12.7 EXERCISES

HOMEWORK KEY

= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 7, 15, and 33

= **TAKS PRACTICE AND REASONING** Exs. 24, 28, 35, 39, and 40

SKILL PRACTICE

1. VOCABULARY The equation $\frac{3}{x-1} = \frac{7}{x} + 4$ is an example of a(n) ___?___ .

2. WRITING *Describe* two methods for solving a rational equation. Which method can you use to solve any kind of rational equation? *Explain*.

EXAMPLE 1 on p. 820 for Exs. 3–13, 24

SOLVING EQUATIONS **Solve the equation. Check your solution.**

3. $\frac{5}{r} = \frac{r}{20}$

4. $\frac{3}{s-13} = \frac{s}{10}$

5. $\frac{2}{t} = \frac{10}{t-6}$

6. $\frac{2}{c+3} = \frac{-5}{c-1}$

7. $\frac{2m}{m+4} = \frac{3}{m-1}$

8. $\frac{n-3}{n-6} = \frac{n+1}{n+5}$

9. $\frac{w}{2} = \frac{15}{w+1}$

10. $\frac{2x}{4-x} = \frac{x}{x-4}$

11. $\frac{2y}{y-3} = \frac{24}{y}$

ERROR ANALYSIS ***Describe*** **and correct the error in solving the equation.**

12. $\frac{x+1}{2x+2} = \frac{3}{2x}$

$$\frac{x+1}{2x+2} = \frac{3}{2x}$$
$$(x+1)2x = 3(2x+2)$$
$$2x^2 + 2x = 6x + 6$$
$$2x^2 - 4x - 6 = 0$$
$$2(x-3)(x+1) = 0$$
$$x - 3 = 0 \quad \text{or} \quad x + 1 = 0$$
$$x = 3 \quad \text{or} \quad x = -1$$

The solutions are 3 and −1.

13. $\frac{4x+1}{8x-1} = \frac{3}{5}$

$$\frac{4x+1}{8x-1} = \frac{3}{5}$$
$$5(4x+1) = 3(8x-1)$$
$$20x + 1 = 24x - 3$$
$$1 = 4x - 3$$
$$4 = 4x$$
$$1 = x$$

The solution is 1.

EXAMPLES 2 and 3 on p. 821 for Exs. 14–23

SOLVING EQUATIONS **Solve the equation. Check your solution.**

14. $\frac{6x}{x-11} + 1 = \frac{3}{x-11}$

15. $\frac{z}{z+7} - 3 = \frac{-1}{z+7}$

16. $\frac{a+7}{a+4} - 1 = \frac{a+10}{2a+8}$

17. $\frac{1}{b+3} + 2 = \frac{b^2-3}{b^2+12b+27}$

18. $\frac{m}{m-2} - \frac{3m}{m-4} = \frac{-2m+2}{m^2-6m+8}$

19. $\frac{3n}{n+1} = \frac{12}{n^2-1} + \frac{n+4}{n-1}$

20. $\frac{3}{p-1} - \frac{2}{p-1} = \frac{-6}{p^2-3p+2}$

21. $\frac{5}{q+4} = \frac{q}{q-3} + \frac{2q-27}{q^2+q-12}$

22. $\frac{r+2}{r^2+6r-7} = \frac{8}{r^2+3r-4}$

23. $\frac{9}{s^2-4} = \frac{4-5s}{s-2}$

24. TAKS REASONING Write a rational equation that can be solved using the cross products property. Then solve the equation.