

## 小升初计算技巧强化训练题最新版——解析

1.  $6+7+8+9+\cdots+48$

$$=(6+48) \times (48-6+1) \div 2$$

$$=1161$$

2.  $1-2+3-4+5-\cdots-2008+2009$

$$=2009-2008+2007-2006+\cdots+5-4+3-2+1$$

$$=(2009-2008)+(2007-2006)+\cdots+(5-4)+(3-2)+1$$

$$=1 \times (2009-1) \div 2 + 1$$

$$=1005$$

3.  $1+2+3-4+5+6+7-8+9+\cdots+85+86+87-88$

$$=(1+2+3-4)+(5+6+7-8)+9+\cdots+(85+86+87-88)$$

$$=2+10+18+\cdots+170$$

$$=(2+170) \times (88 \div 4) \div 2 \quad (\text{可理解为每4个数一组, 共有 } 88 \div 4 \text{ 组})$$

$$=172 \times 11$$

$$=1892$$

4.  $1988-1985+1982-1979+\cdots+8-5+2$

$$=(1988-1985)+(1982-1979)+\cdots+(8-5)+2$$

$$=3 \times [(1988-5) \div 3 + 1] \div 2 + 2$$

$$=3 \times 331 + 2$$

$$=995$$

5.  $1999-1996+1993-1990+\cdots-10+7-4+1$

$$=(1999-1996)+(1993-1990)+\cdots-10+(7-4)+1$$

$$=3 \times [(1999-4) \div 3 + 1] \div 2 + 1$$

$$=3 \times 333 + 1$$

$$=1000$$

6.  $81 \div 99999^2 = \frac{9 \times 9}{99999 \times 99999} = \frac{1 \times 1}{11111 \times 11111} = \frac{1}{123454321}$

7.  $7777^2 \div 49 = \frac{7777 \times 7777}{7 \times 7} = 1111 \times 1111 = 1234321$

8.  $\frac{2009+20092009+200920092009}{2007+20072007+200720072007} - \frac{2}{2007}$

$$= \frac{2009 \times (1+10001+100010001)}{2007 \times (1+10001+100010001)} - \frac{2}{2007}$$

$$= \frac{2009}{2007} - \frac{2}{2007}$$

$$= \frac{2009-2}{2007}$$

$$=1$$

9.  $\frac{1999 \times 1999 - 888}{1111 + 1999 \times 1998}$

$$= \frac{1999 \times (1998+1) - 888}{1111 + 1999 \times 1998}$$

$$= \frac{1999 \times 1998 + 1999 \times 1 - 888}{1999 \times 1998 + 1111}$$

$$= \frac{1999 \times 1998 + 1111}{1999 \times 1998 + 1111}$$

$$=1$$

10.  $1999 \times 19981997 - 1997 \times 19981999$

$$=1999 \times (19980000 + 1997) - 1997 \times (19980000 + 1999)$$

$$=1999 \times 19980000 + 1999 \times 1997 - [1997 \times 19980000 + 1997 \times 1999]$$

$$=1999 \times 19980000 + 1999 \times 1997 - 1997 \times 19980000 - 1997 \times 1999$$

$$=(1999-1997) \times 19980000$$

$$=39960000$$

### 等差数列公式

$$\text{总和} = (\text{首项} + \text{末项}) \times \text{项数} \div 2$$

$$\text{末项} = \text{首项} + \text{公差} \times (\text{项数} - 1)$$

$$\text{首项} = \text{末项} - \text{公差} \times (\text{项数} - 1)$$

$$\text{公差} = (\text{末项} - \text{首项}) \div (\text{项数} - 1)$$

$$\text{项数} = (\text{末项} - \text{首项}) \div \text{公差} + 1$$

$$\text{等差数列 (奇数个数) 的总和} = \text{中间项} \times \text{项数}$$

$$\begin{aligned}
 11. \quad & 0.125 \times 6.26 + \frac{1}{8} \times 4.74 - 1.25 \times 0.1 \\
 &= 0.125 \times 6.26 + 0.125 \times 4.74 - 0.125 \times 1 \\
 &= 0.125 \times (6.26 + 4.74 - 1) \\
 &= 0.125 \times 10 \\
 &= 1.25
 \end{aligned}$$

