Answer key

The method: The law of sines

a ÷ sin A = b ÷ sin B. Use it when you know two angles and a side.

$A = 90°, B = 45°, a = 4:\ b = 2\sqrt{2}$

$\frac{a}{\sin A} = \frac{b}{\sin B}$ the law of sines

$b = \frac{4 \sin 45°}{\sin 90°} = 2\sqrt{2}$ sin 90° = 1, sin 45° = √(2)/2

$A = 30°, B = 120°, a = 9:\ b = 9\sqrt{3}$

$\frac{a}{\sin A} = \frac{b}{\sin B}$ the law of sines

$b = \frac{9 \sin 120°}{\sin 30°} = 9\sqrt{3}$ sin 30° = 1/2, sin 120° = √(3)/2

$A = 45°, B = 30°, a = 4:\ b = 2\sqrt{2}$

$\frac{a}{\sin A} = \frac{b}{\sin B}$ the law of sines

$b = \frac{4 \sin 30°}{\sin 45°} = 2\sqrt{2}$ sin 45° = √(2)/2, sin 30° = 1/2

Problems 1 and 2 worked out · Version 0A

$A = 45°, B = 90°, a = 8:\ b = 8\sqrt{2}$

$\frac{a}{\sin A} = \frac{b}{\sin B}$ the law of sines

$b = \frac{8 \sin 90°}{\sin 45°} = 8\sqrt{2}$ sin 45° = √(2)/2, sin 90° = 1

$A = 30°, B = 90°, a = 12:\ b = 24$

$\frac{a}{\sin A} = \frac{b}{\sin B}$ the law of sines

$b = \frac{12 \sin 90°}{\sin 30°} = 24$ sin 30° = 1/2, sin 90° = 1

The law of sines · Version 0A

1) $8\sqrt{2}$ 2) 24 3) $11\sqrt{3}$ 4) $5\sqrt{2}$ 5) $2\sqrt{3}$ 6) $\frac{8\sqrt{3}}{3}$

7) $\sqrt{3}$ 8) 20 9) $7\sqrt{3}$ 10) $3\sqrt{2}$ 11) $\frac{3}{2}$ 12) $10\sqrt{3}$

13) $9\sqrt{3}$ 14) $\frac{5\sqrt{6}}{3}$ 15) $12\sqrt{2}$