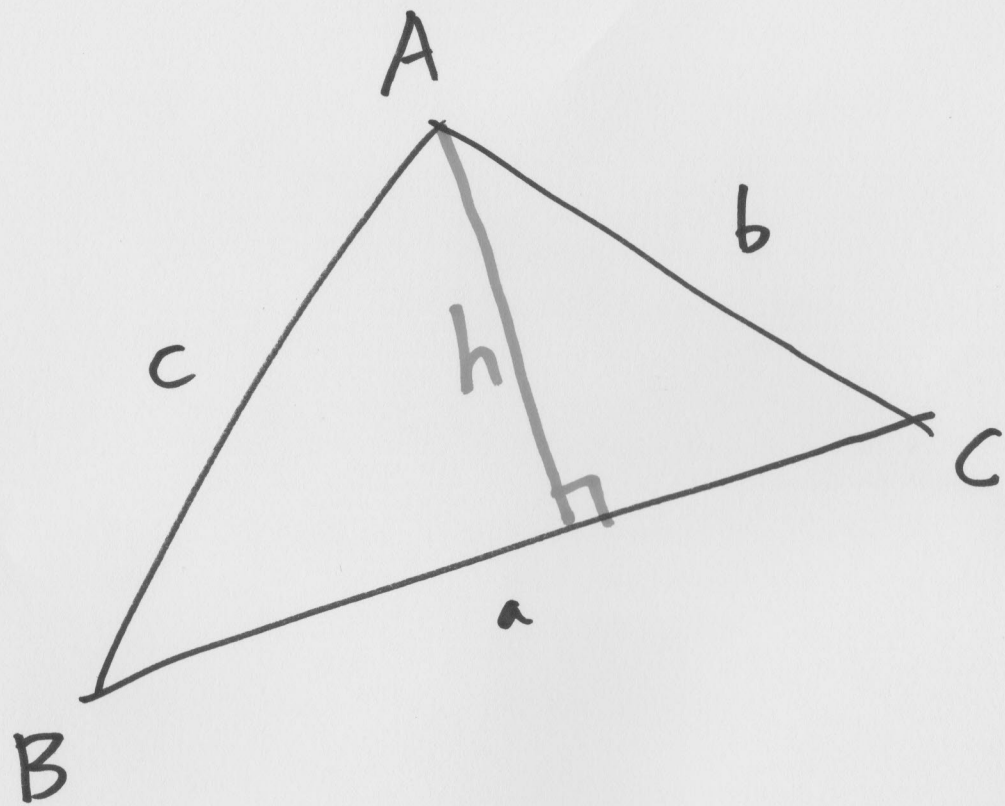


Trigonometry II

三角學 (II)