$$\begin{aligned}
 12. \quad & 6\frac{3}{5} \times 3572 + 642.7 \times 66 + 1 \div \frac{5}{33} \\
 &= 6.6 \times 3572 + 6427 \times 6.6 + 1 \times 6.6 \\
 &= 6.6 \times (3572 + 6427 + 1) \\
 &= 6.6 \times 10000 \\
 &= 66000
 \end{aligned}$$

$$\begin{aligned}
 13. \quad & \frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \cdots + \frac{1}{99 \times 100} \\
 &= 1 - \frac{1}{2} + \frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \cdots + \frac{1}{99} - \frac{1}{100} \\
 &= 1 - \frac{1}{100} \\
 &= \frac{99}{100}
 \end{aligned}$$

公式:  $\frac{1}{n \times (n+1)} = \frac{1}{n} - \frac{1}{n+1}$

$$\begin{aligned}
 14. \quad & \frac{1}{1 \times 4} + \frac{1}{4 \times 7} + \frac{1}{7 \times 10} + \cdots + \frac{1}{97 \times 100} \\
 &= (1 - \frac{1}{4}) \times \frac{1}{3} + (\frac{1}{4} - \frac{1}{7}) \times \frac{1}{3} + (\frac{1}{7} - \frac{1}{10}) \times \frac{1}{3} + \cdots + (\frac{1}{97} - \frac{1}{100}) \times \frac{1}{3} \\
 &= (1 - \frac{1}{4} + \frac{1}{4} - \frac{1}{7} + \frac{1}{7} - \frac{1}{10} + \cdots + \frac{1}{97} - \frac{1}{100}) \times \frac{1}{3} \\
 &= (1 - \frac{1}{100}) \times \frac{1}{3} \\
 &= \frac{99}{100} \times \frac{1}{3} \\
 &= \frac{33}{100}
 \end{aligned}$$

公式:  $\frac{1}{n \times (n+d)} = (\frac{1}{n} - \frac{1}{n+d}) \times \frac{1}{d}$

$$\begin{aligned}
 15. \quad & \frac{1}{3} + \frac{1}{15} + \frac{1}{35} + \cdots + \frac{1}{143} \\
 &= \frac{1}{1 \times 3} + \frac{1}{3 \times 5} + \frac{1}{5 \times 7} + \cdots + \frac{1}{11 \times 13} \\
 &= (1 - \frac{1}{3}) \times \frac{1}{2} + (\frac{1}{3} - \frac{1}{5}) \times \frac{1}{2} + (\frac{1}{5} - \frac{1}{7}) \times \frac{1}{2} + \cdots + (\frac{1}{11} - \frac{1}{13}) \times \frac{1}{2} \\
 &= (1 - \frac{1}{3} + \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \cdots + \frac{1}{11} - \frac{1}{13}) \times \frac{1}{2} \\
 &= (1 - \frac{1}{13}) \times \frac{1}{2} \\
 &= \frac{6}{13}
 \end{aligned}$$

$$\begin{aligned}
 16. \quad & 1 + 3\frac{1}{6} + 5\frac{1}{12} + 7\frac{1}{20} + 9\frac{1}{30} + 11\frac{1}{42} + 13\frac{1}{56} + 15\frac{1}{72} + 17\frac{1}{90} \\
 &= (1+3+5+7+9+11+13+15+17) + \left(\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} + \frac{1}{90}\right) \\
 &= 9 \times 9 + \left(\frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \frac{1}{7 \times 8} + \frac{1}{8 \times 9} + \frac{1}{9 \times 10}\right) \\
 &= 81 + \left(\frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \frac{1}{7} - \frac{1}{8} + \frac{1}{8} - \frac{1}{9} + \frac{1}{9} - \frac{1}{10}\right) \\
 &= 81 + \left(\frac{1}{2} - \frac{1}{10}\right) \\
 &= 81 + \frac{2}{5} \\
 &= 81\frac{2}{5} \\
 17. \quad & 73\frac{1}{15} \times \frac{1}{8} = \left(72 + \frac{16}{15}\right) \times \frac{1}{8} = 72 \times \frac{1}{8} + \frac{16}{15} \times \frac{1}{8} = 9 + \frac{2}{15} = 9\frac{2}{15}
 \end{aligned}$$

