



## SPM Practice 2 (Geometric Progression)

1. The fourth term of a geometric progression is -20. The sum of the fourth and the fifth term is -16. Find the first term and the common ratio of the progression.

$$[\text{Ans: } a=2500, r= -\frac{1}{5}]$$

3. For a geometric progression, the sum of the first two terms is 30 and the third term exceeds the first term by 15. Find the common ratio and the first term of the geometry progression.

$$[\text{Ans: } a = 7\frac{1}{2}, r=3]$$

2. The fourth and the seventh terms of a geometric progression are 18 and 486 respectively. Find the third term.

$$[\text{Ans: } a = \frac{2}{3}, r=3]$$

4. The sum of the first  $n$  terms of the geometric progression 5, 15, 75, ... is 5465. Find the value of  $n$ .

$$[\text{Ans: } n=7]$$



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5. The first three terms of a geometric progression are  $5k+6$ ,  $2k$ ,  $k-2$ .  
Find  
(a) the positive value of  $k$ ,  
(b) the sum from the third term to the sixth term, using the value of  $k$  obtained in (a)
6. The first three terms of a sequence are 2,  $x$ , 18. Find the positive value of  $x$  so that the sequence is  
(a) an arithmetic progression,  
(b) a geometric progression.

[Ans: (a) 8, (b)6]

[Ans: (a)  $k=6$ , (b),  $5\frac{25}{27}$ ]



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7. Given a geometric progression  $\frac{2}{z}, 3, \frac{9z}{2}, q \dots$ ,  
express  $q$  in terms of  $z$ .

$$[\text{Ans : } q = \frac{27}{4} z^2]$$

8. The second and the fourth term of a geometry progression are 10 and  $\frac{2}{5}$  respectively. Find

- (a) The first term and the common ratio where  $r > 0$ ,  
(b) The sum to infinity of the geometry progression.

$$[\text{Ans : (a) } a=50, r = \frac{1}{5}, \text{ (b) } 62.5]$$



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9. In a geometric progression, the first term is 18 and the common ratio is  $r$ .

Given that the sum to infinity of this progression is 21.6, find the value of  $r$ .

$$[\text{Ans: } \frac{1}{6}]$$

10. In a geometric progression, the first term is 27 and the fourth term is 1. Calculate

(a) the positive value of common ratio,  $r$ ,

(b) the sum of the first  $n$  terms where  $n$  is sufficiently

large till  $r^n \approx 0$ .

$$[\text{Ans: (a) } \frac{1}{3}, \text{ (b) } 40\frac{1}{2}]$$



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11. Express the recurring decimal  $0.187187187 \dots$  as a fraction in its simplest form.

$$[\text{Ans : } \frac{8}{9}]$$

13. The sum of the first  $n$  term of a geometry progression is given by  $6(1 - 0.5^n)$ , Find

- (a) The fourth term of the progression,
- (b) The sum to infinity of the progression.

$$[\text{Ans : (a) } 0.375, \text{ (b) } 6]$$

12. Given that  $\frac{1}{p} = 0.166666\dots$

$$= q + a + b + c + \dots$$

Where  $p$  is a positive integer. If  $q = 0.1$  and  $a + b + c$  are the first three terms of a geometric progression, state the value of  $a$ ,  $b$  and  $c$  in decimal form. Hence find the value of  $p$ .

$$[a=0.06, b=0.006, c=0.0006, p=6]$$



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14. A gardener has the task of digging an area of  $800 \text{ m}^2$ . On the first day he digs an area of  $10 \text{ m}^2$ . On each successive day he digs an area of 1.2 times the area that he dug the previous day, until the day when the task is completed. Find the number of days needed to complete the task.

[Ans :  $n=16$ ]

15. Choong started working for a company on 1 January 2008 with an initial annual salary of RM28800. Every January, the company increased his salary by 5% of the previous year's salary.

Calculate

- his annual salary, to the nearest RM on 1 January 2013,
- the minimum value of  $n$  such that his annual salary in the  $n$ th year will exceed RM40 000,
- the total salary, to the nearest RM, paid to him by the company, for the years 2008 to 2013.

[Ans : (a) RM36756.91, (b)  $n=8$ , (c) RM195895]