

ESSENCE TEST-12

DATE : 01-09-19

10TH CLASS

CBSE(B3)

ARITHMETIC PROGRESSION, TRIANGLE

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BestSM solution
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Arithmetics Progressions**Very Short answer type questions:****(1 marks)**

- Find the sum of the first 15 multiples of 8.
- For the following Aps, write the first term and common difference:
-5, -1, 3, 7
- For the following Aps, write the first term and common difference:
0.6, 1.7, 2.8, 3.9,....
- Which of the following are APs, If they form an AP, find the common difference and write three more terms.
(a) $2, \frac{5}{2}, 3, \frac{7}{2}$ (b) -1.2, -3.2, -5.2, -7.5,
- In the following Aps, find the missing terms in the boxes: 2, , 26.
- Check whether -150 is a term of the AP : 11, 8, 5, 2
- How many three-digit numbers are divisible by 7?
- How many multiples of 4 lie between 10 and 250?
- In an AP : given $a = 7$, $a_{13} = 35$, find d and S_{13} .

Short answer type questions: (2 marks)

- Find the sum of all two-digit positive no.?
- In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?
(i) The taxi fare after each km when the fare is rupees 15 for the first km and rupees 8 for each additional km.

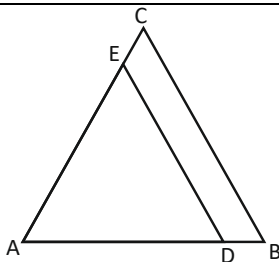
3. An AP consists of 50 terms of which 3rd term is 12 and the last term is 106. Find the 29th term.
4. If the 3rd and then 9th term of an AP are 4 and -8, respectively, which term of this AP is zero?
5. Ramki saved rupees 5 in the first week of a year and then increased her weekly saving by rupees 1.75. If in the nth week, her weekly saving become rupees 20.75, find n.
6. How many terms so the AP 9, 17, 25, must be taken to given sum of 636?
7. The first and the last terms of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?
8. If the sum of 7 terms of an AP is 49 and that of 17 terms is 289, find the sum of n terms.
9. The first and the last terms of the AP 5 and 45 respectively. If the sum of all its terms is 400, find its common difference.
10. Find the value of k if 10, k, -2 are in A.P.

OR

If three (+)_{ve} number a, b and c are in A.P. such that $abc = 8$, then the minimum possible value of b is (IIT - 2017)

- (a) 2 (b) $4^{\frac{1}{3}}$ (c) $4^{\frac{2}{3}}$ (d) 4

11. In Fig. DE || BC. If AD = x, DB = x - 2, AE = x + 2 and EC = x - 1, find the value of x.



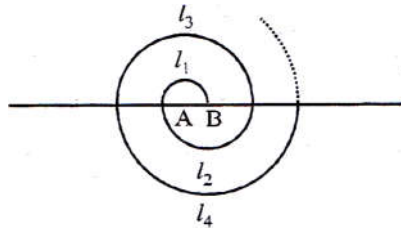
12. Diagonals of a trapezium ABCD with $AB \parallel DC$ intersect each other at the point O. If $AB = 2 CD$, find the ratio of the area of triangles AOB and COD.

Long answer type questions:

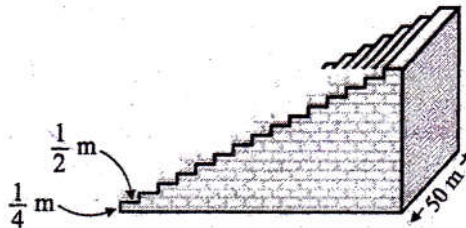
(3 marks)

- If m^{th} term of an AP is $\frac{1}{n}$ and n^{th} term is $\frac{1}{m}$ then find the sum of its 1^{st} mn term?
- Find the sum of first 25^{th} term of an AP whose n^{th} term is given by $t_n = (7 - 3n)$?
- Determine the AP whose third term is sixteen and common different of 5^{th} term is from 7^{th} term is 12.
- The sum of the 4^{th} and 8^{th} term of an AP is 24 and the some of the 6^{th} and 10 terms is 44. Find the first three terms of the AP.
- Find the sum of the following Aps:
 - 2, 7, 12, To 10 terms.
 - $-37, -33, -29, \dots$, to 12 terms.
 - 0.6, 1.7, 2.8,..... to 100 terms.
 - $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \dots$ To 11 terms.
- In an AP:
 - given $a = 8, a_n = 62, S_n = 210$, find n and d .

- (ii) given $a = 4$, $d = 2$, $S_n = -14$, find n .
- (iii) given $a = 3$, $n = 8$, $S = 192$, find d .
- (iii) given $l = 28$, $S = 144$, and there are total 9 terms. Find a .
8. Show that $a_1 + a_2, \dots, a_n, \dots$ form an AP where a_n is defined as below: $a_n = 3 + 4n$.
9. A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, as shown in Fig. What is the total length of such a spiral made up of thirteen consecutive semicircles? (take $\pi = \frac{22}{7}$)



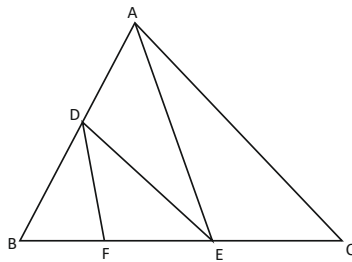
10. A small terrace at a football ground comprises of 15 steps each of which is 50 m long and built of solid concrete.
- Each step has a rise of $\frac{1}{4}$ m and a tread of $\frac{1}{2}$ m. Calculate the total volume of concrete required to build the terrace.



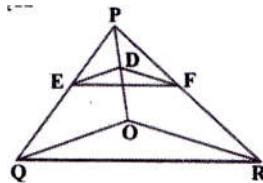
Long answer type questions:

(4 marks)

- In a $\triangle ABC$, D and E are points on sides AB and AC respectively such that $BD = CE$, If $\angle B = \angle C$, show that $DE \parallel BC$.
- Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of triangle PQR. Prove that $\triangle ABC \sim \triangle PQR$.
- In figure, $DE \parallel AC$ and $DF \parallel AE$. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$.



- In figure, $DE \parallel OQ$ and $DF \parallel OR$. Show that $EF \parallel QR$.





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