

Math Sheet

Name _____ Score _____ / 10 Teacher _____ Date _____

Dividing Rational Expressions

Divide and simplify. Keep both original denominators and the divisor numerator nonzero.

1. $\frac{15q^2 - 2q - 1}{63q^2 - 66q + 15} \div \frac{q^2}{42q^2 - 135q + 75}$

2. $\frac{27q^5}{3} \div \frac{9}{3}$

3. $\frac{11s}{s - 8} \div \frac{11s}{7s - 56}$

4. $\frac{n^2 - 22n + 120}{n^2 - n - 132} \div \frac{1}{n + 11}$

5. $\frac{14n^6}{6} \div \frac{42n}{10}$

6. $\frac{m + 9}{m^2 + 4m - 45} \div \frac{2m}{m - 2}$

7. $\frac{30y^2}{11} \div \frac{18}{5}$

8. $\frac{6s}{s - 4} \div \frac{6s}{12s - 48}$

9. $\frac{88n^6}{7} \div \frac{132n^5}{4}$

10. $\frac{110y + 120}{6} \div \frac{99y + 108}{6y}$

Dividing Rational Expressions

Answer Key

Divide and simplify. Keep both original denominators and the divisor numerator nonzero.

$$1. \quad \frac{15q^2 - 2q - 1}{63q^2 - 66q + 15} \div \frac{q^2}{42q^2 - 135q + 75}$$

$$= \frac{(2q - 5)(5q + 1)}{q^2}$$

Restrictions: $63q^2 - 66q + 15 \neq 0$ $42q^2 - 135q + 75 \neq 0$
 $q^2 \neq 0$

$$2. \quad \frac{27q^5}{3} \div \frac{9}{3}$$

$$= 3q^5$$

$$3. \quad \frac{11s}{s - 8} \div \frac{11s}{7s - 56}$$

$$= 7$$

Restrictions: $s - 8 \neq 0$ $7s - 56 \neq 0$ $11s \neq 0$

$$4. \quad \frac{n^2 - 22n + 120}{n^2 - n - 132} \div \frac{1}{n + 11}$$

$$= n - 10$$

Restrictions: $n^2 - n - 132 \neq 0$ $n + 11 \neq 0$

$$5. \quad \frac{14n^6}{6} \div \frac{42n}{10}$$

$$= \frac{5n^5}{9}$$

Restrictions: $42n \neq 0$

$$6. \quad \frac{m + 9}{m^2 + 4m - 45} \div \frac{2m}{m - 2}$$

$$= \frac{m - 2}{2m(m - 5)}$$

Restrictions: $m^2 + 4m - 45 \neq 0$ $m - 2 \neq 0$ $2m \neq 0$

$$7. \quad \frac{30y^2}{11} \div \frac{18}{5}$$

$$= \frac{25y^2}{33}$$

$$8. \quad \frac{6s}{s - 4} \div \frac{6s}{12s - 48}$$

$$= 12$$

Restrictions: $s - 4 \neq 0$ $12s - 48 \neq 0$ $6s \neq 0$

$$9. \quad \frac{88n^6}{7} \div \frac{132n^5}{4}$$

$$= \frac{8n}{21}$$

Restrictions: $132n^5 \neq 0$

$$10. \quad \frac{110y + 120}{6} \div \frac{99y + 108}{6y}$$

$$= \frac{10y}{9}$$

Restrictions: $6y \neq 0$ $99y + 108 \neq 0$