p.17 練習問題

1 ① $10xy$ ② $8mn$ ③ $42abc$ ④ $-12ab$
⑤ $-6xyz$ ⑥ $28abc$ ⑦ $3xy$ ⑧ $-4ab$ ⑨ $6xyz$
⑩ $\frac{1}{10}ab$ ⑪ $\frac{1}{2}xy$ ⑫ $-\frac{1}{6}abc$

2 ① a^3 ② $-4x^5$ ③ $10a^4$ ④ $36x^2$ ⑤ $-a^2$
⑥ $-27a^3$ ⑦ $-12a^2b$ ⑧ $50ab^2$ ⑨ $-18x^3y$
⑩ $3x^2y$ ⑪ $3x^3$ ⑫ $-10xy^3$

3 ① $8a^2b^3$ ② $-8a^3b^4$ ③ $-\frac{1}{4}x^4y^2$ ④ $3a^3b^2$
⑤ $45x^2y^3$ ⑥ $-16a^4b^3$ ⑦ $2a^3b$ ⑧ $\frac{1}{4}x^5$
⑨ $\frac{8}{3}x^5y^3$

4 ① -4 ② $3b$ ③ $-3yz$ ④ $\frac{1}{3}$ ⑤ $-\frac{y}{2}$
⑥ $\frac{2c}{3}$ ⑦ $-2a^2$ ⑧ $3x$ ⑨ xy ⑩ $3a$ ⑪ $7b$
⑫ $-\frac{4a}{b}$

5 ① $\frac{y}{3}$ ② $-\frac{2a}{5}$ ③ $\frac{2c}{7}$ ④ $2ab$ ⑤ $-8b$
⑥ $-12x$ ⑦ $\frac{2x}{3}$ ⑧ $-4b$ ⑨ $-\frac{2x}{3y}$

■解説

1 ⑥ $=(-4)\times a\times b\times(-7)\times c=(-4)\times(-7)\times a\times b\times c=28abc$

⑨ $=(-8)\times x\times y\times\left(-\frac{3}{4}\right)\times z=(-8)\times\left(-\frac{3}{4}\right)\times x\times y\times z=6xyz$

⑪ $=\left(-\frac{3}{4}\right)\times x\times\left(-\frac{2}{3}\right)\times y=\left(-\frac{3}{4}\right)\times\left(-\frac{2}{3}\right)\times x\times y=\frac{1}{2}xy$

⑫ $=\frac{5}{9}\times a\times b\times\left(-\frac{3}{10}\right)\times c=\frac{5}{9}\times\left(-\frac{3}{10}\right)\times a\times b\times c=-\frac{1}{6}abc$

2 ③ $=5\times a^3\times 2\times a=5\times 2\times a^3\times a=10a^4$

⑤ $=-(-a)\times(-a)=-a^2$

⑨ $=(-3x)\times(-3x)\times(-2xy)=9x^2\times(-2xy)=-18x^3y$

⑫ $=\left(-\frac{5}{8}xy\right)\times(-4y)\times(-4y)=\left(-\frac{5}{8}xy\right)\times 16y^2=-10xy^3$

3 ② $=2\times a^2\times b\times(-4)\times a\times b^3=-8a^3b^4$

⑤ $=5y\times(-3xy)\times(-3xy)=5y\times 9x^2y^2=45x^2y^3$

⑧ $=4x\times\left(-\frac{1}{4}x^2\right)\times\left(-\frac{1}{4}x^2\right)=4x\times\frac{1}{16}x^4=\frac{1}{4}x^5$

⑨ $=\left(-\frac{2}{3}xy\right)\times\left(-\frac{2}{3}xy\right)\times\left(-\frac{2}{3}xy\right)\times(-9x^2)$
$=-\frac{8}{27}x^3y^3\times(-9x^2)=\frac{8}{3}x^5y^3$

4 ③ $=-\frac{18xyz}{6x}=-\frac{{}^{3}\cancel{18}\times\cancel{x}^{1}\times y\times z}{{}_{1}\cancel{6}\times{}_{1}\cancel{x}}=-3yz$

⑥ $=\frac{6abc}{9ab}=\frac{{}^{2}\cancel{6}\times\cancel{a}^{1}\times\cancel{b}^{1}\times c}{{}_{3}\cancel{9}\times{}_{1}\cancel{a}\times{}_{1}\cancel{b}}=\frac{2c}{3}$

⑧ $=\frac{24x^3}{8x^2}=\frac{{}^{3}\cancel{24}\times\cancel{x}^{1}\times\cancel{x}^{1}\times x}{{}_{1}\cancel{8}\times{}_{1}\cancel{x}\times{}_{1}\cancel{x}}=3x$

⑪ $=\frac{14ab^2}{2ab}=\frac{{}^{7}\cancel{14}\times\cancel{a}^{1}\times\cancel{b}^{1}\times b}{{}_{1}\cancel{2}\times{}_{1}\cancel{a}\times{}_{1}\cancel{b}}=7b$

⑫ $=-\frac{8a^2b}{2ab^2}=-\frac{{}^{4}\cancel{8}\times\cancel{a}^{1}\times a\times\cancel{b}^{1}}{{}_{1}\cancel{2}\times{}_{1}\cancel{a}\times{}_{1}\cancel{b}\times b}=-\frac{4a}{b}$

