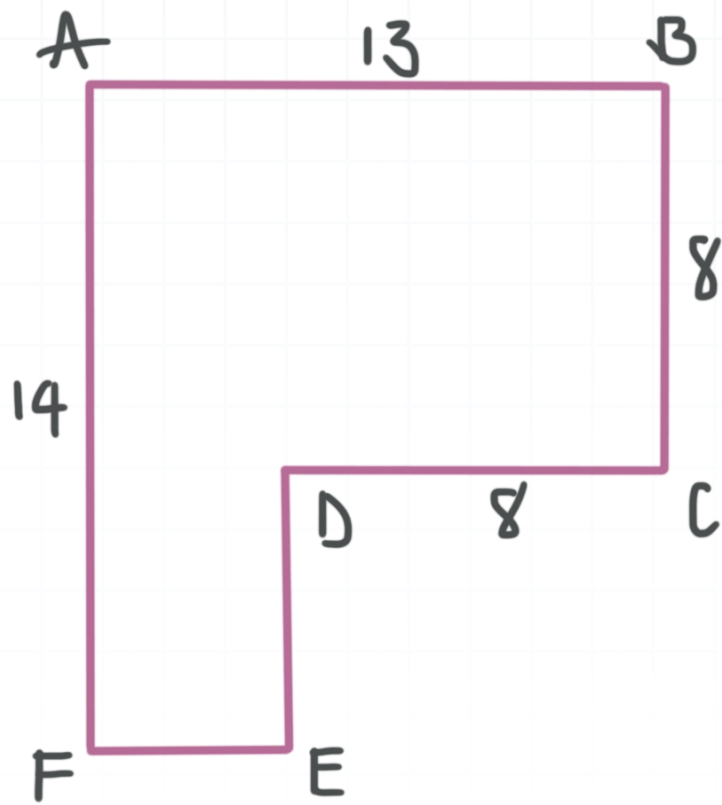


**Topic:** Area of a rectangle using sums and differences

**Question:** The figure is made by combining rectangles. What is the area of the figure?



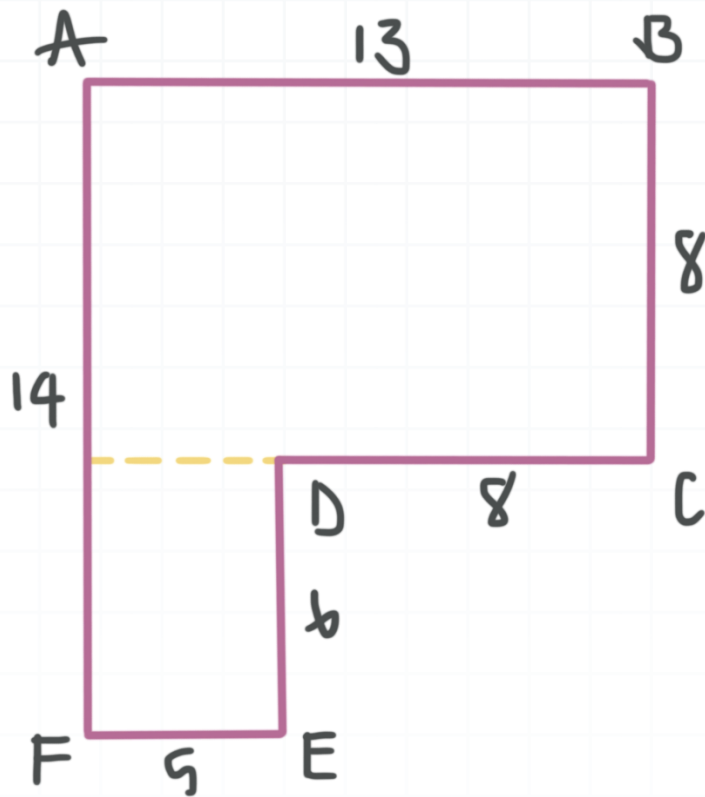
**Answer choices:**

- A 96
- B 104
- C 134
- D 182



**Solution: C**

Draw a dashed segment to divide the figure into two rectangles.



The height of the figure is 14, so  $\overline{DE} = \overline{AF} - \overline{BC} = 14 - 8 = 6$ .

The width of the figure is 13, so  $\overline{FE} = \overline{AB} - \overline{DC} = 13 - 8 = 5$ .

