



正答率 7



平行四辺形 ABCD において、 $AB=7\text{ cm}$ 、 $BC=8\text{ cm}$ で、対角線 $AC=13\text{ cm}$ である。
このとき、

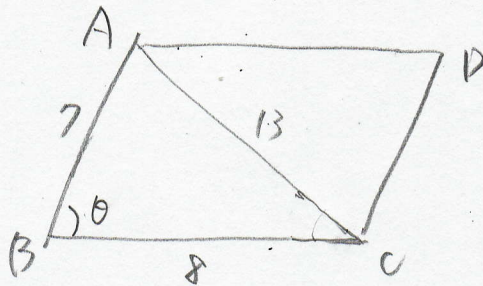
(1) $\cos \angle ABC = \frac{\boxed{\text{アイ}}}{\boxed{\text{ウ}}}$

(2) 平行四辺形 ABCD = $\boxed{\text{エオ}} \sqrt{\boxed{\text{カ}}}$ cm^2

(3) $BD = \sqrt{\boxed{\text{キク}}}$ cm

(4) $\sin \angle ACB = \frac{\boxed{\text{ケ}} \sqrt{\boxed{\text{コ}}}}{\boxed{\text{サシ}}}$

[共通一次]



1) $169 = 49 + 64 - 2 \cdot 7 \cdot 8 \cos \theta$

$169 = 113 - 112 \cos \theta$

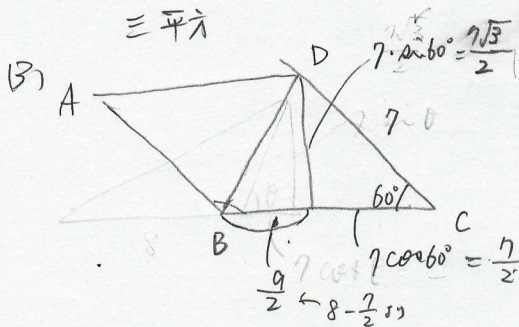
$\cos \theta = -\frac{1}{2}$ $\therefore \theta = 120^\circ$

2) $112 \sin \theta = \frac{\sqrt{3}}{2}$ $\leftarrow \cos \theta > 0$
 $\sin \theta = \frac{\sqrt{3}}{2}$ $\leftarrow \cos \theta > 0$

平行四辺形 ABCD = $2 \Delta ABC$

$= 2 \cdot \frac{1}{2} \cdot 7 \cdot 8 \sin \theta = 7 \cdot 8 \cdot \frac{\sqrt{3}}{2}$

$= 28\sqrt{3}$ \therefore (エオカ)



$BD = \sqrt{\frac{81}{4} + \frac{147}{4}}$

$= \frac{2\sqrt{57}}{2} = \sqrt{57}$ \therefore (キク)

(4) $\angle ACB = \alpha$ とおくと

$49 = 169 + 64 - 2 \cdot 13 \cdot 8 \cos \alpha$

$49 = 233 - 208 \cos \alpha$

$\cos \alpha = \frac{23}{26}$

$\sin^2 \alpha = 1 - \cos^2 \alpha = \frac{147}{26^2}$

$\sin \alpha = \frac{\sqrt{3}}{26}$ \therefore (ケコ)

