

Time Limit: 3.5 minutes**Instructions:** Open book. Closed notes. Calculator allowed.Instructions for all quizzes: **Do not discuss any aspect of this quiz with other midshipmen until after 6th period.**

Print your last name above. Also, fill in the bubble for your section.

Fill the bubble for the correct answer. Write your answers in any blanks provided.

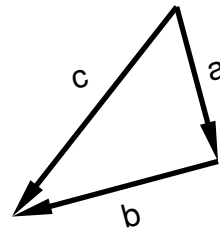
Your work will not be graded unless requested.

The sketch shows three vectors **a**, **b**, and **c** that form a (6, 8, 10)-right triangle with

$$|\mathbf{a}| = 6$$

$$|\mathbf{b}| = 8$$

$$|\mathbf{c}| = 10.$$



1. $\mathbf{c} \cdot \mathbf{c} =$

- 0
 10
 20
 $10\sqrt{2}$
 100
 none of above

Reason: Dotting any vector with itself gives the square of the length of the vector: $\mathbf{c} \cdot \mathbf{c} = |\mathbf{c}|^2 = 10^2 = 100$.

2. $\mathbf{a} \cdot \mathbf{b} =$

- 0
 24
 48
 -24
 -48
 cannot be determined

Reason: Note that **a** and **b** are perpendicular. The dot product of two perpendicular vectors is always 0.

3. $\mathbf{a} \cdot \mathbf{c} =$

Hint: $\cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}}$

- 0
 18
 36
 48
 60
 cannot be determined

Reason: $\mathbf{a} \cdot \mathbf{c} = |\mathbf{a}||\mathbf{c}| \cos(\theta) = (6)(10) \left(\frac{6}{10}\right) = 36$. The angle θ is determined by vectors **a** and **c**. The fraction $\frac{6}{10}$ arises because $\cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}} = \frac{6}{10}$.