The area of the upper rectangle is

$$\text{area} = bh = 13 \cdot 8 = 104$$

The area of the lower rectangle is

$$\text{area} = bh = 5 \cdot 6 = 30$$

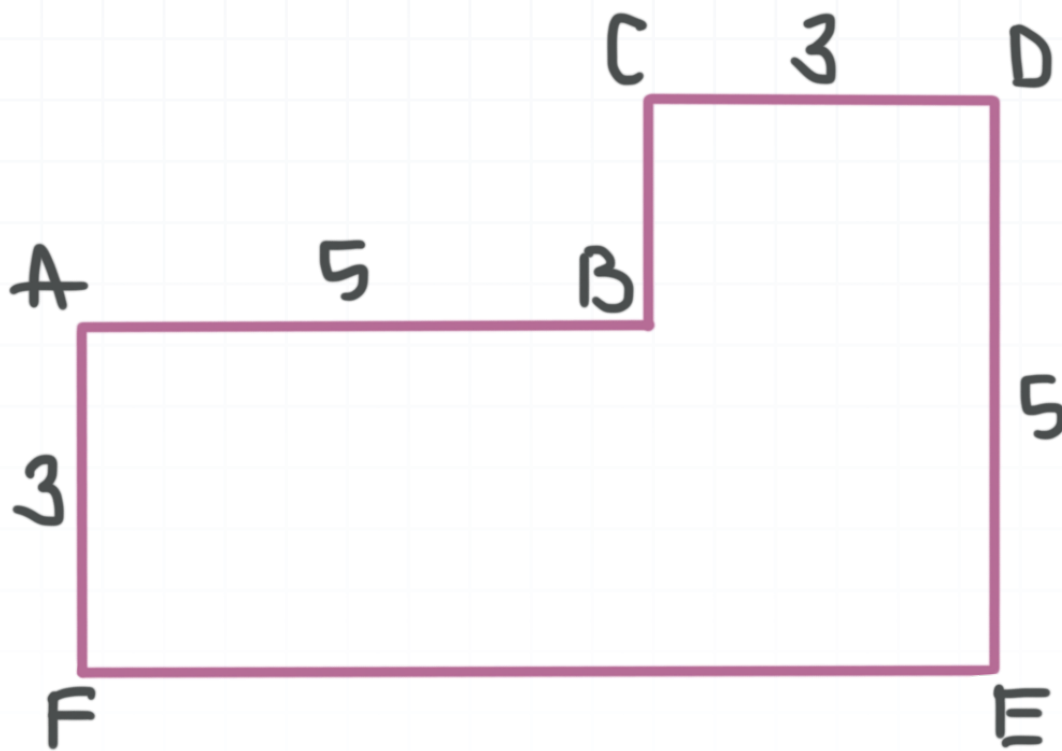
So the total area of the figure is

$$\text{area} = 104 + 30 = 134$$



**Topic:** Area of a rectangle using sums and differences

**Question:** The figure is made by combining rectangles. What is the area of the figure?



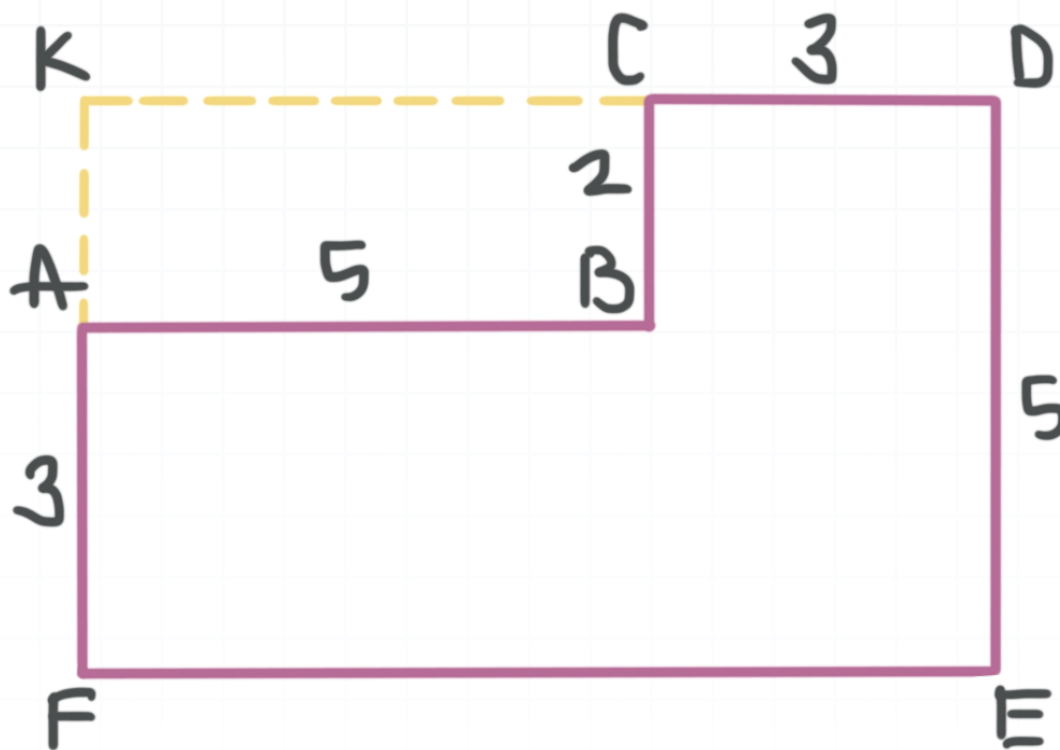
**Answer choices:**

- A 30
- B 40
- C 42
- D 52



**Solution: A**

Form a new, large rectangle by drawing a rectangle that fills in the empty space, and draw dashed line segments from  $A$  and  $C$  to  $K$ , where  $K$  is the vertex in the upper-left corner of the new, large rectangle we formed.



