

第三讲 有理数的混合运算（练习）

一、有理数的加减混合运算

1. 计算：

$$(1) -5\frac{17}{37} - \left[(-9.5) + 4\frac{3}{74} \right] + 7.5 .$$

$$(2) -5.5 + (-3.2) - (-2.5) - (-4.8) .$$

$$(3) -32 - 17 - |-23| - | -(-17) | .$$

【答案】(1) 7.5 .

$$(2) -1.4 .$$

$$(3) -89 .$$

【标注】【能力】运算能力

【知识点】有理数加减混合运算

2. 计算 .

$$(1) (-53) + (+21) - (-69) - (+37)$$

$$(2) 5.7 - 4.2 - 8.4 - 2.3 + 1\frac{1}{5}$$

$$(3) -(-12) + (+18) - (+37) + (-41)$$

$$(4) \left(-1\frac{1}{2}\right) - 1\frac{1}{4} + \left(-2\frac{1}{2}\right) - \left(-3\frac{3}{4}\right) - \left(-1\frac{1}{4}\right) + 4$$

【答案】(1) 0 .

$$(2) -8 .$$

$$(3) -48 .$$

$$(4) 3\frac{3}{4} .$$

【解析】(1) 原式 = $-53 + 21 + 69 - 37$

$$= (21 + 69) + (-53 - 37)$$

$$= 90 - 90$$

$$= 0 .$$

故答案为：0 .

$$(2) \text{原式} = (5.7 + 1.2) + (-4.2 - 8.4 - 2.3)$$

$$= 6.9 - 14.9$$

$$= -8.$$

故答案为：-8.

$$(3) \text{ 原式} = 12 + 18 - 37 - 41$$

$$= 30 - 78$$

$$= -48.$$

故答案为：-48.

$$(4) \text{ 原式} = \left(-1\frac{1}{2} - 2\frac{1}{2}\right) + \left(-1\frac{1}{4} + 3\frac{3}{4} + 1\frac{1}{4}\right) + 4$$

$$= -4 + 3\frac{3}{4} + 4$$

$$= 3\frac{3}{4}.$$

故答案为： $3\frac{3}{4}$.

【标注】【知识点】有理数加减混合运算

3. 加减混合运算：

$$(1) 12 - (-18) + (-7) - 20.$$

$$(2) +5.7 + (-8.4) + (-4.2) - (-10).$$

$$(3) \frac{5}{6} + \left(-\frac{3}{4}\right) - (+0.25) - \left(-\frac{1}{6}\right).$$

$$(4) 5.6 + \left(-7\frac{3}{5}\right) - (-8.3) - \left(+\frac{53}{10}\right) - 1.$$

【答案】 (1) 3.

(2) 3.1.

(3) 0.

(4) 0.

【解析】 (1) 原式 = $12 + 18 + (-7) + (-20)$

$$= 30 - 27$$

$$= 3.$$

$$(2) \text{ 原式} = 5.7 - 8.4 - 4.2 + 10$$

$$= (5.7 + 10) + (-8.4 - 4.2)$$

$$= 15.7 - 12.6$$

$$= 3.1.$$

$$(3) \text{ 原式} = \frac{5}{6} + \left(-\frac{3}{4}\right) + \left(-\frac{1}{4}\right) + \frac{1}{6}$$

$$= \left(\frac{5}{6} + \frac{1}{6}\right) + \left(-\frac{3}{4} - \frac{1}{4}\right)$$

$$= 1 + (-1)$$

$$= 0 .$$

$$(4) \text{ 原式} = 5.6 + (-7.6) + 8.3 + (-5.3) + (-1)$$

$$= (5.6 + 8.3) + (-7.6 - 5.3 - 1)$$

$$= 13.9 + (-13.9)$$

$$= 0 .$$

【标注】【能力】运算能力

【知识点】有理数加减混合运算

4. 计算下列各式：

$$(1) -12 + 11 - 8 + 39 .$$

$$(2) (+0.125) + \left(-\frac{1}{4}\right) + \left(-3\frac{1}{8}\right) + \left(-5\frac{3}{4}\right) .$$

$$(3) \frac{2}{3} - \left(+\frac{1}{4}\right) - \left|-2\frac{1}{3}\right| + \left(-3\frac{3}{4}\right) .$$

$$(4) \left(-18\frac{4}{5}\right) + \left(53\frac{3}{5}\right) + (-53.6) + \left(+18\frac{4}{5}\right) + (-100) .$$

【答案】 (1) 30 .

$$(2) -9 .$$

$$(3) -5\frac{2}{3} .$$

$$(4) -100 .$$

【解析】 (1) $-12 + 11 - 8 + 39 = 30 .$

$$(2) (+0.125) + \left(-\frac{1}{4}\right) + \left(-3\frac{1}{8}\right) + \left(-5\frac{3}{4}\right) = -9 .$$

$$(3) \frac{2}{3} - \left(+\frac{1}{4}\right) - \left|-2\frac{1}{3}\right| + \left(-3\frac{3}{4}\right) = -5\frac{2}{3} .$$

$$(4) \left(-18\frac{4}{5}\right) + \left(53\frac{3}{5}\right) + (-53.6) + \left(+18\frac{4}{5}\right) + (-100) = -100 .$$

【标注】【知识点】有理数加减混合运算

【能力】运算能力

5. 计算：

$$(1) -20 + (-15) - (-28) - 17 .$$

$$(2) (-0.5) - \left(-3\frac{1}{4}\right) + 2.75 - \left(+7\frac{1}{2}\right) .$$

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

$$(4) -4 + 5\frac{1}{6} + (-2.5) - 1\frac{1}{3} .$$

【答案】 (1) -24 .

