

Section 1.2 – Practice Problems

Study the Pattern and predict the missing values

1.  $9 \cdot 9 + 7 = 88$   
 $98 \cdot 9 + 6 = 888$   
 $987 \cdot 9 + 5 = 8888$   
 $9876 \cdot 9 + 4 = 88888$   
 $98765 \cdot 9 + 3 = 888888$

Just add on 8 each time. That's the pattern.

2.  $9^2 = 81$  ✓ added on 9 and a 0  
 $99^2 = 9801$  ✓ added another 9 and 0  
 $999^2 = 998001$   
 $9999^2 = 99980001$   
 $99999^2 = 9999800001$

3.  $1^2 + 1 + 2 = 4 \leftarrow 2^2$   
 $2^2 + 2 + 3 = 9 \leftarrow 3^2$   
 $3^2 + 3 + 4 = 16 \leftarrow 4^2$   
 $4^2 + 4 + 5 = 25$   
 $5^2 + 5 + 6 = 36$

4.  $1 = 1 \leftarrow$  answer + This one is tough  
 $1 + 2 = 3$   
 $1 + 2 + 3 = 6$   
 $1 + 2 + 3 + 4 = 10$   
 $1 + 2 + 3 + \dots + 10 = 55$   
 $1 + 2 + 3 + 4 + 5 = 15$   
 $1 + 2 + 3 + 4 + 5 + 6 = 21$   
 $1 + 2 + 3 + 4 + 5 + 6 + 7 = 28$   
 $1 + \dots + 8 = 36$   
 $1 + \dots + 9 = 45$

5.  $1 = 1$   
 $1 + 3 = 4$   
 $1 + 3 + 5 = 9$   
 $1 + 3 + 5 + \dots + 15 =$
- number of terms squared
- 8 terms

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6.  $2 = 2 \cdot 1 \cdot 2$   
 $2 + 4 = 6 \quad 2 \cdot 3$   
 $2 + 4 + 6 = 12 \quad 3 \cdot 4$   
 $2 + 4 + 6 + 8 = 20 \quad \leftarrow 4 \cdot 5$   
 $2 + 4 + 6 + \dots + 16 =$
- $2 + 4 + 6 \dots + 10 = 30 \quad 5 \cdot 6$   
 $2 + \dots + 12 = 42 \quad 6 \cdot 7$   
 $2 + \dots + 14 = 56 \quad 7 \cdot 8$   
 $2 + \dots + 16 = 72 \quad 8 \cdot 9$

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Study the Pattern, and predict the next two terms

7.  $\overset{1}{2}, \overset{2}{3}, \overset{3}{5}, \overset{4}{8}, 12, \underline{17}, \underline{23}$

plus 1  
plus 2  
plus 3 etc +2

9.  $10, \overset{+2}{7, 12, 9, 14}, \underline{11}, \underline{16}$

8.  $20, \overset{5}{25}, \overset{6}{31}, \overset{7}{38}, \overset{8}{46}, \underline{55}, \underline{65}$

plus 5  
plus 6  
plus 7 etc.

10.  $3, \overset{3}{6}, \overset{5}{11}, \overset{7}{18}, \overset{9}{27}, \overset{11}{38}, \underline{51}, \underline{66}$

11.  $2, \overset{4}{6}, \overset{9}{15}, \overset{16}{31}, \overset{25}{56}, \underline{92}, \underline{141}$

add squared

12.  $2, \overset{4}{6}, \overset{8}{12}, \overset{10}{20}, \overset{12}{30}, \underline{42}, \underline{56}$

13.  $15, \overset{4}{19}, \overset{6}{25}, \overset{8}{33}, \overset{10}{43}, \underline{55}, \underline{69}$

14.  $1, \overset{+3^0}{2}, \overset{+3^1}{5}, \overset{+3^2}{14}, \overset{+3^3}{41}, \overset{+3^4}{122}, \overset{+3^5}{365}$

15.  $3, \overset{2}{5}, \overset{6}{11}, \overset{18}{29}, \overset{54}{83}, \underline{245}, \underline{735}$

16.  $59, \overset{-4}{52}, \overset{-4}{55}, \overset{-4}{48}, \overset{-4}{51}, \overset{-4}{44}, \overset{-4}{47}, \underline{40}, \underline{43}$

What pattern can you notice in the following (Think about odd and even)

17.  $5 + 7 = 12$  and  $47 + 31 = 78$   
 ODD ODD EVEN ODD ODD EVEN

ODD # + ODD # = EVEN #

18.  $4 + 12 = 16$  and  $42 + 16 = 58$   
 EVEN EVEN EVEN

EVEN # + EVEN # = EVEN #

19.  $6 + 7 = 13$  and  $14 + (-17) = -3$   
 EVEN ODD ODD

EVEN # + ODD # = ODD #