18.  $1991^{23} + 1993^{31} + 1997^{41}$  的和的个位数字是( 5 )。

	$3^1$	$3^2$	$3^3$	$3^4$	$3^5$	$3^6$	.....	$3^{31}$
个位	3	9	7	1	3	9	.....	$31 \div 4 = 7$ (个周期).....3

即求  $1^{23} + 1993^{31} + 1997^{41}$  的和的个位数字

即  $1 + 7 + 9 = 17$ , 所以原式的个位数字为 7。

19.  $A = 1 \div \left(\frac{1}{10} + \frac{1}{11} + \frac{1}{12} + \dots + \frac{1}{19}\right)$  “A” 的整数部分是( 1 )。

极限思考法

(一) 分母取最大值时:  $A = 1 \div \left(\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \dots + \frac{1}{10}\right) = 1 \div \left(\frac{1}{10} \times 10\right) = 1$

(二) 分母取最小值时:  $A = 1 \div \left(\frac{1}{19} + \frac{1}{19} + \frac{1}{19} + \dots + \frac{1}{19}\right) = 1 \div \left(\frac{1}{19} \times 10\right) = 1.9$

那么  $1 < A < 1.9$ , 所以 “A” 的整数部分是 1。

$$\begin{aligned}
 20. \quad & \frac{1}{1+2} + \frac{1}{1+2+3} + \frac{1}{1+2+3+4} + \dots + \frac{1}{1+2+3+\dots+99} \\
 &= \frac{1}{(1+2) \times 2 \div 2} + \frac{1}{(1+3) \times 3 \div 2} + \frac{1}{(1+4) \times 4 \div 2} + \dots + \frac{1}{(1+99) \times 99 \div 2} \\
 &= \frac{1}{(1+2) \times 2} \times 2 + \frac{1}{(1+3) \times 3} \times 2 + \frac{1}{(1+4) \times 4} \times 2 + \dots + \frac{1}{(1+99) \times 99} \times 2 \\
 &= \left(\frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \dots + \frac{1}{99 \times 100}\right) \times 2 \\
 &= \left(\frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \dots + \frac{1}{99} - \frac{1}{100}\right) \times 2 \\
 &= \left(\frac{1}{2} - \frac{1}{100}\right) \times 2 \\
 &= \frac{49}{50}
 \end{aligned}$$

$$21. \left(\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5}\right) \times \left(\frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6}\right) - \left(\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \frac{1}{6}\right) \times \left(\frac{1}{3} + \frac{1}{4} + \frac{1}{5}\right)$$

解析：令  $\frac{1}{3} + \frac{1}{4} + \frac{1}{5} = A$ ,  $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} = B$

$$\begin{aligned} \text{原式} &= B \times \left(A + \frac{1}{6}\right) - \left(B + \frac{1}{6}\right) \times A \\ &= B \times A + \frac{1}{6} \times B - B \times A - \frac{1}{6} \times A \\ &= (B - A) \times \frac{1}{6} \\ &= \frac{1}{2} \times \frac{1}{6} \\ &= \frac{1}{12} \end{aligned}$$

$$22. \frac{4}{1 \times 5} + \frac{4}{5 \times 9} + \frac{4}{9 \times 13} + \frac{4}{13 \times 17} + \dots + \frac{4}{77 \times 81}$$

$$\begin{aligned} &= \frac{1}{1 \times 5} \times 4 + \frac{1}{5 \times 9} \times 4 + \frac{1}{9 \times 13} \times 4 + \frac{1}{13 \times 17} \times 4 + \dots + \frac{1}{77 \times 81} \times 4 \\ &= \left(1 - \frac{1}{5}\right) \times \frac{1}{4} \times 4 + \left(\frac{1}{5} - \frac{1}{9}\right) \times \frac{1}{4} \times 4 + \left(\frac{1}{9} - \frac{1}{13}\right) \times \frac{1}{4} \times 4 + \left(\frac{1}{13} - \frac{1}{17}\right) \times \frac{1}{4} \times 4 + \dots + \left(\frac{1}{77} - \frac{1}{81}\right) \times \frac{1}{4} \times 4 \\ &= 1 - \frac{1}{5} + \frac{1}{5} - \frac{1}{9} + \frac{1}{9} - \frac{1}{13} + \frac{1}{13} - \frac{1}{17} + \dots + \frac{1}{77} - \frac{1}{81} \\ &= 1 - \frac{1}{81} \\ &= \frac{80}{81} \end{aligned}$$

