

# GMAT Prep

## Rate Time and Sequence



# Rate Time and Sequences

1. Two Cars travel in opposite directions starting from the same point. One car travel at a rate of 40 mph, and the other car travels at a rate of 54 mph. How long (in hours) will it take for the two cars to be 188 miles apart?
- A. 0.5
  - B. 1
  - C. 2
  - D. 2.5
  - E. 3



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2. Adam travels the first  $\frac{2}{3}$  rd of the distance from his home to football ground on bicycle and remaining on foot. What is the ratio of his speed on bicycle to his speed on foot if he takes twice as long on foot as on bicycle?
- A. 1:4
  - B. 1:2
  - C. 2:1
  - D. 5:2
  - E. 4:1



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3. How many multiples of 3 are there between 18 and 93, inclusive?
- A. 24
  - B. 25
  - C. 26
  - D. 27
  - E. 28



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4. If 4 identical taps can fill a 100-liter tank in 6 hours, then how many hours will be required to fill a 150-liter tank with 8 such taps?
- A. 2.5
  - B. 3
  - C. 4
  - D. 4.5
  - E. 5



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5. Jan lives  $x$  floors above the ground floor of a high-rise building. It takes her 30 seconds per floor to walk down the steps and 2 seconds per floor to ride the elevator. If it takes Jan the same amount of time to walk down the steps to the ground floor as to wait for the elevator for 7 minutes and ride down, then  $x$  equals
- A. 4
  - B. 7
  - C. 14
  - D. 15
  - E. 16



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6. A club decided to build a cabin. The job can be done by 3 skilled workmen in 20 days or by 5 of the boys in 30 days. How many days will the job take if all work together?
- A. 5
  - B. 10
  - C. 12
  - D.  $12\frac{2}{3}$
  - E. 14



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7. A small factory with 3 machines has the job of stamping out several pan covers. The newest machine can do the job in 3 days, another machine can do it in 4 days, and the third machine can do it in 6 days. How many days will the factory take to do the job using all three machines?
- A. 0.5
  - B. 1
  - C.  $1\frac{1}{3}$
  - D. 2
  - E.  $2\frac{1}{3}$





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8. John drove from City A to City B. He drove at an average speed of 30 miles/hr for the first half of the distance and then increased his speed to 50 miles/hr for the second half of the distance. What is John's average speed (in miles/hr) for the entire route?
- A. 35
  - B. 37.5
  - C. 40
  - D. 42.5
  - E. 45



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9. Working together, A and B can complete a work in 15 days, B and C can complete the same work in 10 days and A and C can complete that work in 12 days. What are the number of days taken by A, B, and C working together?
- A. 6
  - B. 7
  - C. 8
  - D. 9
  - E. 10



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10. Amy and Ben are cycling towards each other on a straight path. Amy starts cycling from Town X to Town Y, a distance of 24 miles, at an average speed of 3 miles per hour. Ben starts cycling from Town Y to Town X one hour later than Amy, at an average speed of 4 miles per hour. How far has Ben cycled when they meet?
- A. 9 miles
  - B. 10.2 miles
  - C. 12 miles
  - D. 13 miles
  - E. 13.71 miles



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11. Nine identical machines, each working at the same constant rate, can stitch 27 jerseys in 4 minutes. How many minutes would it take 4 such machines to stitch 60 jerseys?
- A. 8
  - B. 12
  - C. 16
  - D. 18
  - E. 20



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12. One robot, working independently at a constant rate, can assemble a doghouse in 12 minutes. What is the maximum number of complete doghouses that can be assembled by 10 such identical robots, each working on separate doghouses at the same rate for 2.5 hours?
- A. 20
  - B. 25
  - C. 120
  - D. 125
  - E. 150



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13. The 7<sup>th</sup> and 21<sup>st</sup> terms of an Arithmetic Progression are 6 and - 22 respectively. What is the 26<sup>th</sup> term of the series?
- A. -32
  - B. -33
  - C. -34
  - D. 0
  - E. 32



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14. A series of numbers 2, 22, 222, ..... What is the hundreds place of the sum of the first 10 terms of the series?
- A. 0
  - B. 1
  - C. 5
  - D. 9
  - E. 8



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15. The general term of a series is given as  $t_k = \frac{1}{k} - \frac{1}{k+1}$ . What is the sum of the first 100 terms of this series?

A.  $\frac{99}{101}$

B.  $\frac{100}{101}$

C. 1

D.  $\frac{101}{100}$

E.  $\frac{100}{99}$





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16.  $X$  = Sum of first 20 even natural numbers.  $Y$  = Sum of first 20 odd natural numbers. What is the value of  $X - Y$ ?
- A. -20
  - B. -10
  - C. 0
  - D. 10
  - E. 20



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17. The first five terms of the sequence are 0, 5, 5, 0, - 5. In the sequence, any term after the second term can be defined by  $t_{n+2} = t_{n+1} - t_n$ . What is the sum of first 50 terms?
- A. -10
  - B. -5
  - C. 0
  - D. 5
  - E. 10



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18. What is the value of  $\left(1 - \frac{1}{2}\right)^2 \times \left(1 - \frac{1}{3}\right)^2 \times \left(1 - \frac{1}{4}\right)^2 \dots \dots \left(1 - \frac{1}{10}\right)^2$ ?

- A.  $\frac{1}{100}$
- B.  $\frac{1}{10}$
- C.  $\frac{1}{5}$
- D. 1
- E. 10



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19. What is the approximate value of  $\frac{1}{81} + \frac{1}{82} + \frac{1}{83} + \dots + \frac{1}{100}$  ?

- A.  $\frac{1}{9}$
- B.  $\frac{2}{9}$
- C.  $\frac{1}{3}$
- D. 1
- E. 2



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20. A sequence  $S$  consists of 15 numbers arranged in ascending order. The first term  $S$  is 25 and the last term is four times the first term. In this sequence, for the first 14 terms, the ratio of the term to the next term is a fixed constant. What is the 8<sup>th</sup> term in  $S$ ?
- A. 20
  - B. 40
  - C. 50
  - D. 60
  - E. None of the these





*Thank you*