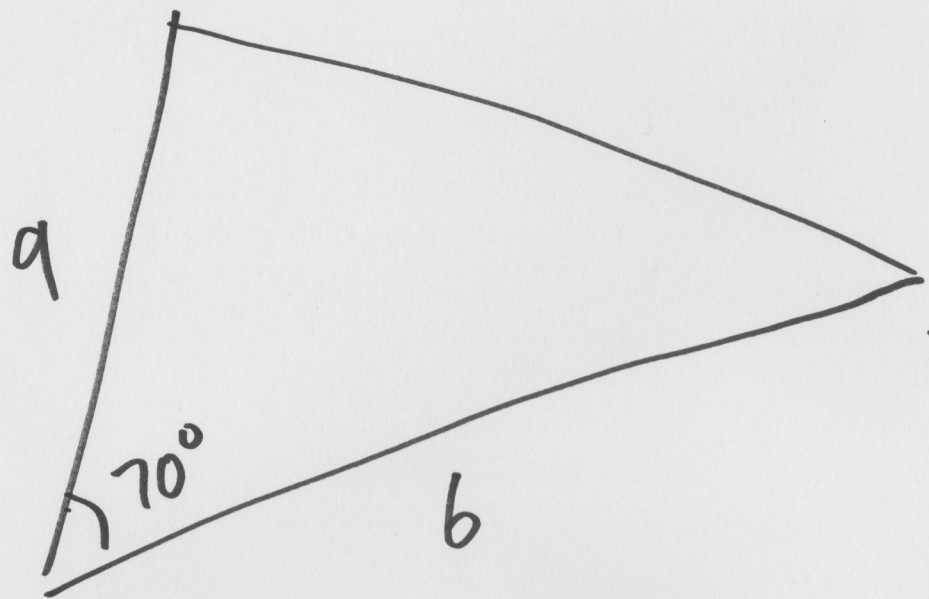


$$\text{area} = \frac{1}{2} ab \sin C$$

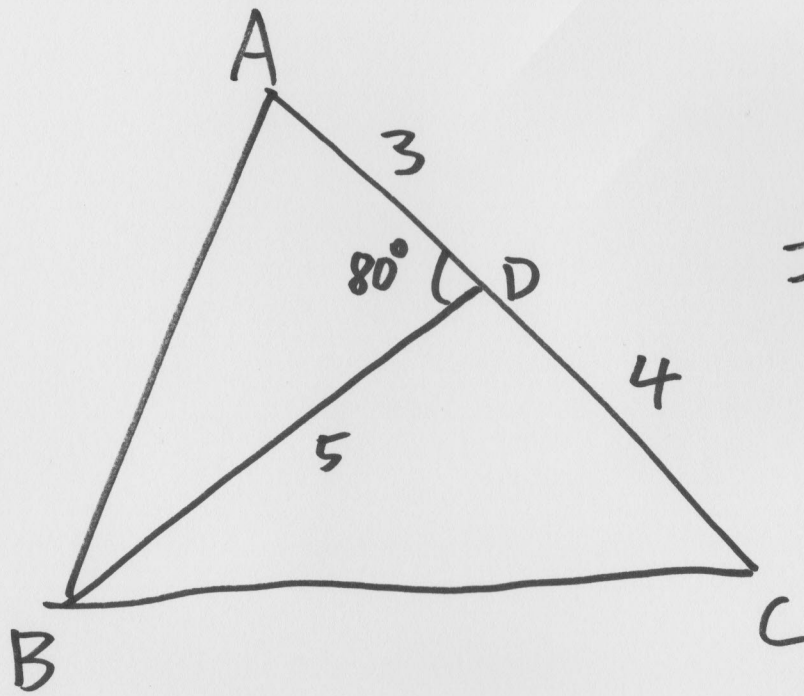
$$\sin C = \frac{h}{b}$$

$$h = b \sin C$$

$$\begin{aligned} \text{area} &= \frac{1}{2} \times a \times h \\ &= \frac{1}{2} ab \sin C \end{aligned}$$

