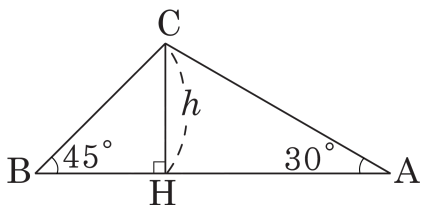


1. 다음 삼각형 ABC 의 높이를 구하는 과정이다. 안에 알맞은 것을 써넣어라.



$\triangle ACH$ 에서 $\angle ACH = 90^\circ - 30^\circ = 60^\circ$

$$\tan 60^\circ = \frac{\boxed{}}{h} \quad \therefore \overline{AH} = \boxed{}$$

$\triangle BCH$ 에서 $\angle BCH = 90^\circ - 45^\circ = 45^\circ$

$$\tan 45^\circ = \frac{\boxed{}}{h} \quad \therefore \overline{BH} = \boxed{}$$

▶ 답 :

▶ 답 : $\underline{\hspace{1cm}}$ $^\circ$

▶ 답 :

▶ 답 : $\underline{\hspace{1cm}}$ $^\circ$

▷ 정답 : $\overline{AH}$

▷ 정답 : $h \tan 60^\circ \underline{\hspace{1cm}}$

▷ 정답 : $\overline{BH}$

▷ 정답 : $h \tan 45^\circ \underline{\hspace{1cm}}$

해설

$\triangle ACH$ 에서 $\angle ACH = 90^\circ - 30^\circ = 60^\circ$

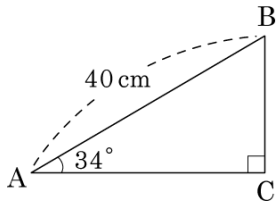
$$\tan 60^\circ = \frac{\overline{AH}}{h} \quad \therefore \overline{AH} = h \tan 60^\circ$$

$\triangle BCH$ 에서 $\angle BCH = 90^\circ - 45^\circ = 45^\circ$

$$\tan 45^\circ = \frac{\overline{BH}}{h} \quad \therefore \overline{BH} = h \tan 45^\circ$$

2. 다음 직각삼각형 ABC 에서 $\angle A = 34^\circ$ 일 때, 높이 $\overline{BC}$ 를 구하면? (단, $\sin 34^\circ = 0.5592$, $\cos 34^\circ = 0.8290$)

- ① 20.141 cm ② 21.523 cm
③ 22.368 cm ④ 23.694 cm
⑤ 24.194 cm

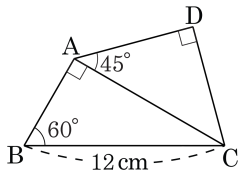


해설

$$\sin 34^\circ = \frac{\overline{BC}}{40}$$

$$\therefore \overline{BC} = 40 \times 0.5592 = 22.368 \text{ (cm)}$$

3. 다음 그림의 $\square ABCD$ 에서 $\angle BAC = \angle ADC = 90^\circ$ 이고, $\overline{BC} = 12\text{ cm}$ 일 때, $\overline{CD}$ 의 길이는?



- ① $2\sqrt{6}\text{ cm}$ ② $3\sqrt{6}\text{ cm}$
 ③ $4\sqrt{6}\text{ cm}$ ④ $5\sqrt{6}\text{ cm}$
 ⑤ $6\sqrt{6}\text{ cm}$

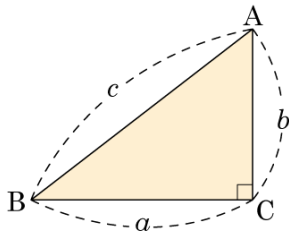
해설

$$\overline{AC} = 12 \cos 30^\circ = 6\sqrt{3} \text{ (cm)}$$

$\triangle ADC$ 는 직각이등변삼각형이므로

$$\overline{CD} = 6\sqrt{3} \sin 45^\circ = 6\sqrt{3} \times \frac{\sqrt{2}}{2} = 3\sqrt{6} \text{ (cm)}$$

4. 다음은 다음 그림과 같은 직각삼각형 ABC 에 대한 설명이다. 옳은 것은 모두 몇 개인가?



