

数の計算への利用

学習日 月 日

年 組 番 氏名

POINT

乗法公式，因数分解の公式などを利用すると，数の計算が簡単にできる場合がある。

(1) 次の□にあてはまる数を入れなさい。

$$\begin{aligned} \textcircled{1} \quad 59^2 &= (\square - \square)^2 \\ &= \square - 2 \times \square + \square \\ &= \square \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 78 \times 82 &= (\square - \square)(\square + \square) \\ &= \square^2 - \square^2 \\ &= \square - \square \\ &= \square \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 63^2 - 37^2 &= (\square + \square)(\square - \square) \\ &= \square \times \square \\ &= \square \end{aligned}$$

(2) 次の計算をなさい。

① 103^2

② 102×98

③ $73^2 - 27^2$

④ 0.98^2

⑤ 1998×2002

⑥ $504^2 - 496^2$

⑦ $19 \times 201 + 199 \times 19$

⑧ $102 \times 103 - 104 \times 101$

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(1) 次の□にあてはまる数を入れなさい。

$$\begin{aligned} \textcircled{1} \quad 59^2 &= (\boxed{60} - \boxed{1})^2 \\ &= \boxed{3600} - 2 \times \boxed{60} + \boxed{1} \\ &= \boxed{3481} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 78 \times 82 &= (\boxed{80} - \boxed{2})(\boxed{80} + \boxed{2}) \\ &= \boxed{80}^2 - \boxed{2}^2 \\ &= \boxed{6400} - \boxed{4} \\ &= \boxed{6396} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 63^2 - 37^2 &= (\boxed{63} + \boxed{37})(\boxed{63} - \boxed{37}) \\ &= \boxed{100} \times \boxed{26} \\ &= \boxed{2600} \end{aligned}$$

(2) 次の計算をなさい。

$$\begin{aligned} \textcircled{1} \quad 103^2 &= (\boxed{100} + \boxed{3})^2 \\ &= \boxed{10000} + 2 \times \boxed{300} + \boxed{9} \\ &= \boxed{10609} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 102 \times 98 &= (\boxed{100} + \boxed{2})(\boxed{100} - \boxed{2}) \\ &= \boxed{10000} - \boxed{4} \\ &= \boxed{9996} \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad 73^2 - 27^2 &= (\boxed{73} + \boxed{27})(\boxed{73} - \boxed{27}) \\ &= \boxed{100} \times \boxed{46} \\ &= \boxed{4600} \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad 0.98^2 &= (\boxed{1} - \boxed{0.02})^2 \\ &= \boxed{1} - 2 \times \boxed{0.02} + \boxed{0.0004} \\ &= \boxed{0.9604} \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad 1998 \times 2002 &= (\boxed{2000} - \boxed{2})(\boxed{2000} + \boxed{2}) \\ &= \boxed{4000000} - \boxed{4} \\ &= \boxed{3999996} \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad 504^2 - 496^2 &= (\boxed{504} + \boxed{496})(\boxed{504} - \boxed{496}) \\ &= \boxed{1000} \times \boxed{8} \\ &= \boxed{8000} \end{aligned}$$

$$\begin{aligned} \textcircled{7} \quad 19 \times 201 + 199 \times 19 &= \boxed{19} \times (\boxed{201} + \boxed{199}) \\ &= \boxed{19} \times \boxed{400} \\ &= \boxed{7600} \end{aligned}$$

$$\begin{aligned} \textcircled{8} \quad 102 \times 103 - 104 \times 101 &= (\boxed{100} + \boxed{2})(\boxed{100} + \boxed{3}) - (\boxed{100} + \boxed{4})(\boxed{100} + \boxed{1}) \\ &= (\boxed{10000} + \boxed{500} + \boxed{6}) - (\boxed{10000} + \boxed{500} + \boxed{4}) \\ &= \boxed{2} \end{aligned}$$