本题也可以利用公式： $\frac{d}{n \times (n+d)} = \frac{1}{n} - \frac{1}{n+d}$

23.  $\underbrace{999 \dots 999}_{100 \text{ 个 } 9} \times \underbrace{999 \dots 999}_{100 \text{ 个 } 9}$  它们的乘积里有 ( ) 个奇数？

$9 \times 9 = 81$  ..... 1 个奇数

$99 \times 99 = 9801$  ..... 2 个奇数

$999 \times 999 = 998001$  ..... 3 个奇数

$\underbrace{999 \dots 999}_{100 \text{ 个 } 9} \times \underbrace{999 \dots 999}_{100 \text{ 个 } 9}$  它们的乘积里有 ( 100 ) 个奇数。

24.  $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times \dots \times 98 \times 99 \times 100$  的积的末尾有 ( 24 ) 个零。

解析：这道题考查数论中的因式分解。关键是考虑 0 是怎样出现的。因为  $10 = 2 \times 5$ ，也就是说只要有一个 2 和一个 5 就会出现一个 0。显然从 1 开始 100 个连续自然数中含因数 2 的数远多于含因数 5 数。因此只需要考虑因数 5 的个数就可以了。

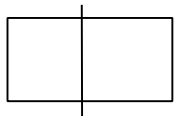
$100 \div 5 = 20$  个 5 的情况

$100 \div 25 = 4$  个  $5 \times 5 = 25$  的情况

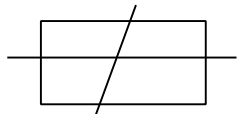
这里与 25 相乘本可产生两个 0，但是在算与 5 相乘的时候 25 已经算过一次，所以还是相当于与一个 25 相乘产生一个 0。

所以积的末尾共有  $20 + 4 = 24$  个 0。

25. 在一张纸上画 50 条直线，它们最多能把这张纸分成 (1276) 块。



画 1 条直线时  $1+1=2$  块



画 2 条直线时  $2+1+1=4$  块



画 3 条直线时  $3+2+1+1=7$  块

所以，画 50 条直线时  $50+49+48+47+\cdots+3+2+1+1$

$$= (50+1) \times 50 \div 2 + 1$$

$$= 1276 \text{ 块}$$

$$\begin{aligned} 26. & 1 - \frac{2}{1 \times (1+2)} - \frac{3}{(1+2) \times (1+2+3)} - \frac{4}{(1+2+3) \times (1+2+3+4)} - \cdots - \frac{10}{(1+2+\cdots+9) \times (1+2+\cdots+9+10)} \\ &= 1 - \frac{4}{1 \times 2 \times 3} - \frac{4}{2 \times 3 \times 4} - \frac{4}{3 \times 4 \times 5} - \cdots - \frac{4}{9 \times 10 \times 11} \\ &= 1 - \left( \frac{1}{1 \times 2 \times 3} + \frac{1}{2 \times 3 \times 4} + \frac{1}{3 \times 4 \times 5} + \cdots + \frac{1}{9 \times 10 \times 11} \right) \times 4 \\ &= 1 - \left[ \left( \frac{1}{1 \times 2} - \frac{1}{2 \times 3} \right) \times \frac{1}{2} + \left( \frac{1}{2 \times 3} - \frac{1}{3 \times 4} \right) \times \frac{1}{2} + \left( \frac{1}{3 \times 4} - \frac{1}{4 \times 5} \right) \times \frac{1}{2} + \cdots + \left( \frac{1}{9 \times 10} - \frac{1}{10 \times 11} \right) \times \frac{1}{2} \right] \times 4 \\ &= 1 - \left( \frac{1}{1 \times 2} - \frac{1}{2 \times 3} + \frac{1}{2 \times 3} - \frac{1}{3 \times 4} + \frac{1}{3 \times 4} - \frac{1}{4 \times 5} + \cdots + \frac{1}{9 \times 10} - \frac{1}{10 \times 11} \right) \times \frac{1}{2} \times 4 \\ &= 1 - \left( \frac{1}{1 \times 2} - \frac{1}{10 \times 11} \right) \times 2 \\ &= 1 - \frac{54}{110} \times 2 \\ &= \frac{1}{55} \end{aligned}$$

