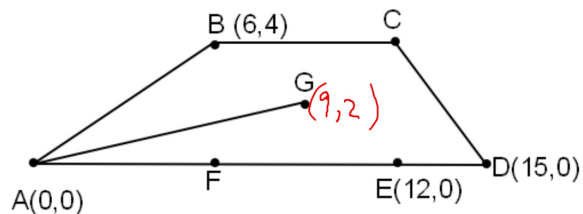


1. Quadrilateral ABCD is drawn on the standard (x,y) coordinate plane as shown below, with points E and F on $\overline{AD}$. Point G is the center of rectangle BCEF. How many coordinate units long is $\overline{AG}$?

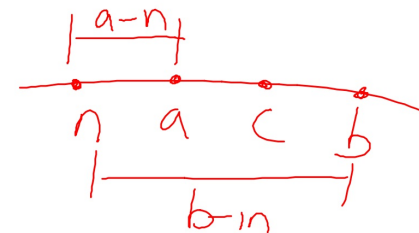


- A. $\sqrt{10}$
 B. $\sqrt{13}$
 C. $\sqrt{85}$
 D. $\sqrt{97}$
 E. 11

$$AG = \sqrt{(9-0)^2 + (2-0)^2} = \sqrt{85}$$

2. Which of the following statements *must* be true whenever n , a , b , and c are positive integers such that $n < a$, $c > a$, and $b > c$.

- ~~A. $a < n$~~
 B. $b - n > a - n$
~~C. $b < n$~~
 D. $n + b = a + c$
 E. $2n > a + b$



3. An industrial cleaner is manufactured using only the 3 secret ingredients A, B, and C, which are mixed in a the ratio 2:3:5, respectively, by weight. How many pounds of secret ingredient B are in a 42 pound (net weight) bucket of this cleaner?

- A. 4.2
 B. 12.6
 C. 14.0
 D. 18.0
 E. 21.0

$$\frac{B}{\text{TOTAL}} = \frac{3}{10} = \frac{B}{42}$$

$$B = 12.6$$

$2+3+5=10$

4. In the figure below, $\angle ABC \cong \angle DFE$, $\angle BAC \cong \angle FDE$, D and F are on $\overline{AB}$, $\overline{AD} \cong \overline{FB}$, and the distances in centimeters are shown. What is the length of $\overline{AD}$, in centimeters?

- A. 5
 B. 4
 C. 3
 D. 2
 E. 1