5 ③ $=\left(-\frac{6abc}{7}\right)\times\left(-\frac{1}{3ab}\right)=\frac{{}^{2}\cancel{6}\times\cancel{a}^{1}\times\cancel{b}^{1}\times c}{7}\times\frac{1}{{}_{1}\cancel{3}\times{}_{1}\cancel{a}\times{}_{1}\cancel{b}}=\frac{2c}{7}$

⑤ $=-\frac{6ab}{1}\times\frac{4}{3a}=-\frac{{}^{2}\cancel{6}\times\cancel{a}^{1}\times b}{1}\times\frac{4}{{}_{1}\cancel{3}\times{}_{1}\cancel{a}}=-8b$

⑧ $=-\frac{6abc}{5}\times\frac{10}{3ac}=-\frac{{}^{2}\cancel{6}\times\cancel{a}^{1}\times b\times\cancel{c}^{1}}{{}_{1}\cancel{5}}\times\frac{{}^{2}\cancel{10}}{{}_{1}\cancel{3}\times{}_{1}\cancel{a}\times{}_{1}\cancel{c}}=-4b$

⑨ $=\frac{3x^2y}{4}\times\left(-\frac{8}{9xy^2}\right)=-\frac{{}^{1}\cancel{3}\times\cancel{x}^{1}\times x\times\cancel{y}^{1}}{{}_{1}\cancel{4}}\times\frac{{}^{2}\cancel{8}}{{}_{3}\cancel{9}\times{}_{1}\cancel{x}\times{}_{1}\cancel{y}\times y}$
$=-\frac{2x}{3y}$

p.18 練習問題

6 ① a^2 ② 1 ③ xy ④ $2x^2$ ⑤ $-y$ ⑥ 3
⑦ $-b$ ⑧ $-2xy$ ⑨ $2b$ ⑩ x^2 ⑪ $-4a^2$
⑫ $\frac{1}{5}$ ⑬ $3b$ ⑭ $2a^2$ ⑮ $-4xy$

7 ① $18a$ ② $-6x$ ③ $3b$ ④ $12y$ ⑤ $\frac{9}{2}$
⑥ $-6a^2b$

8 ① $3a$ ② $-\frac{y}{2}$ ③ $-2x$ ④ $\frac{y}{6}$ ⑤ $\frac{y^3}{3}$
⑥ $-\frac{a^2b}{5}$

■解説

6 ⑤ $=-\frac{4xy\times 2x}{8x^2}=-\frac{4\times x\times y\times 2\times x}{8\times x\times x}=-y$

⑧ $=-\frac{6x^2\times 3y^2}{9xy}=-\frac{6\times x\times x\times 3\times y\times y}{9\times x\times y}=-2xy$

⑨ $=\frac{24a^2b^2}{4ab\times 3a}=\frac{24\times a\times a\times b\times b}{4\times a\times b\times 3\times a}=2b$

⑪ $=\frac{a^2}{3}\times\left(-\frac{2}{a}\right)\times\frac{6a}{1}=-\frac{a^2\times 2\times 6a}{3\times a\times 1}=-4a^2$

⑫ $=\left(-\frac{2xy}{3}\right)\times\left(-\frac{1}{4y}\right)\times\frac{6}{5x}=\frac{2xy\times 1\times 6}{3\times 4y\times 5x}=\frac{1}{5}$

⑮ $=\frac{x^2y}{2}\times\frac{4}{3xy}\times\left(-\frac{6y}{1}\right)=-\frac{x^2y\times 4\times 6y}{2\times 3xy\times 1}=-4xy$

7 ③ $=3ab\div 4a^3\times 4a^2=\frac{3ab\times 4a^2}{4a^3}=3b$

⑤ $=6a^2b\times 3b\div 4a^2b^2=\frac{6a^2b\times 3b}{4a^2b^2}=\frac{9}{2}$

⑥ $=4ab\div(-6ab^2)\times 9a^2b^2=-\frac{4ab\times 9a^2b^2}{6ab^2}=-6a^2b$

8 ② $=18x\times\frac{1}{9}y^2\div(-4xy)=\frac{18x}{1}\times\frac{y^2}{9}\times\left(-\frac{1}{4xy}\right)$
$=-\frac{18x\times y^2\times 1}{1\times 9\times 4xy}=-\frac{y}{2}$

⑤ $=12x^2y\div 16x^2\times\frac{4}{9}y^2=\frac{12x^2y}{1}\times\frac{1}{16x^2}\times\frac{4y^2}{9}$
$=\frac{12x^2y\times 1\times 4y^2}{1\times 16x^2\times 9}=\frac{y^3}{3}$

⑥ $=\frac{1}{4}a^2\times\left(-\frac{2}{3}ab^2\right)\div\frac{5}{6}ab=\frac{a^2}{4}\times\left(-\frac{2ab^2}{3}\right)\times\frac{6}{5ab}$
$=-\frac{a^2\times 2ab^2\times 6}{4\times 3\times 5ab}=-\frac{a^2b}{5}$