主要利用公式:  $\frac{1}{n \times (n+1) \times (n+2)} = \left[ \frac{1}{n \times (n+1)} - \frac{1}{(n+1) \times (n+2)} \right] \times \frac{1}{2}$

27. 在  $1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots, \frac{1}{99}, \frac{1}{100}$  中选出若干个数, 使它们的和大于 3, 至少要选 ( 11 ) 个数。

从左到右, 数是越来越小的, 要想用最少的数, 使它们的和大于 3, 一定要从左边加起哦!

$$\begin{aligned} 28. & \frac{1}{4} \times \left( 4.85 \div \frac{5}{18} - 3.6 + 6.15 \times 3\frac{1}{5} \right) + \left[ 5.5 - 1.75 \times \left( 1\frac{2}{3} + \frac{19}{21} \right) \right] \\ &= \frac{1}{4} \times (4.85 \times 3.6 - 1 \times 3.6 + 6.15 \times 3.6) + \left[ 5.5 - 1.75 \times \left( \frac{2}{3} + 1 + \frac{19}{21} \right) \right] \\ &= \frac{1}{4} \times 3.6 \times (4.85 - 1 + 6.15) + \left[ 5.5 - \left( \frac{7}{4} \times \frac{2}{3} + \frac{7}{4} \times \frac{40}{21} \right) \right] \\ &= 0.9 \times 10 + \left[ 5.5 - \left( \frac{7}{6} + \frac{10}{3} \right) \right] \\ &= 9 + (5.5 - 4.5) \\ &= 10 \end{aligned}$$

$$29. (9\frac{2}{7} + 7\frac{2}{9}) \div (\frac{5}{7} + \frac{5}{9})$$

$$= (9\frac{2}{7} + 7\frac{2}{9}) \div (\frac{5}{7} + \frac{5}{9})$$

$$= (\frac{65}{7} + \frac{65}{9}) \div (\frac{5}{7} + \frac{5}{9})$$

$$= (\frac{5}{7} \times 13 + \frac{5}{9} \times 13) \div (\frac{5}{7} + \frac{5}{9})$$

$$= 13 \times (\frac{5}{7} + \frac{5}{9}) \div (\frac{5}{7} + \frac{5}{9})$$

$$= 13$$

$$30. \frac{121121121121}{21212121} \times \frac{12121212}{132132132132}$$

$$= \frac{121 \times 1001001001}{21 \times 1010101} \times \frac{12 \times 1010101}{132 \times 1001001001}$$

$$= \frac{121}{21} \times \frac{12}{132}$$

$$= \frac{11}{21}$$

$$31. \frac{1}{1 \times 2 \times 3} + \frac{1}{2 \times 3 \times 4} + \cdots + \frac{1}{18 \times 19 \times 20}$$

$$= (\frac{1}{1 \times 2} - \frac{1}{2 \times 3}) \times \frac{1}{2} + (\frac{1}{2 \times 3} - \frac{1}{3 \times 4}) \times \frac{1}{2} + (\frac{1}{3 \times 4} - \frac{1}{4 \times 5}) \times \frac{1}{2} + \cdots + (\frac{1}{18 \times 19} - \frac{1}{19 \times 20}) \times \frac{1}{2}$$

$$= (\frac{1}{1 \times 2} - \frac{1}{2 \times 3} + \frac{1}{2 \times 3} - \frac{1}{3 \times 4} + \frac{1}{3 \times 4} - \frac{1}{4 \times 5} + \cdots + \frac{1}{18 \times 19} - \frac{1}{19 \times 20}) \times \frac{1}{2}$$

$$= (\frac{1}{1 \times 2} - \frac{1}{19 \times 20}) \times \frac{1}{2}$$

$$= \frac{189}{380} \times \frac{1}{2}$$

$$= \frac{189}{760}$$

$$32. 12345678910111213 \div 31211101987654321, \text{ 它的小数点后前三位数字是 ( 395 )。}$$

解析:  $\frac{12345678910111213}{3122000000000000} < \frac{12345678910111213}{31211101987654321} < \frac{12345678910111213}{312100000000000000},$

$$1234.5678 \div 3122 \approx 0.3954, \quad 1234.5678 \div 3121 \approx 0.3955,$$