(2) -2 .

(3) $-1\frac{1}{5}$.

(4) $-2\frac{2}{3}$.

【解析】 (1) $= -20 + (-15) + 28 - 17$

$$= -35 + 11$$

$$= -24 .$$

$$(2) = -\frac{1}{2} + 3\frac{1}{4} + 2\frac{3}{4} - 7\frac{1}{2}$$

$$= -\frac{1}{2} - 7\frac{1}{2} + 3\frac{1}{4} + 2\frac{3}{4}$$

$$= -8 + 6$$

$$= -2 .$$

(3) 略 .

(4) 略 .

【标注】【能力】运算能力

【知识点】有理数加减混合运算

6. 计算 .

$$(1) (-8) + (-1.2) + (-0.6) + (-2.4) .$$

$$(2) (-12) - \left(-\frac{6}{5}\right) + (-8) - \frac{7}{10} .$$

$$(3) 3 - (+63) - (-259) - (-41) .$$

$$(4) 2\frac{1}{3} - \left(+10\frac{1}{3}\right) + \left(-8\frac{1}{5}\right) - \left(+3\frac{2}{5}\right) .$$

【答案】 (1) -12.2 .

$$(2) $-\frac{39}{2}$.$$

$$(3) 240 .$$

$$(4) $-19\frac{3}{5}$.$$

【解析】 (1) $(-8) + (-1.2) + (-0.6) + (-2.4)$

$$= -8 - 1.2 + (-0.6 - 2.4)$$

$$= -9.2 - 3$$

$$= -12.2 .$$

$$(2) (-12) - \left(-\frac{6}{5}\right) + (-8) - \frac{7}{10}$$

$$\begin{aligned}
 &= -12 - 8 + \left(\frac{12}{10} - \frac{7}{10} \right) \\
 &= -20 + \frac{1}{2} \\
 &= -\frac{39}{2} .
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad &3 - (+63) - (-259) - (-41) \\
 &= (3 - 63) + (259 + 41) \\
 &= -60 + 300 \\
 &= 240 .
 \end{aligned}$$

$$\begin{aligned}
 (4) \quad &2\frac{1}{3} - \left(+10\frac{1}{3} \right) + \left(-8\frac{1}{5} \right) - \left(+3\frac{2}{5} \right) \\
 &= 2\frac{1}{3} - 10\frac{1}{3} - \left(8\frac{1}{5} + 3\frac{2}{5} \right) \\
 &= -8 - 11\frac{3}{5} \\
 &= -19\frac{3}{5} .
 \end{aligned}$$

【标注】【能力】运算能力

【知识点】有理数加减混合运算

7. 计算下列各题 .

$$(1) \quad 6 + (-14) - (-39) .$$

$$(2) \quad -7 - (-11) + (-9) - (+2) .$$

$$(3) \quad 20.36 + (-1.4) + (-13.36) + 1.4 .$$

$$(4) \quad \left(+3\frac{2}{5} \right) + \left(-2\frac{7}{8} \right) - \left(-5\frac{3}{5} \right) + \left(-\frac{1}{8} \right) .$$

【答案】 (1) 31 .

$$(2) \quad -7 .$$

$$(3) \quad 7 .$$

$$(4) \quad 6 .$$

【解析】 (1) 原式 = $6 - 14 + 39$

$$= 31 .$$

$$(2) \quad \text{原式} = -7 + 11 - 9 - 2$$

$$= -7 .$$

$$(3) \quad \text{原式} = 20.36 + (-13.36) + 1.4 + (-1.4)$$

$$= 7 .$$

$$(4) \quad \text{原式} = 3\frac{2}{5} + 5\frac{3}{5} + \left(-2\frac{7}{8} \right) + \left(-\frac{1}{8} \right)$$

$$= 9 - 3$$

$$= 6 .$$

【标注】【知识点】有理数加减混合运算

8. 计算题 .

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

$$(2) (-12) - 5 + (-14) - (-39) .$$

$$(3) -3.76 - 2\frac{3}{7} - 7.24 - 3\frac{4}{7} .$$

$$(4) \left| -3\frac{1}{2} + \left(-1\frac{5}{8}\right) \right| - \left| -2\frac{3}{4} + \frac{7}{8} \right| .$$

【答案】 (1) $-\frac{1}{5} .$

(2) $8 .$

(3) $-17 .$

(4) $\frac{13}{4} .$

【解析】 (1) 原式 $= \left(\frac{1}{2} - \frac{1}{2}\right) + \left(-\frac{2}{3} - \frac{1}{3}\right) + \frac{4}{5}$
 $= 0 - 1 + \frac{4}{5}$
 $= -\frac{1}{5} .$

(2) 原式 $= -12 - 5 - 14 + 39$
 $= -31 + 39$
 $= 8 .$

(3) 原式 $= -3.76 - 7.24 - \left(2\frac{3}{7} + 3\frac{4}{7}\right)$
 $= -11 - 6$
 $= -17 .$

