

**COLLEGE PREP ALGEBRA**  
**Semester Review Worksheet**

Simplify the following expressions:

Chapter 1

- |                                      |                                  |
|--------------------------------------|----------------------------------|
| 1) $12 - 3(2 - 6)^2$                 | 2) $5^2(-3)^2(-2)^3$             |
| 3) $\frac{3}{4} \div (-\frac{2}{3})$ | 4) $\frac{12 - (-4)^2}{-2}$      |
| 5) $ 6 - 14  +  -3 - 8 $             | 6) $-14 - (-7) + (-8)$           |
| 7) $6 - 3(5 - 9)^2 - 1$              | 8) $ 8 - 11 $                    |
| 9) $- -8 $                           | 10) $-6(\frac{2}{3})$            |
| 11) $(8 - 13) - 2$                   | 12) $-7 - 3(-4) \div [9 - 3(5)]$ |

Evaluate the following expressions when  $x = -3$ ,  $y = 4$ , and  $z = -1$ :

- |                      |                        |
|----------------------|------------------------|
| 13) $x - y^2$        | 14) $xz^3 + x^2 - y^2$ |
| 15) $x - (x^2 - z)$  | 16) $x - y - z^3$      |
| 17) $\frac{x+y}{2z}$ | 18) $- x + y  - 3 z $  |

Simplify the following expressions:

Chapter 2

- |                             |                             |
|-----------------------------|-----------------------------|
| 19) $-3(x + 1) - 4(4 - 6x)$ | 20) $-4x - 2[3 - (6x - 8)]$ |
|-----------------------------|-----------------------------|

Solve the following equations:

- |   |   |
|---|---|
| 21) $3(x - 1) - 6x = 5(x + 3)$  | 22) $\frac{x}{4} - \frac{2}{3} = \frac{5}{6} - \frac{x}{3}$ |
| 23) $\frac{2x}{5} + \frac{x}{4} = 3$  | 24) $\frac{x+2}{4} = \frac{2x-3}{6}$                        |
| 25) $\frac{3}{x-3} = \frac{8}{x+1}$   | 26) $0.02x + 0.3 = 0.05x - 3$                               |
| 27) $-\frac{3}{4}x - 1 = 11$  | 28) $4x - y = 8$ (solve for y)                              |
| 29) $2x + 5y = 15$ (solve for y)  | 30) $A = \frac{1}{2}bh$ (solve for h)                       |
| 31) A number plus twice the number is twenty-four. Find the number.                                   |   |
| 32) If 7 times a number is added to 3, the result is 2 less than 8 times the number. Find the number. |   |
| 33) Find 2 consecutive integers such that their sum is 3 times the larger integer decreased by 31.    |   |



$$70) \quad \frac{12y^4 + 3y^3}{3y^2}$$

Write in Scientific Notation:

$$71) \quad 12,000,000,000$$

$$72) \quad 0.00031$$

Write in Standard Notation:

$$73) \quad 1.784 \times 10^{-7}$$

$$74) \quad 6.052 \times 10^8$$

Factor the following expressions (or write *N.F.* if prime):

Chapter 5

$$75) \quad x^2 + 5x + 6$$

$$76) \quad x^2 - 10x - 24$$

$$77) \quad x^2 - 25y^2$$

$$78) \quad 9x^2 - 30x + 25$$

$$79) \quad ax + 4a - 3x - 12$$

$$80) \quad 4x^2 + 13x - 12$$

$$81) \quad 16x^2 + 49$$

$$82) \quad 18x^3y^4 + 24x^2y^2 - 12xy^3$$

$$83) \quad 32x^3 - 2x$$

$$84) \quad 6xy - 18x - 5y + 15$$

Solve the following quadratic equations:

$$85) \quad (x - 5)(7x + 1) = 0$$

$$86) \quad 4x^2 = 7x$$

$$87) \quad y^2 - y = 20$$

$$88) \quad 2a^2 = 7 - 13a$$

$$89) \quad (y + 7)(y - 6) = -30$$

$$90) \quad 4y^2 - 25 = 0$$

Simplify the following rational expressions:

Chapter 6

$$91) \quad \frac{a^3b(b+4)}{ab(b+4)}$$

$$92) \quad \frac{x^3y - 9xy}{x^3 + 2x^2 - 3x}$$

$$93) \quad \frac{4x^2 - 1}{10x^2 - x - 3} \cdot \frac{20x^2 - 12x}{2x^2 + 7x - 4}$$

$$94) \quad \frac{16x^3y^5}{x^2 - 9} \div \frac{-8xy^7}{x^2 - 6x + 9}$$

Simplify the following radical expressions:

Chapter 9

$$95) \quad \frac{1}{2}\sqrt{48} - \frac{4}{5}\sqrt{75}$$

$$96) \quad -6\sqrt{12x^2y^3}$$

$$97) \quad 11\sqrt{150w^5z^4}$$

$$98) \quad \frac{9\sqrt{200}}{3\sqrt{2}}$$

$$99) \quad -3\sqrt{15x} \cdot \sqrt{3x}$$

$$100) \quad 3\sqrt{98} + 2\sqrt{50} - \sqrt{8}$$