The height of the new, large rectangle we formed is 5, so

$$\overline{CB} = \overline{DE} - \overline{AF} = 5 - 3 = 2.$$

By adding  $\overline{AB}$  and  $\overline{CD}$ , we find that the base of the new, large rectangle we formed is 8.

The area of the new, large rectangle we formed,  $KDEF$ , is

$$\text{area} = bh = 8 \cdot 5 = 40$$

The area of  $ABCK$  is

$$\text{area} = bh = 5 \cdot 2 = 10$$



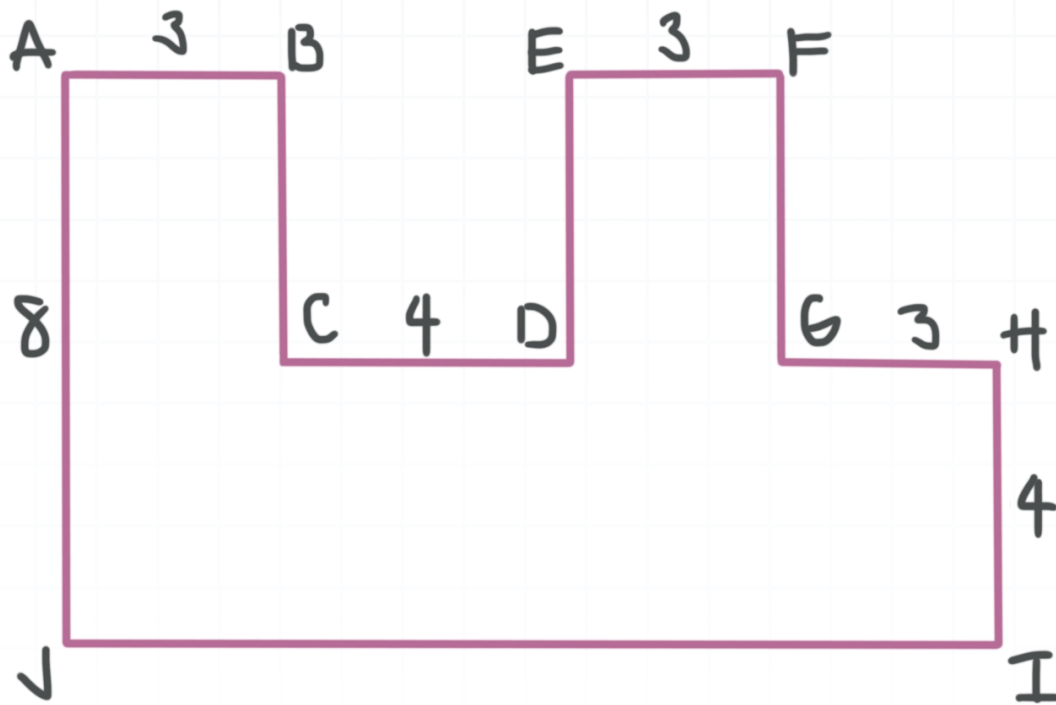
To get the area of the original figure, subtract the area of the rectangle  $ABCK$  from the area of the rectangle  $KDEF$ .