那么原式的值在  $0.3954 < \frac{12345678910111213}{31211101987654321} < 0.3955$  之间, 所以小数点后前三位是 395.

$$33. 51\frac{2}{3} \times \frac{3}{5} + 71\frac{3}{4} \times \frac{4}{7} + 91\frac{4}{5} \times \frac{5}{9}$$

$$= (50 + \frac{5}{3}) \times \frac{3}{5} + (70 + \frac{7}{4}) \times \frac{4}{7} + (90 + \frac{9}{5}) \times \frac{5}{9}$$

$$= 50 \times \frac{3}{5} + \frac{5}{3} \times \frac{3}{5} + 70 \times \frac{4}{7} + \frac{7}{4} \times \frac{4}{7} + 90 \times \frac{5}{9} + \frac{9}{5} \times \frac{5}{9}$$

$$= 30 + 1 + 40 + 1 + 50 + 1$$

$$= 123$$

$$34. 3.6 \times 31\frac{2}{5} + 43.9 \times 6\frac{2}{5}$$

$$= 3.6 \times 31.4 + 43.9 \times 6.4$$

$$= 3.6 \times 31.4 + (31.4 + 12.5) \times 6.4$$

$$= 3.6 \times 31.4 + 31.4 \times 6.4 + 12.5 \times 6.4$$

$$= (3.6 + 6.4) \times 31.4 + 12.5 \times 0.8 \times 8$$

$$= 314 + 80$$

$$= 394$$

$$35. 3\frac{1}{10} + 3\frac{11}{100} + 3\frac{111}{1000} + 3\frac{1111}{10000}$$

$$= 3 + 0.1 + 3 + 0.11 + 3 + 0.111 + 3 + 0.1111$$

$$= 3 \times 4 + (0.1 + 0.11 + 0.111 + 0.1111)$$

$$= 12.4321$$

$$\begin{aligned}
 36. & (1+\frac{1}{2}) \times (1-\frac{1}{2}) \times (1+\frac{1}{3}) \times (1-\frac{1}{3}) \times \cdots \times (1+\frac{1}{99}) \times (1-\frac{1}{99}) \\
 &= \frac{3}{2} \times \frac{1}{2} \times \frac{4}{3} \times \frac{2}{3} \times \frac{5}{4} \times \frac{3}{4} \times \cdots \times \frac{100}{99} \times \frac{98}{99} \\
 &= \frac{1}{2} \times \frac{3}{2} \times \frac{2}{3} \times \frac{3}{4} \times \frac{4}{3} \times \frac{5}{4} \times \cdots \times \frac{98}{99} \times \frac{100}{99} \\
 &= \frac{1}{2} \times \frac{100}{99} \\
 &= \frac{50}{99}
 \end{aligned}$$

37.  $(1+\frac{19}{92}) + (1+\frac{19}{92} \times 2) + (1+\frac{19}{92} \times 3) + \cdots + (1+\frac{19}{92} \times 10) + (1+\frac{19}{92} \times 11)$  的结果是 A。那么，与 A 最接近的整数是( )。

解：原式  $= 1 \times 11 + (\frac{19}{92} \times 1 + \frac{19}{92} \times 2 + \frac{19}{92} \times 3 + \cdots + \frac{19}{92} \times 10) + \frac{19}{92} \times 11$

$$\begin{aligned}
 &= 11 + \frac{19}{92} \times (1+2+3+\cdots+10+11) \\
 &= 11 + \frac{19}{92} \times (1+11) \times 11 \div 2 \\
 &= 11 + \frac{19}{92} \times 66 \\
 &\approx 11 + 13.6 \\
 &\approx 25
 \end{aligned}$$

38.  $75 \times 4.67 + 17.9 \times 2.5$

$$\begin{aligned}
 &= 25 \times 14.01 + 25 \times 1.79 \\
 &= 25 \times 15.8 \\
 &= 1580 \div 4 \\
 &= 395
 \end{aligned}$$

39.  $1992 \times 199319931993 - 1993 \times 199219921992$

$$\begin{aligned}
 &= 1992 \times 1993 \times 100010001 - 1993 \times 1992 \times 100010001 \\
 &= 0
 \end{aligned}$$

