

# Cumulative Review

Name: Key

Solve each equation for x.

1.  $3x + 1 = 4x - 2$

$$x = \underline{3}$$

$$\begin{array}{r} 3x+1 = 4x-2 \\ 3x+1-4x = 4x-2-4x \\ -1x+1 = -2 \\ -1x+1-1 = -2-1 \\ -1x = -3 \\ \frac{-1x}{-1} = \frac{-3}{-1} \\ x = 3 \end{array}$$

2.  $5(x - 6) - 2 = 2x - 5$

$$x = \underline{9}$$

Key

$$\begin{array}{l} 5(x-6) - 2 = 2x - 5 \\ 5x - 30 - 2 = 2x - 5 \\ 5x - 32 = 2x - 5 \\ 5x - 32 - 2x = 2x - 5 - 2x \\ 3x - 32 = -5 \end{array}$$

Apply the distributive property before you isolate the variable.

$$3x - 32 = -5$$

$$3x - 32 + 32 = -5 + 32$$

$$3x = 27$$

$$x = 9$$

3.  $7x + 12 = 2(x + 6)$

$$x = \underline{0}$$

$$\begin{array}{r} 7x+12 = 2(x+6) \\ 7x+12 = 2x+12 \\ 7x+12-2x = 2x+12-2x \\ 5x+12 = 12 \\ 5x+12-12 = 12-12 \\ 5x = 0 \\ \frac{5x}{5} = \frac{0}{5} \\ x = 0 \end{array}$$

4.  $3(x - 4) + 6 = 5(x - 1) + 1$

$$x = \underline{-1}$$

$$\begin{array}{l} 3(x-4) + 6 = 5(x-1) + 1 \\ 3(x) + 3(-4) + 6 = 5(x) + 5(-1) + 1 \\ 3x - 12 + 6 = 5x - 5 + 1 \\ 3x - 6 = 5x - 4 \\ 3x - 6 - 5x = 5x - 4 - 5x \\ -2x - 6 = -4 \\ -2x - 6 + 6 = -4 + 6 \\ -2x = 2 \\ \frac{-2x}{-2} = \frac{2}{-2} \\ x = -1 \end{array}$$

Convert the repeating decimal to a fraction.

5.  $0.\overline{6}$

$$\frac{6}{9} = \frac{2}{3}$$

6.  $1.\overline{1}$

$$\frac{1}{9} \text{ or } \frac{10}{9}$$

7.  $4.\overline{4}$

$$4\frac{4}{9} \text{ or } \frac{40}{9}$$

Complete each sentence.

8.  $-11.3$  is rational because it terminates (stops).
9.  $\sqrt{19}$  is irrational because 19 is not a perfect square.
10.  $0.08\overline{3}$  is rational because 3 is repeating (repeat rational!).
11.  $2.1371938\dots$  is irrational because it does not terminate or repeat.

Evaluate each expression. Leave your answer in exponential form.

12.  $3^4 \times 3^2$

$$3^{4+2} = \underline{3^6}$$

13.  $9^7 \times 9^3$

$$9^{7+3} = \underline{9^{10}}$$

14.  $6^3 \times 6^3$

$$6^{3+3} = \underline{6^6}$$

REMEMBER: You can multiply exponential expressions with like bases by adding the exponents.

15.  $5^5 \times 5^4$

$$5^{5+4} = \underline{5^9}$$

16.  $1^{11} \cdot 1^{-9}$

$$1^{11-9} = 1^2 = \underline{1}$$

17.  $x^3 \cdot x^{-6}$

$$x^{3-6} = x^{-3} = \frac{1}{x^3}$$

\*Cannot have a negative exponent

18.  $\frac{4^9}{4^7}$

$$4^{9-7} = \underline{4^2}$$

19.  $\frac{2^{-10}}{2^4}$

$$2^{-10-4} = 2^{-14} = \frac{1}{2^{14}}$$

20.  $z^{20} \div z^{10}$

$$z^{20-10} = \underline{z^{10}}$$