \cos A$

4.66...

$\cos 50 = \frac{3}{FM}$
 $FM = \frac{3}{\cos 50}$
 $FM = 4.66...$

7.601...

$BM^2 = 6^2 + 4.66...^2$
 $BM^2 = 57.78...$
 $BM = 7.601...$

$7c^2 = 13^2 + (7.601)^2 - 2(13)(7.601)\cos 40$
 $x^2 = 75.38...$
 $x = 8.68m$