



## MATHS

# **BOOKS - NCERT MATHS (ENGLISH)**

# **SEQUENCE AND SERIES**

**Short Answer Type Questions** 

1. The first term of an A.P. is a and the sum of first p terms is

zero, show that the sum of its next q terms is  $\displaystyle rac{-a(p+q)q}{p-1}$  .



**2.** A man saved Rs. 66000 in 20 years. In each succeeding year after the first year he saved Rs. 200 more than what he saved in the previous year. How much did he save in the first year?



**3.** A man accepts a position with an initial salary of Rs. 5200 per month. It is understood that the will receive an automatic increase of Rs. 320 in the very next month and each month thereafter. Find his salary for the tenth month What is his total earnings during the first year?



**4.** If the  $p^{th}andq^{th}$  terms of a G.P. are qandp respectively, show

that 
$$\left(p+q
ight)^{th}$$
 term is  $\left(rac{q^p}{p^q}
ight)^{rac{1}{p-q}}$ 



**5.** A carpenter was hired to build 192 window frames. The first day he made five frames and each day thereafter he made two more frames than he made the day before. How many days did it take him to finish the job?

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**6.** We know that the sum of the interior angles of a triangle is  $180^0$  . Show that the sums of eth interior angles of polygons

with 3, 4, 5, 6, sides for an arithmetic progression. Find the sum of the interior angles of or a 21 sided polygon.



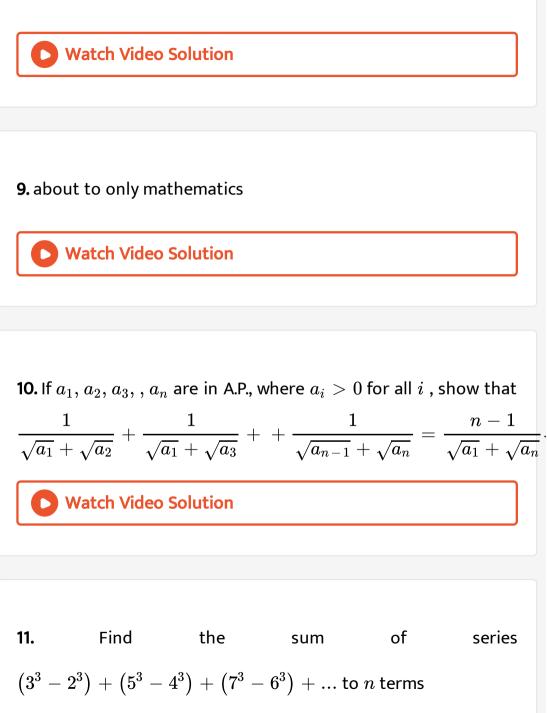
7. A side of an equilarteral triangle is 20 cm long .A second equilateral triangle is inscribed in it by joning the mid -point of the sides of the first triangle . The process is caontinued as shown in the accompanying diagram . find the perimeter of the sixth inscribed equilateral triangle .

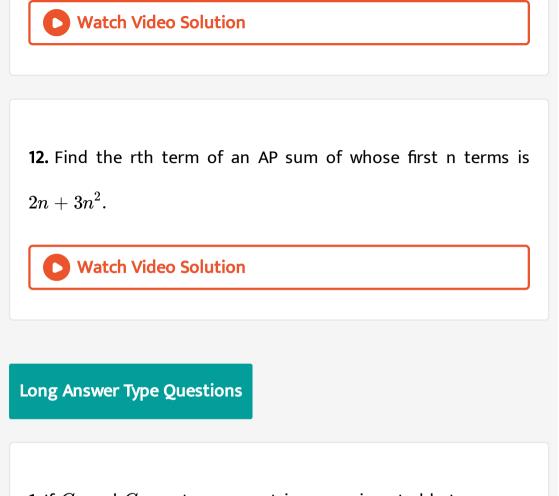
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**8.** In a potato race 20 potatoes are placed in a line at intervals of 4meters with first potato 24metres from the starting point. A constant is required to bring the potatoes back to the starting

place one at a time. How far would he run in bringing back all

the potatoes?





**1.** If  $G_1$  and  $G_2$  are two geometric means inserted between any

two numbers and A is the arithmetic mean of two numbers,

then the value of 
$$\displaystyle rac{G_1^2}{G_2} + \displaystyle rac{G_2^2}{G_1}$$
 is:

**2.** If  $heta_1, heta_2, heta_3, \,, heta_n$  are in AP, whose common difference is d ,

show that  

$$\sec \theta_1 \sec \theta_2 + \sec \theta_2 \sec \theta_3 + + \sec \theta_{n-1} \sec \theta_n = \frac{\tan \theta_n - \tan \theta_1}{\sin d}$$
  
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3. If the sum of p terms of an AP is q and the sum of q terms is p, then show that the sum of p+q terms is -(p+q), Also find the sum of first p-q terms (where , p>q).