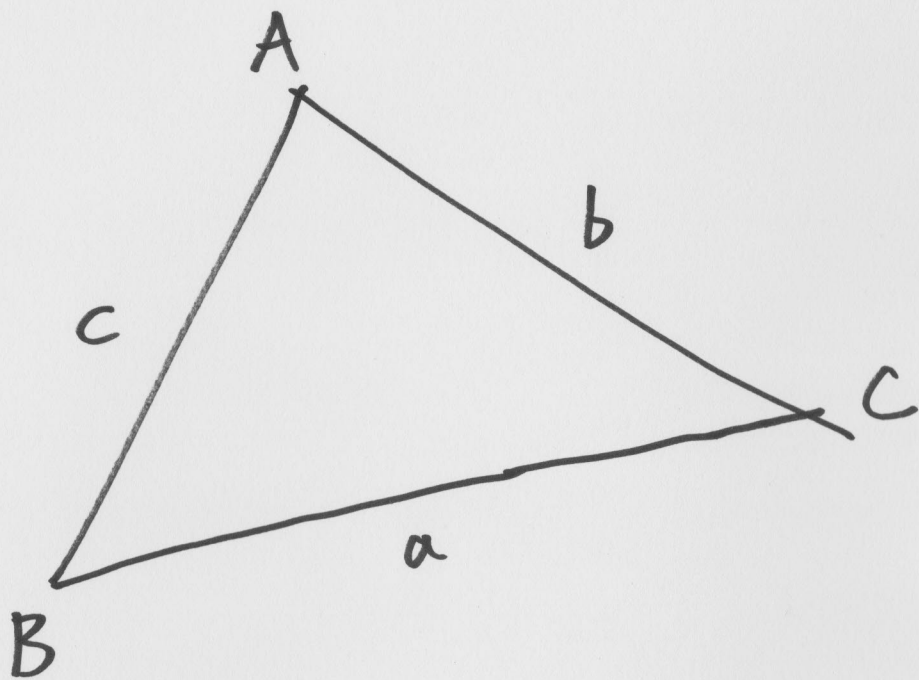


$$\frac{1}{2} \times a \times b \times \sin 70^\circ$$
$$= 25.4$$



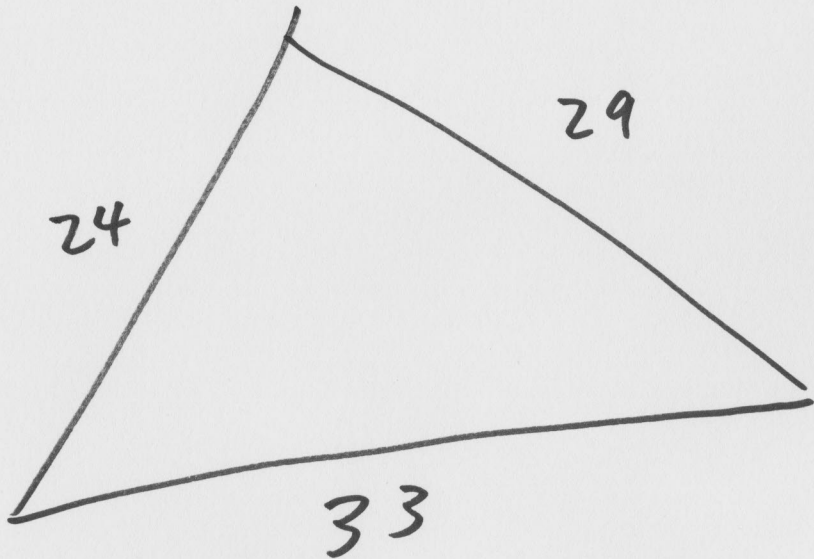
$$\frac{1}{2} \times 3 \times 5 \times \sin 80^\circ + \frac{1}{2} \times 5 \times 4 \times \sin 100^\circ$$
$$= 17.2$$

Heron's Formula 希羅公式



$$s = \frac{a+b+c}{2}$$

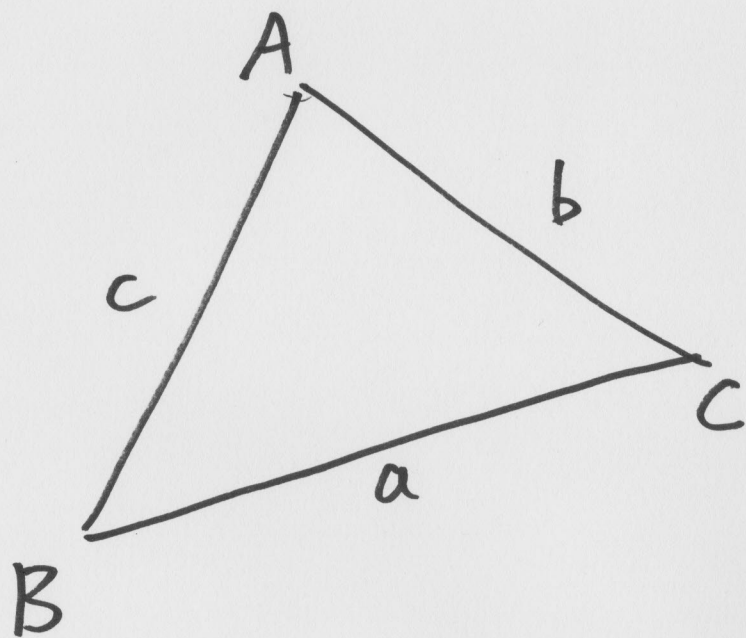
$$\text{area} = \sqrt{s(s-a)(s-b)(s-c)}$$



