

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

# Homework Problem Set

Rewrite each expression by completing the square.

1.  $q^2 + 12q + 32$

$$(q^2 + 12q + 36) + 32 - 36$$

$$(q+6)^2 - 4$$

2.  $m^2 - 4m - 5$

$$(m^2 - 4m + 4) - 5 - 4$$

$$(m-2)^2 - 9$$

3.  $x^2 - 12x + 6$

$$(x^2 - 12x + 36) + 6 - 36$$

$$(x-6)^2 - 30$$

4.  $a^2 + 70a + 1225$

$$(a^2 + 70a + 1225) + 1225 - 1225$$

$$(a+35)^2 + 0$$

$$(a+35)^2$$

5.  $z^2 - 30z + 10$

$$(z^2 - 30z + \underline{225}) + 10 - \underline{225}$$

$$(z - 15)^2 - 215$$

6.  $y^2 - 6by + 20$

$$(y^2 - 6by + \underline{9b^2}) + 20 - \underline{9b^2}$$

$$(y - 3b)^2 + 20 - 9b^2$$

$$\left(\frac{-6b}{2}\right)^2 = \frac{36b^2}{4} = 9b^2$$

7. Which of these expressions would be most easily rewritten by factoring? Justify your answer.

#4 is already a perfect square binomial

## Spiral REVIEW—Simplifying Radicals

Simplify each radical expression.

8.  $3 + \sqrt{4}$

$3 + 2 = 5$

9.  $3 - \sqrt{4}$

$3 - 2 = 1$

10.  $4 + \sqrt{8}$

$4 + 2\sqrt{2}$

11.  $3\sqrt{4}$

$3(2) = 6$

12.  $4\sqrt{8}$

$4 \cdot 2\sqrt{2}$   
 $8\sqrt{2}$

13.  $3 + 5\sqrt{4}$

$3 + 5(2)$   
 $13$

14.  $3 - 5\sqrt{4}$

$3 - 5(2)$   
 $-7$

15.  $2 + \sqrt{37 - 1}$

$2 + \sqrt{36}$   
 $2 + 6$   
 $8$

16.  $\sqrt{36 - 9}$

$\sqrt{27}$   
 $3\sqrt{3}$

17.  $\sqrt{36} - \sqrt{9}$

$6 - 3$   
 $3$

18.  $\sqrt{25 - 9}$

$\sqrt{16}$   
 $4$

19.  $\sqrt{25} - \sqrt{9}$

$5 - 3$   
 $2$

20.  $\sqrt{16 - 4}$

$\sqrt{12}$   
 $2\sqrt{3}$

21.  $\sqrt{10 - 6}$

$\sqrt{4}$   
 $2$

22.  $2\sqrt{9} + 3\sqrt{25 - 16}$

$2\sqrt{9} + 3\sqrt{9}$   
 $2(3) + 3(3)$   
 $6 + 9$   
 $15$

23.  $5\sqrt{12 - 3}$

$5\sqrt{9}$   
 $5 \cdot 3$   
 $15$

$$\sqrt{a} \cdot \sqrt{a} = \sqrt{a^2} = a \quad \text{Remember}$$

### Spiral REVIEW—Multiplying Radical Binomials

$$24. (x - \sqrt{3})(x + \sqrt{3})$$

$$x^2 + x\sqrt{3} - x\sqrt{3} - 3$$

$$x^2 - 3$$

$$25. (x + \sqrt{6})(x + \sqrt{8})$$

$$x^2 + x\sqrt{8} + x\sqrt{6} + \sqrt{48}$$

$$x^2 + 2x\sqrt{2} + x\sqrt{6} + 4\sqrt{3}$$

$$26. (a - \sqrt{2})(a - \sqrt{2})$$

$$a^2 - a\sqrt{2} - a\sqrt{2} + 2$$

$$a^2 - 2a\sqrt{2} + 2$$

$$27. (b + \sqrt{3})(b - 2\sqrt{3})$$

$$b^2 - 2b\sqrt{3} + b\sqrt{3} - 2(3)$$

$$b^2 - b\sqrt{3} - 6$$

$$28. (2w - 3)(2 + \sqrt{2})$$

$$4w + 2w\sqrt{2} - 6 - 3\sqrt{2}$$

$$29. (y + \sqrt{6})(y - \sqrt{6})$$

$$y^2 - y\sqrt{6} + y\sqrt{6} - 6$$

$$y^2 - 6$$

$$30. (4x + \sqrt{2})(4x - \sqrt{2})$$

$$16x^2 - 4x\sqrt{2} + 4x\sqrt{2} - 2$$

$$16x^2 - 2$$

$$31. (a - 2\sqrt{2})(a + 2\sqrt{2})$$

$$a^2 + 2a\sqrt{2} - 2a\sqrt{2} - 4(2)$$

$$a^2 - 8$$