40.  $\frac{3}{2} - \frac{5}{6} + \frac{7}{12} - \frac{9}{20} + \frac{11}{30} - \frac{13}{42}$

$$\begin{aligned}
 &= 1 + \frac{1}{2} - \frac{5}{2 \times 3} + \frac{7}{3 \times 4} - \frac{9}{4 \times 5} + \frac{11}{5 \times 6} - \frac{13}{6 \times 7} \\
 &= 1 + \frac{1}{2} - (\frac{1}{2} + \frac{1}{3}) + (\frac{1}{3} + \frac{1}{4}) - (\frac{1}{4} + \frac{1}{5}) + (\frac{1}{5} + \frac{1}{6}) - (\frac{1}{6} + \frac{1}{7}) \\
 &= 1 + \frac{1}{2} - \frac{1}{2} - \frac{1}{3} + \frac{1}{3} + \frac{1}{4} - \frac{1}{4} - \frac{1}{5} + \frac{1}{5} + \frac{1}{6} - \frac{1}{6} - \frac{1}{7} \\
 &= 1 - \frac{1}{7} \\
 &= \frac{6}{7}
 \end{aligned}$$

$$\begin{aligned}
 41. & [12.8 + (3\frac{4}{7} - 1.5) \times 1\frac{3}{25}] \div 4\frac{1}{5} \\
 &= [12.8 + (\frac{25}{7} - \frac{3}{2}) \times \frac{28}{25}] \times \frac{5}{21} \\
 &= (12.8 + \frac{25}{7} \times \frac{28}{25} - \frac{3}{2} \times \frac{28}{25}) \times \frac{5}{21} \\
 &= (12.8 + 4 - \frac{42}{25}) \times \frac{5}{21} \\
 &= 16.8 \times \frac{5}{21} - \frac{42}{25} \times \frac{5}{21} \\
 &= 0.8 \times 5 - 0.4 \\
 &= 4 - 0.4 \\
 &= 3.6
 \end{aligned}$$

$$\begin{aligned}
 44. & \frac{1 \times 3 \times 5 + 2 \times 6 \times 10 + 3 \times 9 \times 15}{3 \times 5 \times 7 + 6 \times 10 \times 14 + 9 \times 15 \times 21} \\
 &= \frac{1 \times 3 \times 5 + (1 \times 3 \times 5) \times 2 + (1 \times 3 \times 5) \times 3}{3 \times 5 \times 7 + (3 \times 5 \times 7) \times 2 + (3 \times 5 \times 7) \times 3} \\
 &= \frac{1 \times 3 \times 5 \times (1 + 2 + 3)}{3 \times 5 \times 7 \times (1 + 2 + 3)} \\
 &= \frac{1 \times 3 \times 5}{3 \times 5 \times 7} \\
 &= \frac{1}{7}
 \end{aligned}$$

$$\begin{aligned}
 45. & \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} \\
 \text{方法一)} &= \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64} + \frac{1}{64} - \frac{1}{64} \\
 &= \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{32} - \frac{1}{64} \\
 &= \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{16} - \frac{1}{64} \\
 &= \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{8} - \frac{1}{64} \\
 &= \frac{1}{2} + \frac{1}{4} + \frac{1}{4} - \frac{1}{64} \\
 &= \frac{1}{2} + \frac{1}{2} - \frac{1}{64} \\
 &= 1 - \frac{1}{64} \\
 &= \frac{63}{64}
 \end{aligned}$$

$$42. \frac{6933}{25421} \text{ 的最简分数是 ( )。}$$

$$\text{解析: } \frac{6933}{25421} = \frac{3 \times 2311}{11 \times 2311} = \frac{3}{11}$$

$$\begin{aligned}
 43. & \frac{100 \times 89 + 100 \times 99 - 89 \times 11 - 89 \times 89}{54 \times 2 + 99 \times 98 + 45 \times 2} \\
 &= \frac{100 \times 89 + 100 \times 99 - 89 \times (11 + 89)}{99 \times 98 + (54 + 45) \times 2} \\
 &= \frac{100 \times 89 + 100 \times 99 - 89 \times 100}{99 \times 98 + 99 \times 2} \\
 &= \frac{100 \times 99}{100 \times 99} \\
 &= 1
 \end{aligned}$$

