2019 小學數學競賽選拔賽初賽試題

第 一 試：計 算 題 (考試時間 1 小時)

◎**請將答案填入答案卷對應題號的空格內**，不須計算過程。答案若為分數請化為最簡分數。本題目卷正反面空白處可為作演算草稿紙。每題 5 分，共 100 分

1. $11+18+23+27+42+59=?$

$=(11+59)+(18+42)+(23+27)=70+60+50=180$

2. $15\times25=?$

【算法 1】

$=3\times5\times25=3\times125=375$

【算法 2】

$=5\times3\times25=5\times75=375$

【算法 3】

$=(16-1)\times25=16\times25-25=4\times4\times25-25=4\times100-25=400-25=375$

【算法 4】

$=(20-5)\times(20+5)=20\times20-5\times5=400-25=375$

3. $12\frac{1}{2}\times2019\times8\times\frac{3.14}{20.19}=?$

$=8\times12.5\times2019\times\frac{3.14}{20.19}=100\times100\times3.14=31400$

4. $1+902+8003+70004+600005=?$

$=1+(900+2)+(8000+3)+(70000+4)+(600000+5)$

$=(900+8000+70000+600000)+(1+2+3+4+5)$

$=678900+15$

$=678915$

5. $656565\div13\div15=?$

$=65\times10101\div13\div5\div3$

$=65\times10101\div65\div3$

$=10101\div3$

$=3367$

6. $(169-5\times5)\div3\times0.25=?$

$=(169-25)\div3\times\frac{1}{4}=144\div3\times\frac{1}{4}=48\times\frac{1}{4}=12$

7. $3.17+5.17+7.17+9.17+11.17+13.17+15.17+17.17+19.17+21.17=?$

【算法 1】

$=\frac{(3.17+21.17)\times10}{2}=\frac{24.34\times10}{2}=\frac{243.4}{2}=121.7=121\frac{7}{10}=\frac{1217}{10}$

【算法 2】

$=(3+5+7+9+11+13+15+17+19+21)+0.17\times10$

$=\dfrac{(3+21)\times10}{2}+1.7$

$=120+1.7$

$=121.7=121\dfrac{7}{10}=\dfrac{1217}{10}$

8. $2019-1-3-5-7-9-\cdots-85-87=?$

$=2019-(1+3+5+7+\cdots+85+87)$

$=2019-\dfrac{(1+87)\times44}{2}$

$=2019-44\times44$

$=2019-1936$

$=83$

9. $1-\dfrac{1}{3}-\dfrac{1}{6}-\dfrac{1}{12}-\dfrac{1}{24}-\dfrac{1}{48}-\dfrac{1}{96}-\dfrac{1}{192}=?$

$=\dfrac{192-64-32-16-8-4-2-1}{192}$

$=\dfrac{192-(1+2+4+8+16+32+64)}{192}=\dfrac{192-127}{192}=\dfrac{65}{192}$

10. $14+47+70+3+36+69+92+25+58+81=?$

$=(4+7+0+3+6+9+2+5+8+1)+10\times(1+4+7+3+6+9+2+5+8)$

$=(1+2+3+4+5+6+7+8+9)\times(1+10)$

$=45\times11$

$=495$

11. $9.1+8.11+7.111+6.1111+5.11111+4.111111+3.1111111+2.11111111$
$+1.111111111=?$

$=(9+8+7+6+5+4+3+2+1)+(0.1+0.11+0.111+0.1111+0.11111+0.111111$
$+0.1111111+0.11111111+0.111111111)$

$=45+0.987654321$

$=45.987654321$

12. $995\times995+995\times116+116\times995+116\times116=?$

【算法 1】

$=995\times(995+116)+116\times(995+116)$

$=(995+116)\times(995+116)$

$=1111\times1111$

$=1234321$

【算法 2】

$=995^2+2\times995\times116+116^2=(995+116)^2=1111^2=1234321$

13. $\dfrac{20\times19\times18\times17\times16\times15\times14\times13\times12\times11}{3\times5\times7\times9\times11\times13\times15\times17\times19}=?$

$=\dfrac{20\times18\times16\times14\times12}{3\times5\times7\times9}$

$=\dfrac{(4\times5)\times(2\times9)\times16\times(2\times7)\times(3\times4)}{3\times5\times7\times9}$

$=4\times2\times16\times2\times4$

$=1024$

14. $\dfrac{\dfrac{9}{28}\times3\dfrac{1}{2}+\dfrac{1}{6}}{8\dfrac{1}{3}\div\dfrac{5}{7}-5\dfrac{7}{8}}\div\dfrac{31}{8}=?$

$=\dfrac{\dfrac{9}{28}\times\dfrac{7}{2}+\dfrac{1}{6}}{\dfrac{25}{3}\times\dfrac{7}{5}-\dfrac{47}{8}}\times\dfrac{8}{31}=\dfrac{\dfrac{9}{4}\times\dfrac{1}{2}+\dfrac{1}{6}}{\dfrac{5}{3}\times7-\dfrac{47}{8}}\times\dfrac{8}{31}=\dfrac{\dfrac{9}{8}+\dfrac{1}{6}}{\dfrac{35}{3}-\dfrac{47}{8}}\times\dfrac{8}{31}=\dfrac{\dfrac{27+4}{24}}{\dfrac{280-141}{24}}\times\dfrac{8}{31}=\dfrac{31}{139}\times\dfrac{8}{31}=\dfrac{8}{139}$