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**4.** If the *pth*, *qth* and *rth* terms of *a* G.P. are *a*, *b*, *c* respectively, prove that:  $a^{(q-r)} \stackrel{\cdot}{\frown} ()b^{(r-p)}\dot{c}^{(p-q)} = 1.$ 

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1. The sum of first n terms of an AP is given by  $S_n=2n^2+3n.$ Find the common difference of the AP.

A. 3 B. 2 C. 6

D. 4

Answer: D



**2.** If the third term of G.P.is 4, then find the product of first five terms

A.  $4^3$ 

 $\mathsf{B.4}^4$ 

 $\mathsf{C.}\,4^5$ 

D. None of these

### Answer: C

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3. if 9 times the 9 th term of an AP is equal to 13 times the 13 th

term , then the 22 nd term of the AP is

B. 22

C. 198

D. 220

Answer: A



**4.** if x , 2y and 3z are in AP where the distinct numbers x, yand z are in gp. Then the common ratio of the GP is

A. 3  
B. 
$$\frac{1}{3}$$
  
C. 2  
D.  $\frac{1}{2}$ 

### Answer: B



5. If in an AP,  $S_n = q n^2$  and  $S_m = q m^2$  , where  $S_r$  denotes the of

r terms of the AP , then  $S_q$  equals to



B. mnq

 $\mathsf{C}.\,q^3$ 

D. 
$$(m+n)q^2$$

#### Answer: C

6. Let  $S_n$  denote the sum of first n terms of an AP and  $3S_n=S_{2n}$  What is  $S_{3n}\colon S_n$  equal to?

A. 4

B. 6

C. 8

D. 10

#### Answer: B

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7. The minimum value of  $4^x+4^{1-x}, x\in \mathbb{R}$  is

A. 2

B.4

C. 1

D. 0

Answer: B

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8. let  $S_n$  denote the sum of the cubes of the first n natural numbers and  $s_n$  denote the sum of the first n natural numbers ,

then 
$$\sum_{r=1}^n rac{S_r}{s_r}$$
 equals to  
A.  $rac{n(n+1)(n+2)}{6}$   
B.  $rac{n(n+1)}{2}$   
C.  $rac{n^2+3n+2}{2}$ 

D. None of these

### Answer: A



9. If  $t_n$  denotes the nth term of the series 2+3+6+11+18+...then  $t_{50}$ =...... $49^2-1$  b.  $49^2$  c.  $50^2+1$  d.  $49^2+2$ 

A.  $49^2 - 1$ 

 $\mathsf{B.}\,49^2$ 

 $C.50^2 + 1$ 

 $D.49^2 + 2$ 

#### Answer: D

**10.** The lengths of three unequal edges of a rectangular solids block are in GP . if the volume of the block is  $216cm^3$  and the total surface area is  $252cm^2$  then the length of the longest edge is

A. 12cm

B. 6 cm

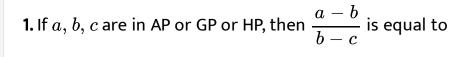
C. 18 cm

D. 3 cm

Answer: A







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2. Show that in an A.P. the sum of the terms equidistant from

the beginning and end is always same and equal to the sum of

first and last terms.

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3. If the third term of G.P.is 4, then find the product of first five

terms



1. Two sequences cannot be in both AP and GP together .

**2.** Every proression is a sequence but the converse i.e., every sequence is also a progression need not mecessarily be true.

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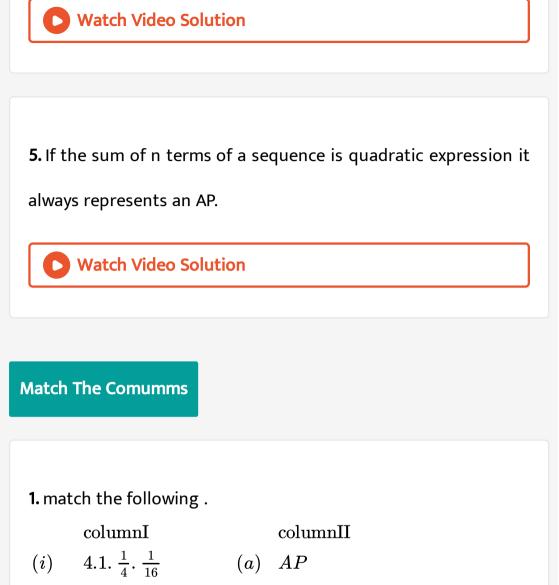
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3. Any term of an AP (except first ) is equal to half the sum of

terms which are equidistant from it .



**4.** the sum of difference of two GP . Is again a GP.



- (ii) 2.3.5.7 (b) sequence
- (iii) 13.8.3. -2. -7 (c) GP



2. Match the following .

