

Magnitudes of Scalar Multiples - Guided Lesson Explanation**Explanation #1**

Step 1) See what is being asked.

Step 2) To solve:

$$(a) a \cdot b = |a| |b| \cos 90^\circ$$

$$= 2 \times 4 \times 0 = 0$$

$$(b) a \cdot c = |a| |c| \cos 45^\circ$$

$$= 2 \times \sqrt{2} \times .707 = 2$$

$$(c) b \cdot c = |b| |c| \cos 45^\circ$$

$$= 4 \times \sqrt{2} \times .707 = 4$$

The answers are $a \cdot b = 0$, $a \cdot c = 2$, and $b \cdot c = 4$.

Explanation #2

Step 1) See what is being asked.

Step 2) To solve:

$$(a) a \cdot b = |a| |b| \cos 80^\circ$$

$$= 10.29 \times 12.65 \times .173 = 22.52$$

$$(b) a \cdot c = |a| |c| \cos 40^\circ$$

$$= 10.29 \times \sqrt{2} \times .766 = 11.15$$

$$(c) b \cdot c = |b| |c| \cos 40^\circ$$

$$= 12.65 \times \sqrt{2} \times .766 = 13.70$$

The answers are $a \cdot b = 22.52$, $a \cdot c = 11.15$, and $b \cdot c = 13.70$



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Explanation #3

Step 1) See what is being asked.

Step 2) To solve:

$$(a) a.b = |a| |b| \cos 70^\circ$$

$$= 5.83 \times 10.44 \times .342 = 20.82$$

$$(b) a.c = |a| |c| \cos 35^\circ$$

$$= 5.83 \times \sqrt{2} \times .819 = 6.75$$

$$(c) b.c = |b| |c| \cos 35^\circ$$

$$= 10.44 \times \sqrt{2} \times .819 = 12.09$$

The answers are $a.b = 20.82$, $a.c = 6.75$, and $b.c = 12.09$.

