

ALEGRA 2 – PRACTICE EXAM

1. Find the sum of the first 5 terms in the sequence whose general term is (2^{n-1}) .
A. 16 C. 31
B. 8 D. 15
2. Determine the sum of the first 4 terms of the sequence whose general term is given by $3^n - 2$.
A. 100 C. 98
B. 89 D. 112
3. Determine the 5th term of the sequence whose sum of n terms is given by $(2^{n+3} - 5)$.
A. 258 C. 128
B. 218 D. 158
4. Find the 30th term of the A. P. 4, 7, 10 ...
A. 88 C. 75
B. 91 D. 90
5. An arithmetic progression starts with 3, has 9 terms, and the middle term is 19. Determine the sum of the first 9 terms.
A. 220 C. 57
B. 110 D. 171
6. Find the sum of all integers between 300 and 800 that are exactly divisible by 14.
A. 11,908 C. 21,200
B. 19,908 D. 18,205
7. The fourth term of a Geometric Progression is 189 and the sixth term is 1701, the 8th term is:
A. 5103 C. 45927
B. 1240029 D. 15309
8. The numbers 28, $x+2$, 112... for a geometric progression. What is the 15th term of the sequence?
A. 143369 C. 286721
B. 458752 D. 573442
9. Find the sum of the first 10 terms of the geometric progression 2,4,8,16,...
A. 1203 C. 1225
B. 2046 D. 1825
10. There are 4 geometric means between 3 and 729. Find the fourth term of the geometric progression.
A. 42 C. 81
B. 27 D. 108
11. A rubber ball is made to fall from a height of 100 ft and is observed to rebound $\frac{2}{3}$ of the distance it falls. How far will the ball travel before coming to rest if the ball continues to fall in this manner?
A. 420 C. 343
B. 271 D. 250
12. Consider a portfolio of stocks that goes up from \$100 to \$110 in year one, then declines to \$80 in year two and goes up to \$150 in year three. The return on portfolio is
A. 11.35% C. 13.92%
B. 12.58% D. 14.47%
13. What is the 11th term of the harmonic progression if the first and the third terms are $\frac{1}{2}$ and $\frac{1}{6}$ respectively?
A. $\frac{1}{20}$ C. $\frac{1}{4}$
B. $\frac{1}{12}$ D. $\frac{1}{22}$
14. Suppose 4 machines in a machine shop are used to produce the same part. However, each of the 4 machines takes 2.5, 2.0, 1.5 and 6.0 minutes to make one part, respectively. What is the average rate of speed?
A. 2 C. 2.59
B. 2.31 D. 3
15. A father is four times as old as his son now. Six years ago he was 7 times as old as his son during that time. Find their present ages.
A. 8,41 C. 10,40
B. 12,48 D. 12,45
16. The sum of Kim's and Kevin's ages is 18. In three years Kim will be twice as old as Kevin. What are their ages now?
A. 6,12 C. 5,13
B. 4,14 D. 8,10
17. Maria is 36 years old. Maria was twice as old as Arian was when Maria was as old as Arian is now. How old is Arian?
A. 20 C. 24
B. 18 D. 16
18. The sum of the parent's ages is twice the sum of their children's ages. Five years ago, the sum of the parent's ages is four times the sum of their children's ages. In fifteen years, the sum of the parent's ages will be equal to the sum of their children's ages. How many children were in the family?
A. 3 C. 5
B. 4 D. 6
19. Ten liters of 25% salt solution and 15 liters of 35% salt solution are poured into a drum originally containing 30 liters of 10 % salt solution. What is the percent concentration in the mixture?
A. 19.54 % C. 11.4%
B. 15.3% D. 5%
20. How many pounds of water must be removed from a 50 lb of 3 % salt solution so that the remaining solution will be 5 % salt?
A. 10 lb C. 15 lb
B. 30 lb D. 20 lb
21. If 19kg of gold loses 1kg, and 10kg of silver loses 1kg when weighted in water, find the weight of gold in a bar of gold and silver weighing 106kg in air and 99kg in water.
A. 25kg C. 56kg
B. 64kg D. 76kg
22. Twelve men can finish the job in 16 days. Five men were working at the start and after 8 days 3 more men were added. How many days will it take to finish the job?
A. 25 days C. 27 days
B. 30 days D. 20 days
23. A farmer can plow the field in 8 days. After working for 3 days, the son joins him and together they plow the field in three more days. How many days will it require for the son to plow the field alone?
A. 6 days C. 11 days
B. 12 days D. 9 days
24. A besieged garrison of 700 men has provisions that will last for 66 days. Each day 20 men die. For how long will the provisions last?
A. 67 days C. 76 days
B. 66 days D. 86 days
25. The time required for two examinees to solve the same problem differs by two minutes. Together they can solve 22 problems in one hour. How long will it take for the slower problem solver to solve the problem?
A. 4 min C. 3 min.
B. 5 min D. 2 min.
26. A mechanic and his helper can repair a car in 8 hours. The mechanic works 3 times as fast as his helper. How long would it take the helper to make the repair working alone?
A. 32 hrs. C. 11 hrs.
B. 9 hrs D. 4 hrs
27. Candle A and candle B of equal length are lighted at the same time and burning until candle A is twice as long as candle B. candle A is designed to fully burn in 8 hours while candle B for 4 hours. How long will they be lighted?
A. 3 hours and 30 minutes C. 3 hours
B. 2 hours and 40 minutes D. 2 hours
28. The speed of the plane is 120 mi/hr in a calm. With the wind it can cover a certain distance in 4 hours, but against the wind it can cover only $\frac{3}{5}$ of that distance in the same time. Find the velocity of the wind.
A. 10 mi/hr C. 20 mi/hr
B. 30 mi/hr D. 40mi/hr
29. The boat travels downstream in $\frac{2}{3}$ of the time as it does going upstream. If the velocity of the river current is 8 kph, determine the velocity of the boat in still water.
A. 20 kph C. 15 kph
B. 40 kph D. 30 kph
30. Pedro and Juan run at constant speeds along a circular track 1,350 m in circumference. If they run in opposite directions, they meet every 3 minutes, while running in the same direction they are together every 27 minutes. Determine the speed of Pedro.
A. 250 m/min. C. 150 m/min.
B. 180 m/min. D. 230 m/min.