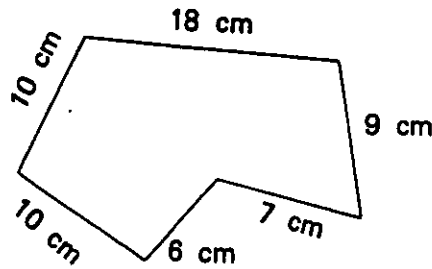


1. Find the perimeter of the following figure.



\_\_\_\_\_ 1

2. A solid metal cube with side of 40 cm is melted down to make 64 identical small cubes.  
What will be the volume of each of the small cubes (in  $cm^3$ )?

\_\_\_\_\_ 2

3. A mad professor has created a new kind of creature called a Blorg. For each Blorg, one hour after it is born, it gives birth to a new Blorg. Two hours after it is born, it gives birth to two more new Blorgs and then it immediately dies. If the professor starts with one newborn Blorg at noon, how many live Blorgs does he have at 4:30 PM that afternoon?

\_\_\_\_\_ 3

4. The number 1729 is known as Ramanujan's number. The great Indian mathematician found two different ways to write 1729 as the sum of two cubes.

Thus:

$$1729 = K^3 + L^3 = M^3 + N^3, \text{ where } K, L, M, N$$

are whole numbers and  $K \neq M \neq L$ .

If  $K = 12$ , what is the value of  $M + N$  ?

\_\_\_\_\_ 4

Grade Five (5) Division

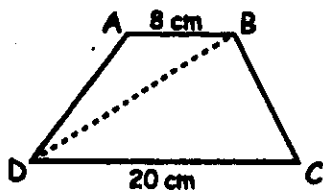
5. The year 2002 was the first palindrome year of the third millennium.  
The year 2992 will be the last palindrome year of the third millennium.  
How many palindrome years are there, altogether, in the third millennium?

\_\_\_\_\_ 5

6. On the beach, Carl always wears a T-shirt, shorts, sun-glasses,  
and a cowboy hat - that's all. He can't put on the T-shirt after  
the hat or after the sun-glasses.  
In how many different orders can Carl get dressed?

\_\_\_\_\_ 6

7.  $ABCD$  is a trapezoid ( $\overline{AB}$  parallel to  $\overline{CD}$ ).  
 $AB = 8\text{ cm}$  and  $CD = 20\text{ cm}$ .  
The area of the triangle  $BCD$  is  $90\text{ cm}^2$ .  
Find the area of the trapezoid (in  $\text{cm}^2$ ).



\_\_\_\_\_ 7

8. The sum of three squares of whole numbers is 165.  
What is the largest of these squares?

\_\_\_\_\_ 8

Grade Five (5) Division

9. David and John had the same amount of money when they went together to a store to buy presents for their friends. In the store, David spent \$36 and John spent \$84. When they left the store with bags full of presents David had three times as much money as John. How much money did David have when he arrived at the store?

\_\_\_\_\_ 9

10. In the following multiplication E, M, O, and R represent 4 different digits.

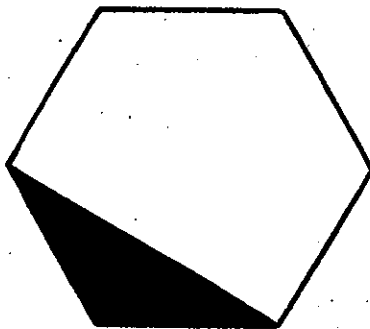
$$\begin{array}{r} \text{EROM} \\ \times \quad 9 \\ \hline \end{array}$$

MORE

What is the value of  $E+M+O+R$  ?

\_\_\_\_\_ 10

11. The area of the regular hexagon is  $100 \text{ cm}^2$ . Find the area of the shaded regions (in  $\text{cm}^2$ ) rounded to the nearest whole number.



\_\_\_\_\_ 11

12.  $M$  and  $N$  are both even positive whole numbers that satisfy  $M + (M + 1) + (M + 2) + \dots + (M + N - 1) = 100$ . Find the value of  $M + N$ .

\_\_\_\_\_ 12