(4) 原式 $= 3\frac{1}{2} + 1\frac{5}{8} - \left(2\frac{3}{4} - \frac{7}{8}\right)$
 $= 3\frac{1}{2} + 1\frac{5}{8} - 2\frac{3}{4} + \frac{7}{8}$
 $= \frac{3}{4} + \frac{5}{2}$
 $= \frac{13}{4} .$

【标注】【知识点】有理数加减混合运算

9. 计算：

$$(1) 1\frac{1}{3} - 1\frac{1}{5} + \frac{5}{3} - (-0.6) - \left(-3\frac{3}{5}\right) .$$

$$(2) \frac{2}{5} - \left| -1\frac{1}{2} \right| - \left(+2\frac{1}{4} \right) - (-2.75) .$$

$$(3) 1.125 - 3\frac{3}{4} - \frac{1}{8} - 0.25 .$$

$$(4) 2\frac{2}{10} + 6.3 - \left(\frac{3}{5} - 1\frac{3}{5}\right) .$$

【答案】(1) 6 .

(2) $-\frac{3}{5}$.

(3) -3 .

(4) $\frac{19}{2}$.

【解析】(1) 原式 $= 1\frac{1}{3} - 1\frac{1}{5} + \frac{5}{3} + \frac{3}{5} + 3\frac{3}{5} = 3 + 3 = 6$.

(2) 原式 $= \frac{2}{5} - \frac{3}{2} - \frac{9}{4} + \frac{11}{4} = \frac{2}{5} - \frac{3}{2} + \frac{1}{2} = -\frac{3}{5}$.

(3) 原式 $= 1\frac{1}{8} - 3\frac{3}{4} - \frac{1}{8} - \frac{1}{4} = 1 - 4 = -3$.

(4) 原式 $= 2\frac{2}{10} + 6\frac{3}{10} - \frac{3}{5} + 1\frac{3}{5} = 8\frac{1}{2} + 1 = 9\frac{1}{2} = \frac{19}{2}$.

【标注】【知识点】有理数加减混合运算

10. 计算 .

(1) $(-7) + (+10) + (-4) + (+7)$

(2) $(-3.125) + (+4.75) + \left(-9\frac{7}{8}\right) + \left(+5\frac{1}{4}\right)$

(3) $\left(-9\frac{1}{3}\right) + \left(-\left|-4\frac{5}{6}\right|\right) + \left|-5\frac{1}{6}\right| + \left(-\frac{2}{3}\right)$

(4) $0 + 3.2 + \left(-\frac{2}{5}\right) + |-24| - \left[3.2 - \left(60 + 8\frac{3}{5}\right)\right]$

【答案】(1) 6 .

(2) -3 .

(3) $-9\frac{2}{3}$.

(4) $92\frac{1}{5}$.

【解析】(1) $(-7) + (+10) + (-4) + (+7)$

$$= -7 + 10 - 4 + 7$$

$$= -7 - 4 + 10 + 7$$

$$= 6 .$$

(2) $(-3.125) + (+4.75) + \left(-9\frac{7}{8}\right) + \left(+5\frac{1}{4}\right)$

$$= -3\frac{1}{8} + 4\frac{3}{4} - 9\frac{7}{8} + 5\frac{1}{4}$$

$$= -3\frac{1}{8} - 9\frac{7}{8} + \left(4\frac{3}{4} + 5\frac{1}{4}\right)$$

$$= -13 + 10$$

$$= -3 .$$

(3) $\left(-9\frac{1}{3}\right) + \left(-\left|-4\frac{5}{6}\right|\right) + \left|-5\frac{1}{6}\right| + \left(-\frac{2}{3}\right)$

$$= -9\frac{1}{3} - 4\frac{5}{6} + 5\frac{1}{6} - \frac{2}{3}$$

$$\begin{aligned}
&= -9\frac{1}{3} - \frac{2}{3} + \left(5\frac{1}{6} - 4\frac{5}{6}\right) \\
&= -10 + \frac{1}{3} \\
&= -9\frac{2}{3}. \\
(4) \quad &0 + 3.2 + \left(-\frac{2}{5}\right) + |-24| - \left[3.2 - \left(60 + 8\frac{3}{5}\right)\right] \\
&= 3\frac{1}{5} - \frac{2}{5} + 24 - \left(3\frac{1}{5} - 60 - 8\frac{3}{5}\right) \\
&= 3\frac{1}{5} - \frac{2}{5} + 24 - 3\frac{1}{5} + 60 + 8\frac{3}{5} \\
&= 3\frac{1}{5} - \frac{2}{5} - 3\frac{1}{5} + 8\frac{3}{5} + (24 + 60) \\
&= 8\frac{1}{5} + 84 \\
&= 92\frac{1}{5}.
\end{aligned}$$

【标注】【知识点】有理数加减混合运算

二、有理数的乘除混合运算

11. 计算： $(-9) \times \frac{1}{9} \times (-1) \div \left(-\frac{1}{9}\right) \times (-9)$.

【答案】 81 .

【解析】 $(-9) \times \frac{1}{9} \times (-1) \div \left(-\frac{1}{9}\right) \times (-9)$
 $= (-9) \times \frac{1}{9} \times (-1) \times (-9) \times (-9)$
 $= +\left(9 \times \frac{1}{9} \times 9 \times 9\right)$
 $= 81$.

