Section 11.3 Worksheet

Name: KEY

Simplify the expression, if possible.

1.) $\frac{7x}{21}$ $\frac{7 \cdot x}{7 \cdot 3}$

$\boxed{\frac{x}{3}}$

2.) $\frac{48x^5}{18x^2}$ $\frac{3 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x \cdot x}{3 \cdot 2 \cdot 3 \cdot x \cdot x}$

$\boxed{\frac{8x^3}{3}}$

3.) $\frac{18x^2}{12x}$ $\frac{3 \cdot 3 \cdot 2 \cdot x \cdot x}{3 \cdot 2 \cdot 2 \cdot x}$

$\boxed{\frac{3x}{2}}$

4.) $\frac{x}{15+x}$

already simplified

5.) $\frac{m^2}{m(m+1)}$ $\frac{m \cdot m}{m \cdot (m+1)}$

$\boxed{\frac{m}{m+1}}$

6.) $\frac{12b(4-b)}{6b^3}$ $\frac{3 \cdot 2 \cdot 2 \cdot b \cdot (4-b)}{3 \cdot 2 \cdot b \cdot b \cdot b}$

$\boxed{\frac{2(4-b)}{b^2}}$

7.) $\frac{14x}{7x^2-21x^3}$ $\frac{7 \cdot 2 \cdot x}{7x^2(1-3x)}$

$\frac{7 \cdot 2 \cdot x}{7 \cdot x \cdot x(1-3x)}$

$\boxed{\frac{2}{x(1-3x)}}$

8.) $\frac{5x}{x^2+3x}$ $\frac{5 \cdot x}{x(x+3)}$

$\boxed{\frac{5}{x+3}}$

9.) $\frac{2x^2+x}{4x}$ $\frac{x(2x+1)}{2 \cdot 2 \cdot x}$

$\boxed{\frac{2x+1}{4}}$

10.) $\frac{x^2-1}{6x+6}$ $\frac{(x+1)(x-1)}{6(x+1)}$

$\boxed{\frac{x-1}{6}}$

11.) $\frac{4x-12}{x^2-9}$ $\frac{4(x-3)}{(x+3)(x-3)}$

$\boxed{\frac{4}{x+3}}$

12.) $\frac{x^2+5x+4}{3x+12}$ $4 + 1 = 5$

$x^2+4x+1x+4$

$x(x+4)+1(x+4)$

$\frac{(x+4)(x+1)}{3(x+4)}$

$\boxed{\frac{x+1}{3}}$

13.) $\frac{x^2-4}{x^2+7x+10}$ $\frac{(x+2)(x-2)}{x^2+2x+5x+10}$

10: $2+5=7$

$x(x+2)+5(x+2)$

$(x+2)(x+5)$

$\boxed{\frac{x-2}{x+5}}$

$\frac{(x+2)(x-2)}{(x+2)(x+5)}$

14.) $\frac{x^2-13x+42}{x^2+3x+2}$ $-6, -7 = -13$

$x^2-6x-7x+42$

$x(x-6)-7(x-6)$

2: $2+1=3$

$\frac{(x-6)(x-7)}{x^2+2x+1x+2}$

$x(x+2)+1(x+2)$

$(x+2)(x+1)$

$\boxed{\frac{(x-6)(x-7)}{(x+2)(x-1)}}$

15.) $\frac{2x^2+5x+3}{4x^2+4x-3}$ $2 \cdot 3 = 6$

6: $4+2=5$

$4 \cdot -3 = -12$

$4 = 6 + -2$

$2x^2+3x+2x+3$

$x(2x+3)+1(2x+3)$

$\frac{(2x+3)(x+1)}{4x^2+6x-2x-3}$

$2x(2x+3)-1(2x+3)$

$(2x+3)(2x-1)$

$\frac{(2x+3)(x+1)}{(2x+3)(2x-1)}$

$\boxed{\frac{x+1}{2x-1}}$

REVIEW:

Solve by using cross multiplication.

16.) $\frac{6}{2p} = \frac{5}{8}$

$2p \cdot 5 = 6 \cdot 8$

$10p = 48$

$\boxed{p = \frac{24}{5}}$

-8

$-4 + 2 = -2$

17.) $\frac{x}{x+4} = \frac{2}{x}$

$x \cdot x = 2(x+4)$

$x^2 = 2x + 8$

$x^2 - 2x - 8 = 0$

$x^2 - 4x + 2x - 8 = 0$

$x(x-4) + 2(x-4) = 0$

$(x-4)(x+2) = 0$

$\boxed{x = 4}$ $\boxed{x = -2}$

Using the given values of x and y and the type of variation listed, write an equation that relates x and y.

18.) $x = 36,\ y = 54$; directly

$y = kx$

$54 = k \cdot 36$

$k = \frac{3}{2}$

$\boxed{y = \frac{3}{2}x}$

19.) $x = 4.2,\ y = 6$; inversely

$y = \frac{k}{x}$

$6 = \frac{k}{4.2}$

$k = 25.2$

$\boxed{y = \frac{25.2}{x}}$