

## Simplifying, Multiplying, and Dividing Rationals

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Simplify.

1)  $\frac{7x+42}{7x-42}$  1) \_\_\_\_\_

2)  $\frac{21x+7}{35}$  2) \_\_\_\_\_

3)  $\frac{3x+3}{15x^2+21x+6}$  3) \_\_\_\_\_

4)  $\frac{y^2+14y+48}{y^2+16y+64}$  4) \_\_\_\_\_

5)  $\frac{y^2-3y-10}{y^2+2y-35}$  5) \_\_\_\_\_

6)  $\frac{m^2-64}{m^2-16m+64}$  6) \_\_\_\_\_

7)  $\frac{m^2-25m}{25-m}$  7) \_\_\_\_\_

8)  $\frac{r^2-4}{6r+12}$  8) \_\_\_\_\_

9)  $\frac{11y^3}{44y^{10}}$  9) \_\_\_\_\_

Multiply and simplify.

10)  $\frac{7x^2}{4} \cdot \frac{24}{x^3}$  10) \_\_\_\_\_

11)  $\frac{5y}{10y+5} \cdot \frac{14y+7}{4}$  11) \_\_\_\_\_

12)  $\frac{y^2-49}{7y+49} \cdot \frac{y-1}{y-7}$  12) \_\_\_\_\_

$$13) \frac{3p-3}{p} \cdot \frac{7p^2}{8p-8} \quad \dots \underline{\hspace{2cm}}$$

$$14) \frac{z^2-4z+4}{z^2-81} \cdot \frac{z^2+9z}{z-2} \quad \dots \underline{\hspace{2cm}}$$

$$15) \frac{k^2+4k+4}{k^2+7k+10} \cdot \frac{k^2+5k}{k^2+6k+8} \quad \dots \underline{\hspace{2cm}}$$

$$16) \frac{x^2-11x+30}{3x^3+2x^2} \cdot \frac{9x^3-4x}{4x-20} \quad \dots \underline{\hspace{2cm}}$$

$$17) \frac{x^3-27}{x^2-9} \cdot \frac{x^2-6x+9}{x^2+3x+9} \quad \dots \underline{\hspace{2cm}}$$

$$18) \frac{4x^2-9y^2}{8x^3+27y^3} \cdot \frac{4x^2-6xy+9y^2}{4x^2-12xy+9y^2} \quad \dots \underline{\hspace{2cm}}$$

**Divide and simplify.**

$$19) \frac{2x^2}{4} \div \frac{x^3}{20} \quad \dots \underline{\hspace{2cm}}$$

$$20) \frac{30x^7}{30y^{10}} \div \frac{12x^4}{30y^4} \quad \dots \underline{\hspace{2cm}}$$

$$21) \frac{5p-5}{p} \div \frac{6p-6}{5p^2} \quad \dots \underline{\hspace{2cm}}$$

$$22) \frac{z^2-9}{z} \div \frac{z+3}{z+2} \quad \dots \underline{\hspace{2cm}}$$

$$23) \frac{25x^2-49}{x^2-25} \div \frac{5x+7}{x+5} \quad \dots \underline{\hspace{2cm}}$$

$$24) \frac{x^2-16}{x^2+18x+81} \div \frac{3x-12}{x^2+19x+90} \quad \dots \underline{\hspace{2cm}}$$

$$25) \frac{y^3 + 1y}{y^2 - 1} \div \frac{y^2 + 0y - 64}{y^2 - 9y + 8}$$

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$$26) \frac{343y^3 + 512}{343y^3 + 64} \div \frac{49y^2 - 64}{49y^2 - 28y + 16}$$

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## Answer Key

Testname: SIMPLIFYING, MULT, DIV RATIONALS

1)  $\frac{x+6}{x-6}$

2)  $\frac{3x+1}{5}$

3)  $\frac{1}{5x+2}$

4)  $\frac{y+6}{y+8}$

5)  $\frac{y+2}{y+7}$

6)  $\frac{m+8}{m-8}$

7)  $-m$

8)  $\frac{r-2}{6}$

9)  $\frac{1}{4y^7}$

10)  $\frac{42}{x}$

11)  $\frac{7y}{4}$

12)  $\frac{y-1}{7}$

13)  $\frac{21p}{8}$

14)  $\frac{z(z-2)}{z-9}$

15)  $\frac{k}{k+4}$

16)  $\frac{(x-6)(3x-2)}{4x}$

17)  $\frac{(x-3)(x-3)}{x+3}$

18)  $\frac{1}{2x-3y}$

19)  $\frac{10}{x}$

20)  $\frac{5x^3}{2y^6}$

Answer Key

Testname: SIMPLIFYING, MULT, DIV RATIONALS

21)  $\frac{25p}{6}$

22)  $\frac{(z-3)(z+2)}{z}$

23)  $\frac{5x-7}{x-5}$

24)  $\frac{(x+4)(x+10)}{3(x+9)}$

25)  $\frac{y(y^2+1)}{(y+1)(y+8)}$

26)  $\frac{49y^2-56y+64}{(7y+4)(7y-8)}$