

Question 1

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$$\sin(\theta + \theta) = \sin \theta \cos \theta + \cos \theta \sin \theta$$

$$= 2 \sin \theta \cos \theta$$

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$\frac{1}{2} \sin 2\theta = \sin \theta \cos \theta$$

$$\cos 15^\circ \sin 15^\circ$$

$$= \frac{1}{2} \sin 20^\circ$$

$$= \frac{1}{2} \frac{1}{2}$$

$$= \frac{1}{4}$$