

Name: _____

Score: _____

Quotient Rule

Use quotient rule and simplify. Write your answers with positive exponents.

1) $\frac{9x^{-1}y^{-4}z^7}{4xy^{10}z^{10}}$

2) $\frac{3a^3b^8c^{-7}}{6a^{-2}b^7c^5}$

3) $\frac{2p^{-7}q^{-2}r^5}{8pq^3r^6}$

4) $\frac{4u^{-7}vw^{-2}}{u^{-10}v^8w^{-10}}$

5) $\frac{5^m5^65^3}{5^{-5}5^{-m}5^{-4}}$

6) $\frac{8x^4y^{-9}}{4x^{10}y^{-4}}$

7) $\frac{b^{-3}c^{-3}d^{-2}}{5b^{-8}c^{-4}d^2}$

8) $\frac{9q^{-7}r^{-1}s^{-3}}{3q^4r^{-4}s^3}$

9) $\frac{6^{-r}6^{-4}6^{-3}}{6^r6^86^7}$

10) $\frac{3w^9x^{-2}y^{-2}}{7w^{-2}x^{-1}y^{-9}}$

11) $\frac{4m^{-2}n^2}{5m^8n^{-6}}$

12) $\frac{6k^4l^{-2}m^3}{2k^9l^8m^3}$

13) $\frac{9^u9^89^{-3}}{9^{-4}9^{-u}9^{-6}}$

14) $\frac{5r^5s^8t^6}{8r^2s^{-10}t^{-2}}$

15) $\frac{8p^3q^{-10}}{5p^8q^4r^{-1}}$

16) $\frac{3r^{-7}s^{-2}}{9qr^9s^{-8}}$

17) $\frac{7a^2b^5}{9a^3b^6}$

18) $\frac{7b^{-7}c^2d^3}{4c^{-8}d^5}$

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Answers

$$1) \frac{9x^{-1}y^{-4}z^7}{4xy^{10}z^{10}}$$

$$= \frac{9}{4x^2y^{14}z^3}$$

$$2) \frac{3a^3b^8c^{-7}}{6a^{-2}b^7c^5}$$

$$= \frac{a^5b}{2c^{12}}$$

$$3) \frac{2p^{-7}q^{-2}r^5}{8pq^3r^6}$$

$$= \frac{1}{4p^8q^5r}$$

$$4) \frac{4u^{-7}vw^{-2}}{u^{-10}v^8w^{-10}}$$

$$= \frac{4u^3w^8}{v^7}$$

$$5) \frac{5^m5^65^3}{5^{-5}5^{-m}5^{-4}}$$

$$= 5^{2m+18}$$

$$6) \frac{8x^4y^{-9}}{4x^{10}y^{-4}}$$

$$= \frac{2}{x^6y^5}$$

$$7) \frac{b^{-3}c^{-3}d^{-2}}{5b^{-8}c^{-4}d^2}$$

$$= \frac{b^5c}{5d^4}$$

$$8) \frac{9q^{-7}r^{-1}s^{-3}}{3q^4r^{-4}s^3}$$

$$= \frac{3r^3}{q^{11}s^6}$$

$$9) \frac{6^{-r}6^{-4}6^{-3}}{6^r6^86^7}$$

$$= \frac{1}{6^{2r+22}}$$

$$10) \frac{3w^9x^{-2}y^{-2}}{7w^{-2}x^{-1}y^{-9}}$$

$$= \frac{3w^{11}y^7}{7x}$$

$$11) \frac{4m^{-2}n^2}{5m^8n^{-6}}$$

$$= \frac{4n^8}{5m^{10}}$$

$$12) \frac{6k^4l^{-2}m^3}{2k^9l^8m^3}$$

$$= \frac{3}{k^5l^{10}}$$

$$13) \frac{9^u9^89^{-3}}{9^{-4}9^{-u}9^{-6}}$$

$$= 9^{2u+15}$$

$$14) \frac{5r^5s^8t^6}{8r^2s^{-10}t^{-2}}$$

$$= \frac{5r^3s^{18}t^8}{8}$$

$$15) \frac{8p^3q^{-10}}{5p^8q^4r^{-1}}$$

$$= \frac{8r}{5p^5q^{14}}$$

$$16) \frac{3r^{-7}s^{-2}}{9qr^9s^{-8}}$$

$$= \frac{s^6}{3qr^{16}}$$

$$17) \frac{7a^2b^5}{9a^3b^6}$$

$$= \frac{7}{9ab}$$

$$18) \frac{7b^{-7}c^2d^3}{4c^{-8}d^5}$$

$$= \frac{7c^{10}}{4b^7d^2}$$