【标注】【知识点】有理数乘除混合运算

12. 计算 .

$$\begin{aligned}
(1) \quad &(-5) \times 6 \times \left(-\frac{4}{5}\right) \div (-4) . \\
(2) \quad &\left(-\frac{7}{2}\right) \times \left(\frac{1}{6} - \frac{1}{2}\right) \times \frac{3}{14} \div \left(-\frac{1}{2}\right) .
\end{aligned}$$

【答案】 (1) -6 .

$$(2) -\frac{1}{2} .$$

【解析】 (1) $(-5) \times 6 \times \left(-\frac{4}{5}\right) \div (-4)$
 $= -5 \times 6 \times \frac{4}{5} \times \frac{1}{4}$

$$\begin{aligned}
&= -6. \\
(2) \quad & -\frac{7}{2} \times \left(\frac{1}{6} - \frac{1}{2}\right) \times \frac{3}{14} \div \left(-\frac{1}{2}\right) \\
&= -\frac{7}{2} \times \left(-\frac{1}{3}\right) \times \frac{3}{14} \times (-2) \\
&= -\frac{7}{2} \times \frac{1}{3} \times \frac{3}{14} \times 2 \\
&= -\frac{1}{2}.
\end{aligned}$$

【标注】【知识点】含乘方的有理数混合运算

13. 计算.

$$\begin{aligned}
(1) \quad & -4\frac{1}{4} \div 2\frac{1}{8} \times (-9). \\
(2) \quad & |-0.25| \div \left(-\frac{2}{3}\right) \times \left|-1\frac{3}{5}\right|.
\end{aligned}$$

【答案】 (1) 18.

$$(2) -\frac{3}{5}.$$

【解析】

$$\begin{aligned}
(1) \quad & -4\frac{1}{4} \div 2\frac{1}{8} \times (-9) \\
&= -\frac{17}{4} \times \frac{8}{17} \times (-9) \\
&= \frac{17}{4} \times \frac{8}{17} \times 9 \\
&= 18.
\end{aligned}$$

$$\begin{aligned}
(2) \quad & |-0.25| \div \left(-\frac{2}{3}\right) \times \left|-1\frac{3}{5}\right| \\
&= \frac{1}{4} \times \left(-\frac{3}{2}\right) \times \frac{8}{5} \\
&= -\left(\frac{1}{4} \times \frac{3}{2} \times \frac{8}{5}\right) \\
&= -\frac{3}{5}.
\end{aligned}$$

【标注】【知识点】有理数乘除混合运算

14. 计算:

$$\begin{aligned}
(1) \quad & (-3) \times \left(-1\frac{4}{5}\right) \times \left(-1\frac{1}{9}\right) \times \left(+5\frac{1}{2}\right) \times \frac{3}{11}. \\
(2) \quad & (-2) \div \left(-1\frac{6}{7}\right) \times 0.5 \times \left(-3\frac{1}{4}\right) \div 7.
\end{aligned}$$

【答案】 (1) -9.

$$(2) -\frac{1}{4}.$$

【标注】【知识点】有理数四则混合运算

15. 计算：

$$\begin{aligned} (1) & (-56) \times \left(-1\frac{5}{16}\right) \div \left(-1\frac{3}{4}\right) \times \frac{4}{7} . \\ (2) & (-2.25) \div \left(-1\frac{1}{2}\right) \div \left(-1\frac{1}{8}\right) . \end{aligned}$$

【答案】(1) -24 .

$$(2) -\frac{4}{3} .$$

【解析】(1) $(-56) \times \left(-1\frac{5}{16}\right) \div \left(-1\frac{3}{4}\right) \times \frac{4}{7}$
 $= -56 \times \frac{21}{16} \times \frac{4}{7} \times \frac{4}{7} = -24 .$

$$\begin{aligned} (2) & (-2.25) \div \left(-1\frac{1}{2}\right) \div \left(-1\frac{1}{8}\right) \\ & = \left(-\frac{9}{4}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{8}{9}\right) = -\frac{4}{3} . \end{aligned}$$

【标注】【知识点】有理数乘除混合运算

16. 乘除混合运算 .

$$\begin{aligned} (1) & (+4) \div \frac{2}{3} \times \frac{3}{2} \div \left(-\frac{1}{4}\right) . \\ (2) & -\frac{1}{0.2} \div \left|-\frac{1}{4}\right| \times (+3) \div \left(-\frac{1}{2.5}\right) . \end{aligned}$$

【答案】(1) -36 .

$$(2) 150 .$$

【解析】(1) 学生容易先计算 $\frac{2}{3} \times \frac{3}{2} = 1$, 忽略前面的除法 .

(2) 略

【标注】【知识点】有理数四则混合运算

17. 计算 .

$$\begin{aligned} (1) & \left(-2\frac{1}{3}\right) \div (-7) \times 4.2 . \\ (2) & (-8) \div \left(-4\frac{1}{2}\right) \div \left(-2\frac{2}{3}\right) . \\ (3) & \left(-\frac{3}{2}\right) \div 2 \times \frac{1}{2} \div \left(-\frac{9}{16}\right) . \\ (4) & (-16) \div \left(-1\frac{1}{3}\right) \times \left(-1\frac{3}{4}\right) \div 4\frac{2}{3} . \end{aligned}$$

【答案】(1) $\frac{7}{5}$.