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方法二)

$$\begin{aligned}
 &= (\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64}) \times 2 - (\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64}) \\
 &= (1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32}) - (\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} + \frac{1}{64}) \\
 &= 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \frac{1}{32} - \frac{1}{2} - \frac{1}{4} - \frac{1}{8} - \frac{1}{16} - \frac{1}{32} - \frac{1}{64} \\
 &= 1 - \frac{1}{64} \\
 &= \frac{63}{64}
 \end{aligned}$$



$$\begin{aligned}
 46. & 1 + \frac{1}{2} + \frac{2}{2} + \frac{1}{2} + \frac{1}{3} + \frac{2}{3} + \frac{3}{3} + \frac{2}{3} + \frac{1}{3} + \frac{1}{4} + \frac{2}{4} + \frac{3}{4} + \cdots + \frac{1}{10} + \frac{2}{10} + \cdots + \frac{2}{10} + \frac{1}{10} \\
 &= (1 + \frac{2}{2} + \frac{3}{3} + \cdots + \frac{10}{10}) + [(\frac{1}{2} + \frac{1}{2}) + (\frac{1}{3} + \frac{2}{3} + \frac{2}{3} + \frac{1}{3}) + \cdots + (\frac{1}{10} + \frac{2}{10} + \cdots + \frac{2}{10} + \frac{1}{10})] \\
 &= 1 \times 10 + (1 + 2 + 3 + \cdots + 9) \\
 &= 10 + 45 \\
 &= 55
 \end{aligned}$$

$$\begin{aligned}
 47. & 1 \times 2 + 2 \times 3 + 3 \times 4 + \cdots + 39 \times 40 \\
 &= 1 \times (1+1) + 2 \times (2+1) + 3 \times (3+1) + \cdots + 39 \times (39+1) \\
 &= 1^2 + 1 \times 1 \times 2^2 + 2 \times 1 \times 3^2 + 3 \times 1 + \cdots + 39^2 + 39 \times 1 \\
 &= (1^2 + 2^2 + 3^2 + \cdots + 39^2) + (1 + 2 + 3 + 4 + \cdots + 39) \\
 &= [39 \times 40 \times (2 \times 39 + 1)] \div 6 + (1 + 39) \times 39 \div 2 \\
 &= 20540 + 780 \\
 &= 21320
 \end{aligned}$$

公式:  $1^2 + 2^2 + \cdots + (n-1)^2 + n^2 = \frac{n(n+1)(2n+1)}{6}$

或利用公式:  $1 \times 2 + 2 \times 3 + 3 \times 4 + \cdots + n \times (n+1) = \frac{n(n+1)(n+2)}{3}$

$$\begin{aligned}
 \text{原式} &= \frac{39 \times 40 \times 41}{3} \\
 &= 21320
 \end{aligned}$$

$$\begin{aligned}
 48. & 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + \cdots + 50^2 \\
 &= \frac{50 \times 51 \times (2 \times 50 + 1)}{6} \\
 &= 42925
 \end{aligned}$$

$$\begin{aligned}
 49. & 1^3 + 2^3 + 3^3 + 4^3 + 5^3 + 6^3 + \cdots + 50^3 \\
 &= (\frac{50 \times 51}{2})^2 \\
 &= 1625625
 \end{aligned}$$

公式:  $1^3 + 2^3 + 3^3 + 4^3 + \cdots + n^3 = (\frac{n(n+1)}{2})^2$

$$\begin{aligned}
 50. & 1^2 - 2^2 + 3^2 - 4^2 + \cdots - 48^2 + 49^2 \\
 &= 1^2 + (3^2 - 2^2) + (5^2 - 4^2) + \cdots + (49^2 - 48^2) \\
 &= 1 + (3+2) \times (3-2) + (5+4) \times (5-4) + \cdots + (49+48) \times (49-48) \\
 &= 1 + 2 + 3 + 4 + 5 + \cdots + 48 + 49 \\
 &= (1+49) \times 49 \div 2 \\
 &= 25 \times 49 \\
 &= 1225
 \end{aligned}$$

本题涉及到初一下册平方差的问题。

平方差公式  $(a^2 - b^2) = (a+b)(a-b)$