

STUDY GUIDE MULTIPLICATION AND DIVISION OF RATIONAL NUMBERS AND EXPRESSIONS
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Change the fraction into a decimal. Round your answer to the nearest hundredth, if necessary.

1) $\frac{7}{8}$

A) .09

B) 1.14

C) 8.75

D) .88

Change the improper fraction into a mixed number.

2) $\frac{130}{9}$

A) $130\frac{130}{9}$

B) $130\frac{9}{130}$

C) $14\frac{4}{9}$

D) $\frac{9}{130}$

Change the mixed number into an improper fraction.

3) $4\frac{7}{9}$

A) $\frac{36}{9}$

B) $\frac{43}{9}$

C) $\frac{43}{7}$

D) $\frac{36}{7}$

Write the fraction in lowest terms.

4) $\frac{30}{66}$

A) $\frac{11}{5}$

B) $\frac{65}{29}$

C) $\frac{30}{66}$

D) $\frac{5}{11}$

Reduce the rational expression.

5) $\frac{18m^3p^2}{6m^{10}p}$

A) $3mp$

B) $3m^7p^2$

C) $\frac{3p}{m^7}$

D) $\frac{3m^7}{p}$

Find all the numbers that make the rational expression undefined.

6) $\frac{7}{b+7}$

A) $b = 0$

B) None

C) $b = 7$

D) $b = -7$

Reduce the rational expression to lowest terms.

7) $\frac{a^2 - 7a}{(a+3)(a-7)}$

A) $\frac{1}{a+3}$

B) $\frac{a}{a+3}$

C) $\frac{a^2}{a+3}$

D) $\frac{a-7}{a+3}$

Find the product. Leave answer reduced to lowest terms, and assume that all variables have nonzero values.

8) $\frac{14}{30} \cdot \frac{5}{2}$

A) $\frac{35}{12}$

B) $\frac{70}{60}$

C) $\frac{19}{42}$

D) $\frac{7}{6}$

9) $6\frac{2}{9} \cdot 2\frac{4}{7}$

A) 17

B) $12\frac{8}{63}$

C) 16

D) 18

10) $-\frac{12}{5} \cdot \left(-\frac{40}{9}\right) \cdot 80$

A) $\frac{2560}{3}$

B) $-\frac{2560}{9}$

C) $-\frac{2560}{3}$

D) $-\frac{40}{3}$

Find the product. Leave answer reduced to lowest terms.

11) $\frac{4z^2 - 64}{5x} \cdot \frac{5x^2 - 20x}{2z - 8}$

A) $\frac{4z^2 - 2z - 64}{x - 4}$

B) $\frac{(2z + 8)(x - 4)(x + 4)}{x}$

C) $(2z + 8)(x - 4)$

D) $(2z - 8)(x - 4)$

Find the quotient of the fractions. Leave the answer reduced to lowest terms.

12) $\frac{5}{11} \div \frac{10}{77}$

A) $\frac{50}{847}$

B) $\frac{7}{2}$

C) $\frac{35}{2}$

D) $\frac{2}{7}$

13) $2\frac{8}{9} \div 13$

A) $\frac{2}{9}$

B) $\frac{1}{9}$

C) $\frac{2}{8}$

D) $\frac{3}{9}$

14) $\frac{8p - 8}{p} \div \frac{9p - 9}{7p^2}$

A) $\frac{56p}{9}$

B) $\frac{72p^2 + 144p + 72}{7p^3}$

C) $\frac{56p^3 - 56p^2}{9p^2 - 9p}$

D) $\frac{9}{56p}$

Find the quotient using long division.

15) $\frac{p^2 + 3p - 1}{p + 5}$

A) $p + 2 + \frac{9}{p + 5}$

B) $p - 2 + \frac{9}{p + 5}$

C) $p - 9 + \frac{2}{p + 5}$

D) $p - 2$

$$16) \frac{x^2 + 17x + 63}{x + 9}$$

A) $x + 9$

B) $x + 8 - \frac{9}{x + 9}$

C) $\frac{x + 8}{x + 9}$

D) $x + 8 + \frac{9}{x + 9}$

Find the product. Leave answer reduced to lowest terms.

$$17) \frac{t - 7}{t^2 - 4t - 12} \cdot \frac{t + 2}{t^2 - 14t + 49}$$

A) $\frac{1}{(t - 6)(t - 7)}$

B) $\frac{(t - 7)}{(t - 6)(t - 7)(t + 7)}$

C) $-\frac{1}{6(t + 7)}$

D) $\frac{t}{(t + 6)(t + 7)}$

Reduce the rational expression to lowest terms.

$$18) \frac{7 - m}{m - 7}$$

A) 0

B) -1

C) 1

D) -m

$$19) \frac{(y + 6)(4 - y)}{(-y + 4)(6 + y)}$$

A) 0

B) -y

C) -1

D) 1

$$20) \frac{6k - 42}{21 - 3k}$$

A) 2

B) 1

C) -1

D) -2

Find the quotient.

$$21) \frac{2x^3y^3}{3xy} \div \frac{x^2y^4}{15xy^3}$$

A) $\frac{xy}{10}$

B) 10xy

C) $\frac{10x}{y}$

D) $\frac{10y}{x}$

$$22) \frac{z^2 + 8z + 15}{z^2 + 13z + 40} \div \frac{z^2 + 3z}{z^2 + 16z + 64}$$

A) $z + 8$

B) $\frac{z + 8}{z}$

C) $\frac{z}{z^2 + 13z + 40}$

D) $\frac{z + 8}{z^2 + 8z}$

$$23) \frac{x^2 - 36}{x} \div \frac{7x + 42}{x - 6}$$

A) $\frac{7(x + 6)^2}{x}$

B) $\frac{7x}{(x - 6)^2}$

C) $\frac{(x - 6)^2}{x}$

D) $\frac{(x - 6)^2}{7x}$

Find the indicated value of the given function.

$$24) f(x) = \frac{7x^2 + 3x}{2x}, f(-3)$$

A) -9

B) -12

C) 12

D) 9

25) $f(x) = \frac{7x - 4}{2x^2 - 4x + 1}$, $f(-4)$

A) $\frac{24}{49}$

B) $-\frac{32}{15}$

C) $-\frac{32}{49}$

D) $-\frac{24}{49}$