㉠ $\sin B = \frac{b}{a}$

㉡ $c = \frac{b}{\sin B}$

㉢ $\tan B = \frac{b}{a}$

㉤ $a = \frac{b}{\tan B}$

㉥ $\cos B = \frac{a}{b}$

▶ 답 : 개

▶ 정답 : 3 개

해설

㉠ $\sin B = \frac{b}{c}$

㉡ $\sin B = \frac{b}{c} \Rightarrow c = \frac{b}{\sin B}$

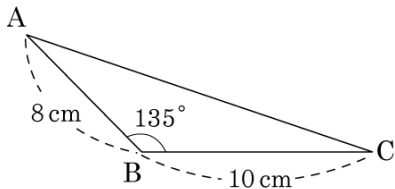
㉢ $\tan B = \frac{b}{a}$

㉤ $\tan B = \frac{b}{a} \Rightarrow a = \frac{b}{\tan B}$

㉥ $\cos B = \frac{a}{b}$

∴ ㉡, ㉢, ㉤

5. 다음 삼각형의 넓이를 구하여라.



▶ 답 : cm²

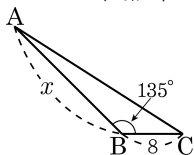
▷ 정답 : $20\sqrt{2}$ cm²

해설

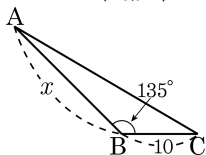
$$\begin{aligned}(\text{넓이}) &= \frac{1}{2} \times 8 \times 10 \times \sin(180^\circ - 135^\circ) \\ &= \frac{1}{2} \times 8 \times 10 \times \sin 45^\circ \\ &= \frac{1}{2} \times 8 \times 10 \times \frac{\sqrt{2}}{2} = 20\sqrt{2} \text{ (cm}^2\text{)}\end{aligned}$$

6. 다음 $\triangle ABC$ 에서 x 의 길이를 구하여라.

- (1) $\triangle ABC$ 의 넓이 : $40\sqrt{2}$



- (2) $\triangle ABC$ 의 넓이 : $30\sqrt{2}$



▶ 답 :

▶ 답 :

▷ 정답 : (1) 20

▷ 정답 : (2) 16

해설

$$(1) \frac{1}{2} \times 8 \times x \times \sin(180^\circ - 135^\circ) = 40\sqrt{2}$$

$$4x \times \sin 45^\circ = 40\sqrt{2}$$

$$4x \times \frac{\sqrt{2}}{2} = 40\sqrt{2}$$

$$4x = 80$$

$$\therefore x = 20$$

$$(2) \frac{1}{2} \times 10 \times x \times \sin(180^\circ - 135^\circ) = 30\sqrt{2}$$

$$5x \times \sin 45^\circ = 30\sqrt{2}$$

$$5x \times \frac{\sqrt{2}}{2} = 30\sqrt{2}$$

$$\therefore x = 16$$

7. 다음 삼각형의 넓이를 구하면?

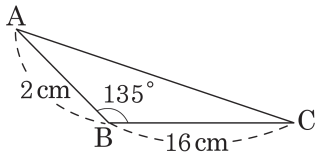
① $7\sqrt{2}\text{ cm}^2$

② $7\sqrt{3}\text{ cm}^2$

③ $8\sqrt{2}\text{ cm}^2$

④ $8\sqrt{3}\text{ cm}^2$

⑤ $9\sqrt{2}\text{ cm}^2$

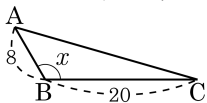


해설

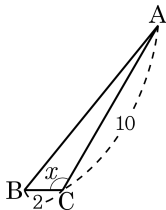
$$\begin{aligned}(\text{넓이}) &= \frac{1}{2} \times 2 \times 16 \times \sin(180^\circ - 135^\circ) \\&= \frac{1}{2} \times 2 \times 16 \times \sin 45^\circ \\&= \frac{1}{2} \times 2 \times 16 \times \frac{\sqrt{2}}{2} = 8\sqrt{2} (\text{cm}^2)\end{aligned}$$

8. 다음 $\triangle ABC$ 에서 $\angle x$ 의 크기를 구하여라.

(1) $\triangle ABC$ 의 넓이 : $40\sqrt{3}$



(2) $\triangle ABC$ 의 넓이 : $5\sqrt{3}$



▶ 답 :

▶ 답 :

▷ 정답 : (1) 120°

▷ 정답 : (2) 120°

해설

$$(1) \frac{1}{2} \times 8 \times 20 \times \sin(180^\circ - x) = 40\sqrt{3}$$

$$\sin(180^\circ - x) = \frac{\sqrt{3}}{2}$$

$$180^\circ - x = 60^\circ$$

$$\therefore \angle x = 120^\circ$$

$$(2) \frac{1}{2} \times 2 \times 10 \times \sin(180^\circ - x) = 5\sqrt{3}$$

$$\sin(180^\circ - x) = \frac{\sqrt{3}}{2}$$

$$180^\circ - x = 60^\circ$$

$$\therefore \angle x = 120^\circ$$