15. $20192019\times9999+99999\times20192019-2019\times99989998=?$

$=20192019\times9999+20192019\times99999-2019\times9998\times10001$

$=20192019\times9999+20192019\times99999-9998\times20192019$

$=20192019\times9999-20192019\times9998+20192019\times99999$

$=20192019+20192019\times99999$

$=20192019\times(1+99999)$

$=2019201900000$

16. $(1-\dfrac{1}{11}\times\dfrac{1}{11})\times(1-\dfrac{1}{12}\times\dfrac{1}{12})\times(1-\dfrac{1}{13}\times\dfrac{1}{13})\times\cdots\times(1-\dfrac{1}{120}\times\dfrac{1}{120})=?$

$=(1-\dfrac{1}{11})\times(1+\dfrac{1}{11})\times(1-\dfrac{1}{12})\times(1+\dfrac{1}{12})\times(1-\dfrac{1}{13})\times(1+\dfrac{1}{13})\times\cdots\times(1-\dfrac{1}{120})\times(1+\dfrac{1}{120})$

$=\dfrac{10}{11}\times\dfrac{12}{11}\times\dfrac{11}{12}\times\dfrac{13}{12}\times\dfrac{12}{13}\times\dfrac{14}{13}\times\cdots\times\dfrac{119}{120}\times\dfrac{121}{120}$

$=\dfrac{10}{11}\times\dfrac{121}{120}$

$=\dfrac{11}{12}$

17. $131\frac{2}{11}\times\frac{11}{13}+111\frac{2}{9}\times\frac{9}{11}+91\frac{2}{7}\times\frac{7}{9}+71\frac{2}{5}\times\frac{5}{7}+51\frac{2}{3}\times\frac{3}{5}=?$

$=(\frac{11\times131+2}{11})\times\frac{11}{13}+(\frac{9\times111+2}{9})\times\frac{9}{11}+(\frac{7\times91+2}{7})\times\frac{7}{9}+(\frac{5\times71+2}{5})\times\frac{5}{7}$

$+(\frac{3\times51+2}{3})\times\frac{3}{5}$

$=\frac{11\times131+2}{13}+\frac{9\times111+2}{11}+\frac{7\times91+2}{9}+\frac{5\times71+2}{7}+\frac{3\times51+2}{5}$

$=\frac{11\times(130+1)+2}{13}+\frac{9\times(110+1)+2}{11}+\frac{7\times(90+1)+2}{9}+\frac{5\times(70+1)+2}{7}+\frac{3\times(50+1)+2}{5}$

$=\frac{11\times130+13}{13}+\frac{9\times110+11}{11}+\frac{7\times90+9}{9}+\frac{5\times70+7}{7}+\frac{3\times50+5}{5}$

$=111+91+71+51+31$

$=355$

18. $11+13\frac{4}{15}+15\frac{4}{35}+17\frac{4}{63}+19\frac{4}{99}+21\frac{4}{143}=?$

$=11+13+15+17+19+21+\frac{4}{3\times5}+\frac{4}{5\times7}+\frac{4}{7\times9}+\frac{4}{9\times11}+\frac{4}{11\times13}$

$=96+2\times(\frac{2}{3\times5}+\frac{2}{5\times7}+\frac{2}{7\times9}+\frac{2}{9\times11}+\frac{2}{11\times13})$

$=96+2\times(\frac{1}{3}-\frac{1}{5}+\frac{1}{5}-\frac{1}{7}+\frac{1}{7}-\frac{1}{9}+\frac{1}{9}-\frac{1}{11}+\frac{1}{11}-\frac{1}{13})$

$=96+2\times(\frac{1}{3}-\frac{1}{13})$

$=96+2\times\frac{10}{39}$

$=96\frac{20}{39}$

19. $\frac{2.71828}{2.019\times2.019-1.019\times3.019}=?$

$=\frac{2.71828}{2.019\times2.019-(2.019-1)\times(2.019+1)}$

$=\frac{2.71828}{2.019\times2.019-2.019\times2.019+1\times1}$

$=\frac{2.71828}{1}$

$=2.71828$

20. $\dfrac{(1+2019)\times(1+\frac{2019}{2})\times(1+\frac{2019}{3})\times(1+\frac{2019}{4})\times\cdots\times(1+\frac{2019}{100})\times(1+\frac{2019}{101})}{(1+2020)\times(1+\frac{2020}{2})\times(1+\frac{2020}{3})\times(1+\frac{2020}{4})\times\cdots\times(1+\frac{2020}{99})\times(1+\frac{2020}{100})}=?$

$=\dfrac{(1+2019)\times(\frac{2+2019}{2})\times(\frac{3+2019}{3})\times(\frac{4+2019}{4})\times\cdots\times(\frac{100+2019}{100})\times(\frac{101+2019}{101})}{(1+2020)\times(\frac{2+2020}{2})\times(\frac{3+2020}{3})\times(\frac{4+2020}{4})\times\cdots\times(\frac{100+2020}{100})}$

$=\dfrac{2020\times2021\times2022\times\cdots\times2118\times2119\times\frac{2120}{101}}{2021\times2022\times2023\times\cdots\times2120}$

$=2020\times\dfrac{1}{101}$

$=20$