$$(2) -\frac{2}{3} .$$

$$(3) \frac{2}{3}.$$

$$(4) -\frac{9}{2}.$$

【解析】 (1) 原式 $= \left(-\frac{7}{3}\right) \times \left(-\frac{1}{7}\right) \times \frac{21}{5} = \frac{7}{5}.$

$$(2) \text{原式} = (-8) \times \left(-\frac{2}{9}\right) \times \left(-\frac{3}{8}\right) = -\frac{2}{3}.$$

$$(3) \text{原式} = \left(-\frac{3}{2}\right) \times \frac{1}{2} \times \frac{1}{2} \times \left(-\frac{16}{9}\right) = \frac{2}{3}.$$

$$(4) \text{原式} = (-16) \times \left(-\frac{3}{4}\right) \times \left(-\frac{7}{4}\right) \times \frac{3}{14} = -\frac{9}{2}.$$

【标注】【知识点】有理数乘除混合运算

18. 计算：

$$(1) 6 \div (-5) \times \left(-\frac{1}{5}\right).$$

$$(2) (-27) \div 2\frac{1}{4} \times \frac{4}{9} \div (-24).$$

$$(3) -12 \times \frac{5}{3} \div \frac{5}{3}.$$

$$(4) \frac{1}{5} \times (-5) \div \left(-\frac{1}{5}\right) \times 5.$$

【答案】 (1) $\frac{6}{25}.$

$$(2) \frac{2}{9}.$$

$$(3) -12.$$

$$(4) 25.$$

【解析】 (1) $6 \div (-5) \times \left(-\frac{1}{5}\right)$
 $= 6 \times \frac{1}{5} \times \frac{1}{5}$
 $= \frac{6}{25}.$

$$(2) (-27) \div 2\frac{1}{4} \times \frac{4}{9} \div (-24)$$

 $= 27 \times \frac{4}{9} \times \frac{4}{9} \times \frac{1}{24}$
 $= \frac{2}{9}.$

$$(3) -12 \times \frac{5}{3} \div \frac{5}{3}$$

 $= -12 \times \frac{5}{3} \times \frac{3}{5}$
 $= -12.$

$$(4) \frac{1}{5} \times (-5) \div \left(-\frac{1}{5}\right) \times 5$$

 $= \frac{1}{5} \times 5 \times 5 \times 5$
 $= 25.$

【标注】【知识点】有理数四则混合运算

19. 计算 .

- (1) $\left(-\frac{8}{25}\right) \times 1.25 \times (-8)$.
(2) $\left(-\frac{3}{4}\right) \times \left(-1\frac{1}{2}\right) \div \left(-2\frac{1}{6}\right)$.
(3) $\frac{7}{6} \times \left(\frac{1}{6} - \frac{1}{3}\right) \times \frac{3}{14} \div \frac{3}{5}$.
(4) $\left(-1 - \frac{1}{2}\right) \cdot \left(-1 - \frac{1}{3}\right) \cdot \left(-1 - \frac{1}{4}\right) \cdots \left(-1 - \frac{1}{50}\right)$.

【答案】 (1) $\frac{16}{5}$.

(2) $-\frac{27}{52}$.

(3) $-\frac{5}{72}$.

(4) $-\frac{51}{2}$.

【解析】 (1) 原式 $= \frac{8}{25} \times \frac{5}{4} \times 8$
 $= \frac{16}{5}$.

(2) 原式 $= -\frac{3}{4} \times \frac{3}{2} \div \frac{13}{6}$
 $= -\frac{3}{4} \times \frac{3}{2} \times \frac{6}{13}$
 $= -\frac{27}{52}$.

(3) 原式 $= \frac{7}{6} \times \left(-\frac{1}{6}\right) \times \frac{3}{14} \times \frac{5}{3}$
 $= -\frac{7}{36} \times \frac{5}{14}$
 $= -\frac{5}{72}$.

(4) 原式 $= \left(-\frac{3}{2}\right) \times \left(-\frac{4}{3}\right) \times \left(-\frac{5}{4}\right) \times \cdots \times \left(-\frac{50}{49}\right) \times \left(-\frac{51}{50}\right)$
 $= -\frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \times \cdots \times \frac{50}{49} \times \frac{51}{50}$
 $= -\frac{51}{2}$.

【标注】【知识点】有理数四则混合运算

20. 计算 :

- (1) $-1 \div \left(-\frac{4}{9}\right) \times \left(-\frac{9}{4}\right)$.
(2) $-2\frac{1}{3} \times \left(-\frac{1}{6}\right) \div (-7) \times \frac{1}{7}$.
(3) $(-81) \div 2\frac{1}{4} \times \frac{4}{9} \div (-16)$.
(4) $(-2) \div \left(-1\frac{6}{7}\right) \times 0.5 \times \left(-3\frac{1}{4}\right) \div 7$.

【答案】 (1) $-\frac{81}{16}$.