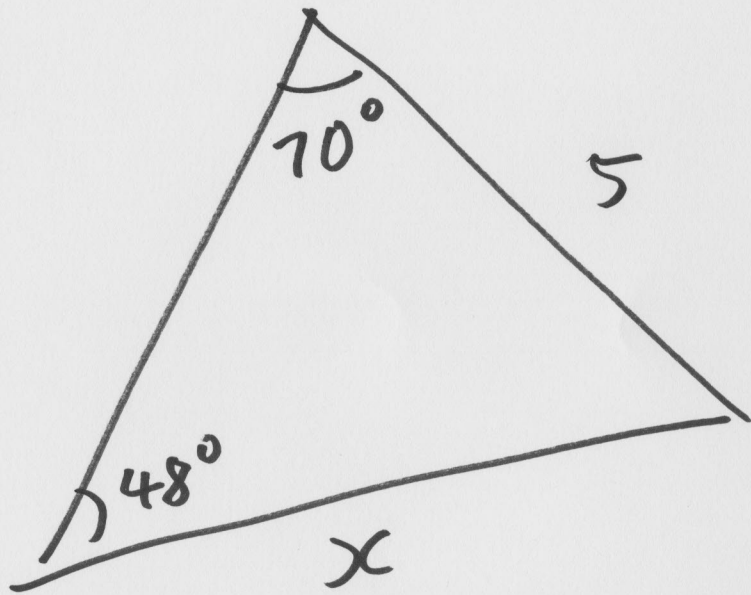
設 Let $s = \frac{24+29+33}{2}$
 $= 43$

$$\text{area} = \sqrt{43(43-24)(43-29)(43-33)}$$
$$= 338.2$$

Sine Formula 正弦公式



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

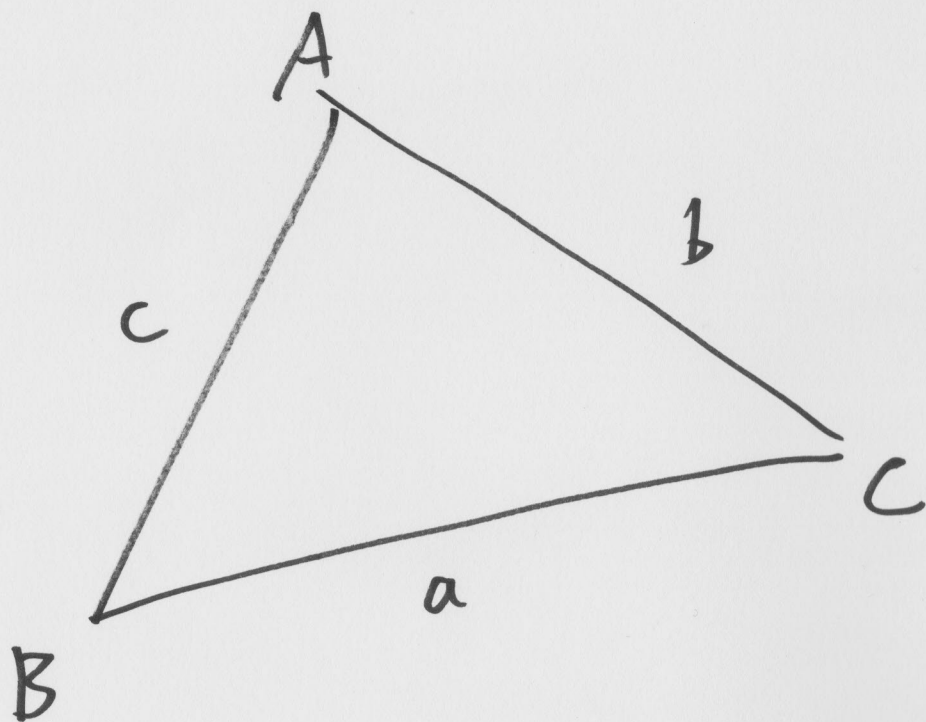


$$\frac{x}{\sin 70^\circ} = \frac{5}{\sin 48^\circ}$$

$$x = \frac{5 \cdot \sin 70^\circ}{\sin 48^\circ}$$

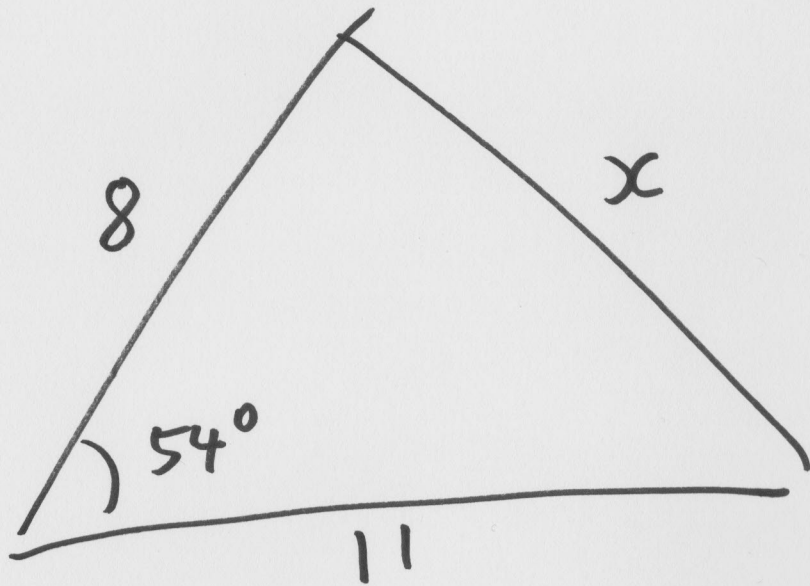
$$= 6.32$$

Cosine Formula 餘弦公式



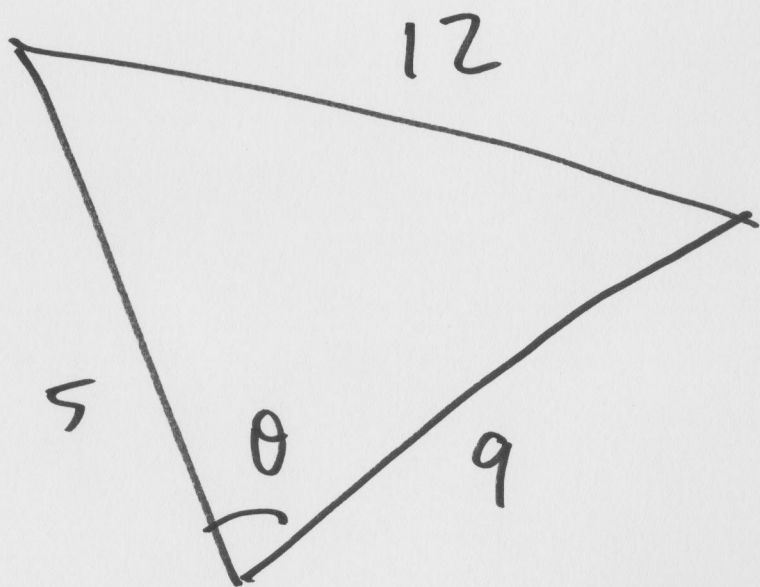
$$c^2 = a^2 + b^2 - 2ab \cos C$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$



