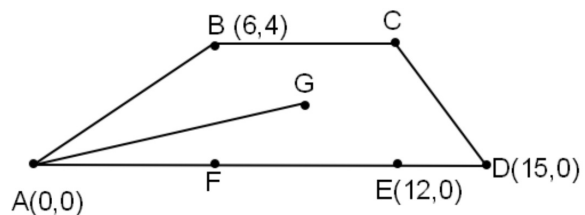


1. Quadrilateral ABCD is drawn on the standard (x,y) coordinate plane as shown below, with points E and F on  $\overline{AD}$ . Point G is the center of rectangle BCEF. How many coordinate units long is  $\overline{AG}$ ?



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

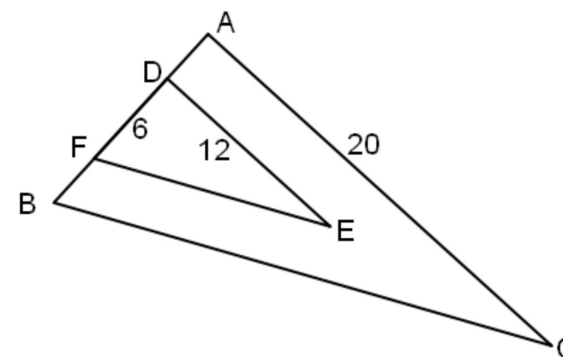
2. Which of the following statements *must* be true whenever  $n$ ,  $a$ ,  $b$ , and  $c$  are positive integers such that  $n < a$ ,  $c > a$ , and  $b > c$ .

- 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

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