(2) $-\frac{1}{126}$.

$$(3) 1.$$

$$(4) -\frac{1}{4}.$$

【解析】 (1) 原式 $= -1 \times \left(-\frac{9}{4}\right) \times \left(-\frac{9}{4}\right) = -\frac{81}{16}.$

$$(2) \text{ 原式} = -\frac{7}{3} \times \left(-\frac{1}{6}\right) \times \left(-\frac{1}{7}\right) \times \frac{1}{7} = -\frac{1}{126}.$$

$$(3) \text{ 原式} = -81 \times \frac{4}{9} \times \frac{4}{9} \times \left(-\frac{1}{16}\right) = 1.$$

$$(4) \text{ 原式} = -2 \times \left(-\frac{7}{13}\right) \times \frac{1}{2} \times \left(-\frac{13}{4}\right) \times \frac{1}{7} = -\frac{1}{4}.$$

【标注】【知识点】有理数乘除混合运算

三、有理数的加减、乘除、乘方混合运算

21. 计算.

$$(1) \left(-\frac{6}{5}\right) \times \left(-\frac{2}{3}\right) + \left(-\frac{6}{5}\right) \div \frac{3}{17}.$$

$$(2) (-10)^3 + [(-4)^2 - (1 - 3^2) \times 2].$$

【答案】 (1) $-6.$

(2) $-968.$

【解析】 (1) 原式 $= -\frac{6}{5} \times \left(-\frac{2}{3}\right) + \left(-\frac{6}{5}\right) \times \frac{17}{3}$
 $= -\frac{6}{5} \times \left(-\frac{2}{3} + \frac{17}{3}\right)$
 $= -\frac{6}{5} \times 5$
 $= -6.$

$$(2) \text{ 原式} = -1000 + [16 - (1 - 9) \times 2]$$

 $= -1000 + (16 + 16)$
 $= -968.$

【标注】【知识点】有理数四则混合运算

22. 计算.

$$(1) -(-1)^{1000} - 2.45 \times 8 + 2.55 \times (-8).$$

$$(2) -2^2 - 5 \times \frac{1}{5} + |-3| - 25 \times 0.$$

【答案】 (1) $-41.$

$$(2) -2.$$

【解析】 (1) 原式 $= -1 - 8 \times (2.45 + 2.55)$
 $= -1 - 8 \times 5$
 $= -1 - 40$
 $= -41.$

(2) 原式 $= -4 - 1 + 3 - 0$
 $= -5 + 3$
 $= -2.$

【标注】【知识点】含乘方的有理数混合运算

23. 计算：

(1) $4 \times (-3)^2 - 13 \div \left(-\frac{1}{2}\right) + |-4^3|.$

(2) $\left|-5\frac{1}{2}\right| \times \left(\frac{1}{3} - \frac{1}{2}\right) \times 0.6 \div (-0.25).$

【答案】 (1) 126.

(2) $\frac{11}{5}.$

【解析】 (1) 原式 $= 4 \times 9 - 13 \times (-2) + |-64|$
 $= 36 + 26 + 64$
 $= 126.$

(2) 原式 $= 5\frac{1}{2} \times \left(-\frac{1}{6}\right) \times \frac{3}{5} \div \left(-\frac{1}{4}\right)$
 $= \frac{11}{2} \times \frac{1}{6} \times \frac{3}{5} \times 4$
 $= \frac{11}{5}.$

【标注】【知识点】有理数四则混合运算

24. 计算.

(1) $16 \div (-8) + \left(-\frac{1}{8}\right) \times (-4).$

(2) $\left(\frac{5}{12} + \frac{2}{3} - \frac{3}{4}\right) \times (-12).$

(3) $-1^4 - (-4)^2 - |3 - 7| \div \left(-\frac{2}{3}\right).$

【答案】 (1) $-\frac{3}{2}.$

(2) -4.

(3) -11.

【解析】 (1) 原式 $= -2 + \frac{1}{2}$

$$= -\frac{3}{2}.$$

$$(2) \text{ 原式} = \left(\frac{5}{12} + \frac{8}{12} - \frac{9}{12} \right) \times (-12)$$

$$= \frac{4}{12} \times (-12)$$

$$= -4.$$

$$(3) \text{ 原式} = -1 - 16 - 4 \times \left(-\frac{3}{2} \right)$$

$$= -17 + 6$$

$$= -11.$$

【标注】【知识点】有理数四则混合运算

25. 计算

$$(1) 18 - 3 \times (-2) \div \left(-\frac{1}{3} \right).$$

$$(2) 1 - 24 \times \left(-\frac{7}{6} + \frac{11}{12} - \frac{13}{24} \right).$$

$$(3) 1\frac{1}{2} \times \frac{5}{7} - \left(-\frac{5}{7} \right) \times 2\frac{1}{2} + \left(-\frac{1}{2} \right) \times \frac{5}{7}.$$

$$(4) -2^4 + (-3) \times |1 - (-2)^3| - (-1)^{2019}.$$

【答案】 (1) 0.

(2) 20.

(3) $\frac{5}{2}$.

(4) -42.

【解析】 (1) 原式 = $18 - 3 \times 2 \times 3$

$$= 18 - 18$$

$$= 0.$$

(2) 原式 = $1 - (-28 + 22 - 13)$

$$= 1 + 28 - 22 + 13$$

$$= 20.$$

$$(3) \text{ 原式} = \frac{5}{7} \times \left(1\frac{1}{2} + 2\frac{1}{2} - \frac{1}{2} \right)$$

$$= \frac{5}{7} \times \frac{7}{2}$$

$$= \frac{5}{2}.$$

(4) 原式 = $-16 - 3 \times |1 + 8| + 1$

$$= -16 - 3 \times 9 + 1$$

$$= -16 - 27 + 1$$

$$= -43 + 1$$

$$= -42 .$$

【标注】【知识点】有理数四则混合运算

26. 计算 .