$$\text{area} = 40 - 10 = 30$$



**Topic:** Area of a rectangle using sums and differences

**Question:** The figure is made by combining rectangles. What is the area of the figure?



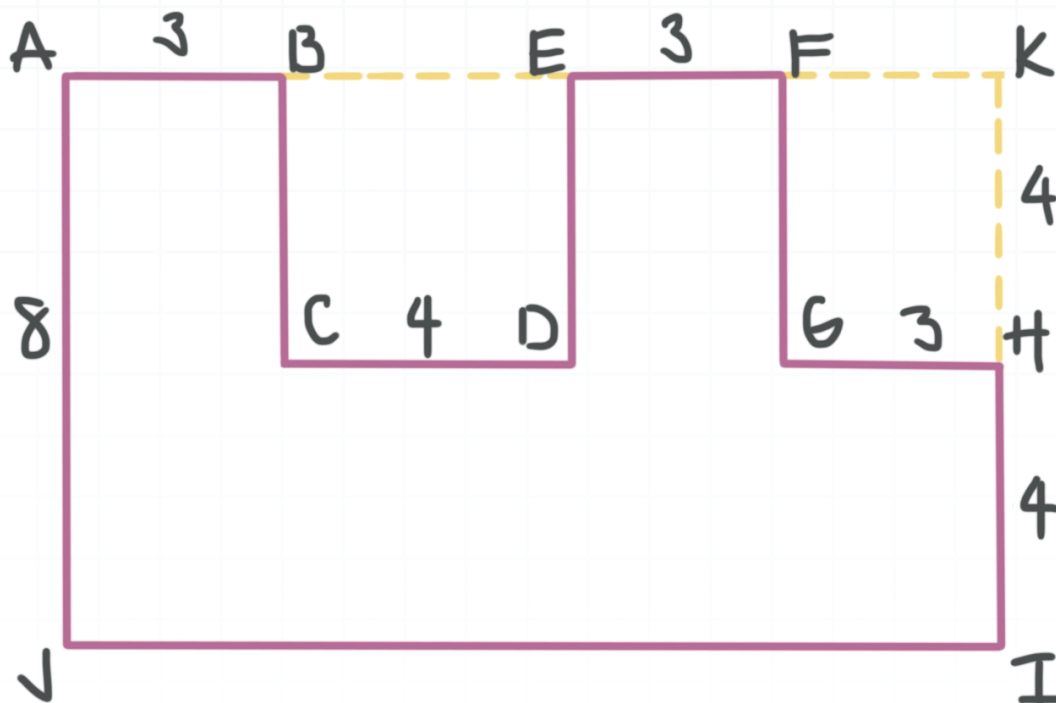
**Answer choices:**

- A 76
- B 82
- C 94
- D 108



**Solution: A**

Form a new, large rectangle by drawing two rectangles that fill in the empty spaces. To do this, draw a dashed line segment from  $B$  to  $E$  (to get rectangle  $BEDC$ ), and draw dashed line segments from  $F$  and  $H$  to a new point  $K$  (to get rectangle  $FKHG$ ).



The height of the new, large rectangle we formed is 8, so  $\overline{HK} = \overline{IK} - \overline{IH} = 8 - 4 = 4$ . Likewise,  $\overline{DE}$  must also be 4.

By adding the lengths of  $\overline{AB}$ ,  $\overline{CD}$ ,  $\overline{EF}$ , and  $\overline{GH}$ , we get a total width of 13.

The area of the new, large rectangle we formed is therefore

$$\text{area} = bh = 13 \cdot 8 = 104$$

The area of  $BEDC$  is

$$\text{area} = bh = 4 \cdot 4 = 16$$

The area of  $FKHG$  is



$$\text{area} = bh = 3 \cdot 4 = 12$$

To get the area of the original figure, subtract the sum of the areas of the rectangles  $BEDC$  and  $FKHG$  from the area of the new, large rectangle we formed,  $AKIJ$ .

$$\text{area} = 104 - (16 + 12) = 104 - 28 = 76$$