$$x^2 = 8^2 + 11^2 - 2 \cdot 8 \cdot 11 \cdot \cos 54^\circ$$

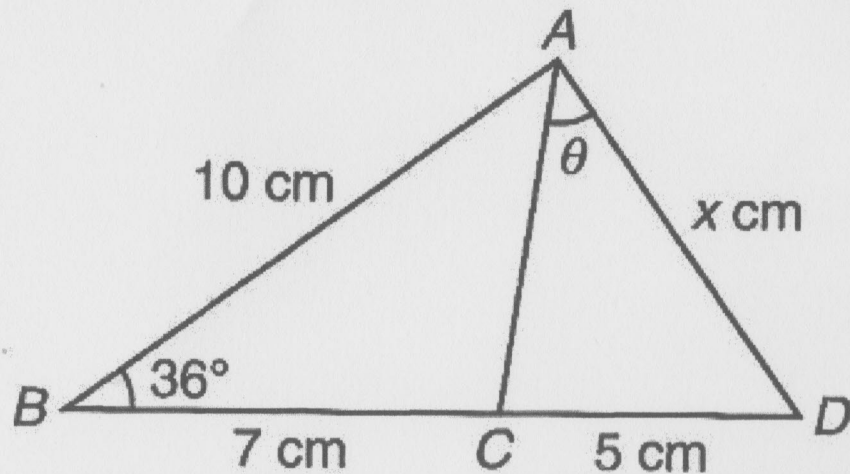
$$x = 9.03$$



$$12^2 = 5^2 + 9^2 - 2 \cdot 5 \cdot 9 \cdot \cos \theta$$

$$\cos \theta = -0.4222$$

$$\theta = 114.97^\circ$$



$$x^2 = 10^2 + 12^2 - 2 \times 10 \times 12 \cos 36^\circ$$

$$x = 7.0595$$

$$\approx 7.06 \text{ cm} //$$

$$AC^2 = 10^2 + 7^2 - 2 \times 10 \times 7 \cos 36^\circ$$

$$AC = 5.978$$

$$\cos \theta = \frac{(7.0595)^2 + (5.978)^2 - 5^2}{2 \times 7.0595 \times 5.978}$$

$$\theta = 44.1^\circ //$$