- (1) $\left(-10\frac{1}{8}\right) \div 2\frac{1}{4} \times \left(-\frac{4}{9}\right) \div (-2) .$
 (2) $13 \times 1\frac{2}{3} - 0.34 \times \frac{2}{7} + \frac{1}{3} \times 13 + \left(-9\frac{5}{7}\right) \times 0.34 .$
 (3) $-1 - \left\{(-3)^3 - \left[3 + 0.4 \times \left(-1\frac{1}{2}\right)\right] \div (-2)\right\} .$

【答案】 (1) $-1 .$

(2) $22.6 .$

(3) $24\frac{4}{5} .$

【解析】 (1) $\left(-10\frac{1}{8}\right) \div 2\frac{1}{4} \times \left(-\frac{4}{9}\right) \div (-2)$
 $= \left(-\frac{81}{8}\right) \times \frac{4}{9} \times \left(-\frac{4}{9}\right) \times \left(-\frac{1}{2}\right)$
 $= -1 .$

(2) $13 \times 1\frac{2}{3} - 0.34 \times \frac{2}{7} + \frac{1}{3} \times 13 + \left(-9\frac{5}{7}\right) \times 0.34$
 $= 13 \times \frac{5}{3} + \frac{1}{3} \times 13 - 0.34 \times \frac{2}{7} + 0.34 \times \left(-\frac{68}{7}\right)$
 $= 13 \times \left(\frac{5}{3} + \frac{1}{3}\right) - 0.34 \left(\frac{2}{7} + \frac{68}{7}\right)$
 $= 13 \times 2 - 0.34 \times 10$
 $= 26 - 3.4$
 $= 22.6 .$

(3) $-1 - \left\{(-3)^3 - \left[3 + 0.4 \times \left(-1\frac{1}{2}\right)\right] \div (-2)\right\}$
 $= -1 - \left\{-27 - \left[3 - \frac{3}{5}\right] \times \left(-\frac{1}{2}\right)\right\}$
 $= -1 - \left\{-27 - \frac{12}{5} \times \left(-\frac{1}{2}\right)\right\}$
 $= -1 - \left\{-27 + \frac{6}{5}\right\}$
 $= -1 + 27 - \frac{6}{5}$
 $= 26 - \frac{6}{5}$
 $= 24\frac{4}{5} .$

【标注】【知识点】有理数乘除混合运算

27. 计算题 .

- (1) $-\left|-\frac{2}{3}\right| - \left|-\frac{1}{2} \times \frac{2}{3}\right| - \left|\frac{1}{3} - \frac{1}{4}\right| - |-3| .$

$$\begin{aligned} (2) & \left(-\frac{3}{4} - \frac{5}{6} + \frac{7}{12}\right) \div \frac{1}{24} . \\ (3) & \left(-\frac{1}{2}\right)^2 + 6\frac{1}{2} \times \frac{4}{13} - (-2)^4 \div (-16) . \\ (4) & -14 - 14 \times \left[-2^2 + \left(-\frac{2}{3}\right)^2 \times (-3)^3\right] . \end{aligned}$$

【答案】

$$\begin{aligned} (1) & -\frac{49}{12} . \\ (2) & -24 . \\ (3) & \frac{13}{4} . \\ (4) & 210 . \end{aligned}$$

【解析】

$$\begin{aligned} (1) \text{ 原式} &= -\frac{2}{3} - \frac{1}{3} - \frac{1}{12} - 3 \\ &= -\frac{49}{12} . \\ (2) \text{ 原式} &= \left(-\frac{18}{24} - \frac{20}{24} + \frac{14}{24}\right) \times 24 \\ &= -1 \times 24 \\ &= -24 . \\ (3) \text{ 原式} &= \frac{1}{4} + \frac{13}{2} \times \frac{4}{13} - 16 \div (-16) \\ &= \frac{1}{4} + 2 + 1 \\ &= \frac{13}{4} . \\ (4) \text{ 原式} &= -14 - 14 \times \left[-4 + \frac{4}{9} \times (-27)\right] \\ &= -14 - 14 \times (-4 - 12) \\ &= -14 + 14 \times 16 \\ &= 14 \times 15 \\ &= 210 . \end{aligned}$$

【标注】【知识点】有理数四则混合运算

28. 计算 .

$$\begin{aligned} (1) & (-7) \times (-5) - 90 \div (-15) + \left(-\frac{3}{4}\right) \div (-0.25) . \\ (2) & -3^2 \times (-2) - 4 \div \left(-\frac{1}{9}\right) - (-3) \times [(-2)^3 + 2] + (-28) . \\ (3) & \left(\frac{1}{4} + \frac{1}{6} - \frac{1}{12}\right) \times (-12) - \left(-\frac{3}{4}\right) \times 14 + \left(-\frac{3}{4}\right) \times (-10) . \end{aligned}$$

