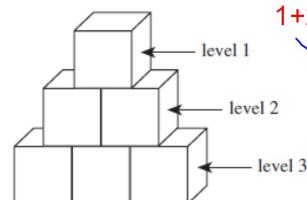


1. Carmen is playing with blocks. She arranges stacks of blocks so that each successive level of blocks has 1 fewer block than the level below it and the top level has 1 block. Such a stack with 3 levels is shown below. Carmen wants to make such a stack with 12 levels. How many blocks would she use to build this stack?

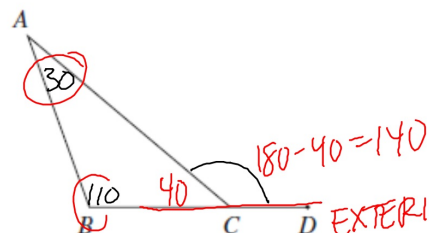


$$1+2+3+4+5+6+7+8+9+10+11+12$$

$$6 \cdot 13 = 78$$

- A. 66  
B. 78  
C. 132  
D. 144  
E. 156

12. In the figure below,  $\angle BAC$  measures  $30^\circ$ ,  $\angle ABC$  measures  $110^\circ$ , and points  $B$ ,  $C$ , and  $D$  are collinear. What is the measure of  $\angle ACD$ ?

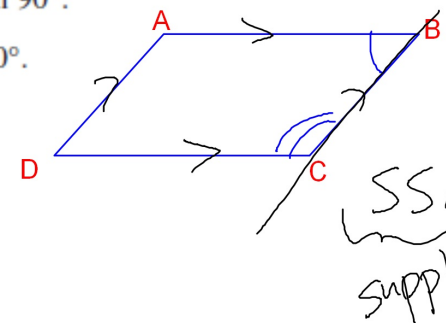


- E.  $150^\circ$   
G.  $140^\circ$   
H.  $130^\circ$   
J.  $120^\circ$   
K.  $110^\circ$

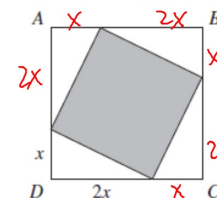
$180 - 40 = 140$   
EXTERIOR  $\angle$  = sum of the remote interior

6. In any parallelogram  $ABCD$ , it is always true that the measures of  $\angle ABC$  and  $\angle BCD$ :

- F. add up to  $180^\circ$ .  
G. add up to  $90^\circ$ .  
H. are each greater than  $90^\circ$ .  
J. are each  $90^\circ$ .  
K. are each less than  $90^\circ$ .



33. In the figure below,  $ABCD$  is a square. Points are chosen on each pair of adjacent sides of  $ABCD$  to form 4 congruent right triangles, as shown below. Each of these has one leg that is twice as long as the other leg. What fraction of the area of square  $ABCD$  is shaded?



- A.  $\frac{1}{9}$   
B.  $\frac{2}{9}$   
C.  $\frac{4}{9}$   
D.  $\frac{5}{9}$   
E.  $\frac{8}{9}$

$$\text{Area of 1 triangle} = \frac{1}{2}bh = \frac{1}{2}(x)(2x)$$

$$\text{Area of 4 triangles} = 4x^2$$

$$\text{Area of Square} = (3x)^2 = 9x^2$$

$$\text{Shaded Area} = 9x^2 - 4x^2 = 5x^2$$

$$\text{Ratio of } \frac{\text{Shaded Area}}{\text{Area of Square}} = \frac{5x^2}{9x^2}$$