【答案】

$$\begin{aligned} (1) & 44 . \\ (2) & 8 . \\ (3) & 14 . \end{aligned}$$

【解析】 (1) $(-7) \times (-5) - 90 \div (-15) + \left(-\frac{3}{4}\right) \div (-0.25)$

$$= 35 + 6 + 3$$

$$= 44.$$

(2) $-3^2 \times (-2) - 4 \div \left(-\frac{1}{9}\right) - (-3) \times [(-2)^3 + 2] + (-28)$

$$= -9 \times (-2) - 4 \times (-9) + 3 \times [(-8) + 2] - 28$$

$$= 18 + 36 - 18 - 28$$

$$= 8.$$

(3) $\left(\frac{1}{4} + \frac{1}{6} - \frac{1}{12}\right) \times (-12) - \left(-\frac{3}{4}\right) \times 14 + \left(-\frac{3}{4}\right) \times (-10)$

$$= \left(\frac{3+2-1}{12}\right) \times (-12) + \left(\frac{42}{4} + \frac{30}{4}\right)$$

$$= -4 + 18$$

$$= 14.$$

【标注】【知识点】有理数四则混合运算

29. 计算：

(1) $1\frac{1}{2} \times \frac{5}{7} - \left(-\frac{5}{7}\right) \times 2\frac{1}{2} + \left(-\frac{1}{2}\right) \times \frac{5}{7}.$

(2) $-3 - \left[-5 + \left(1 - \frac{2}{3} \times \frac{9}{4}\right) \div (-3)\right].$

(3) $(-3)^2 \times \left[\left(-\frac{1}{3}\right) - \frac{4}{9}\right] - 6 \div \left(-\frac{2}{3}\right)^2 + \left[-\left(\frac{3}{2}\right)^2 + 1\right] \times (-2)^3.$

【答案】 (1) $\frac{5}{2}.$

(2) $\frac{11}{6}.$

(3) $-\frac{21}{2}.$

【解析】 (1) 原式 $= \frac{3}{2} \times \frac{5}{7} + \frac{5}{7} \times \frac{5}{2} - \frac{1}{2} \times \frac{5}{7}$

$$= \frac{5}{7} \times \left(\frac{3}{2} + \frac{5}{2} - \frac{1}{2}\right)$$

$$= \frac{5}{7} \times \frac{7}{2}$$

$$= \frac{5}{2}.$$

(2) 原式 $= -3 - \left[-5 + \left(1 - \frac{3}{2}\right) \div (-3)\right]$

$$= -3 - \left[-5 + \left(-\frac{1}{2}\right) \div (-3)\right]$$

$$= -3 - \left(-5 + \frac{1}{6}\right)$$

$$= -3 + 5 - \frac{1}{6}$$

$$= 2 - \frac{1}{6}$$

$$= \frac{11}{6}.$$

$$\begin{aligned}
 (3) \text{ 原式} &= 9 \times \left(-\frac{7}{9}\right) - 6 \times \frac{9}{4} + \left(-\frac{9}{4} + 1\right) \times (-8) \\
 &= -7 - \frac{27}{2} + \left(-\frac{5}{4}\right) \times (-8) \\
 &= -7 - \frac{27}{2} + 10 \\
 &= 3 - \frac{27}{2} \\
 &= -\frac{21}{2}.
 \end{aligned}$$

【标注】【知识点】含乘方的有理数混合运算

30. 计算.

$$\begin{aligned}
 (1) & \left| -\frac{7}{9} \right| \div \left(\frac{2}{3} - \frac{1}{5} \right) - \frac{1}{3} \times (-4)^2. \\
 (2) & -2^2 - (-2)^2 + (-3)^2 \times \left(-\frac{2}{3} \right) - 4^2 \div |-4|. \\
 (3) & 1\frac{2}{3} - \left\{ 5\frac{3}{4} - 2^2 \div \left[\left(-\frac{1}{2} \right)^2 + 3 \times \left(-\frac{3}{4} \right) \right] \times \frac{1}{8} \right\}. \\
 (4) & 11.35 \times \left(-\frac{2}{3} \right)^2 + 1.05 \times \left(-\frac{2}{9} \right)^2 - 7.7 \times \left(-\frac{4}{3^2} \right).
 \end{aligned}$$

【答案】 (1) $-\frac{11}{3}$.

(2) -18 .

(3) $-4\frac{1}{3}$.

(4) $\frac{230}{27}$.

【解析】 (1) 原式 $= \frac{7}{9} \div \frac{7}{15} - \frac{1}{3} \times 16$
 $= \frac{5}{3} - \frac{16}{3}$
 $= -\frac{11}{3}.$

(2) 原式 $= -4 - 4 + 9 \times \left(-\frac{2}{3} \right) - 16 \div 4$
 $= -8 - 6 - 4$
 $= -14 - 4$
 $= -18.$

(3) 原式 $= 1\frac{2}{3} - \left[5\frac{3}{4} - 4 \div \left(\frac{1}{4} - \frac{9}{4} \right) \times \frac{1}{8} \right]$
 $= 1\frac{2}{3} - \left[5\frac{3}{4} - 4 \div (-2) \times \frac{1}{8} \right]$
 $= -\frac{2}{3} - \left[5\frac{3}{4} + 2 \times \frac{1}{8} \right]$
 $= 1\frac{2}{3} - \left(5\frac{3}{4} + \frac{1}{4} \right)$
 $= 1\frac{2}{3} - 6$
 $= -4\frac{1}{3}.$

(4) 原式 $= 11.35 \times \frac{4}{9} + 1.05 \times \frac{4}{81} + 7.7 \times \frac{4}{9}$

$$\begin{aligned}
&= \frac{4}{9} \times \left(11.35 + 1.05 \times \frac{1}{9} + 7.7 \right) \\
&= \frac{4}{9} \times \left(19.05 + \frac{7}{60} \right) \\
&= \frac{4}{9} \times 19\frac{1}{6} \\
&= \frac{230}{27} .
\end{aligned}$$

【标注】【知识点】含乘方的有理数混合运算