

**Factor each completely.**

1)  $x^2 - 7x - 18$

2)  $p^2 - 5p - 14$

3)  $m^2 - 9m + 8$

4)  $x^2 - 16x + 63$

5)  $7x^2 - 31x - 20$

6)  $7k^2 + 9k$

7)  $7x^2 - 45x - 28$

8)  $2b^2 + 17b + 21$

9)  $5p^2 - p - 18$

10)  $28n^4 + 16n^3 - 80n^2$

11)  $3b^3 - 5b^2 + 2b$

12)  $7x^2 - 32x - 60$

13)  $30n^2b - 87nb + 30b$

14)  $9r^2 - 5r - 10$

15)  $9p^2r + 73pr + 70r$

16)  $9x^2 + 7x - 56$

17)  $4x^3 + 43x^2 + 30x$

18)  $10m^2 + 89m - 9$

**Critical thinking questions:**

19) For what values of  $b$  is the expression factorable?  
 $x^2 + bx + 12$

20) Name four values of  $b$  which make the expression factorable:  
 $x^2 - 3x + b$

**Factor each completely.**

1)  $x^2 - 7x - 18$

$$(x - 9)(x + 2)$$

2)  $p^2 - 5p - 14$

$$(p + 2)(p - 7)$$

3)  $m^2 - 9m + 8$

$$(m - 1)(m - 8)$$

4)  $x^2 - 16x + 63$

$$(x - 9)(x - 7)$$

5)  $7x^2 - 31x - 20$

$$(7x + 4)(x - 5)$$

6)  $7k^2 + 9k$

$$k(7k + 9)$$

7)  $7x^2 - 45x - 28$

$$(7x + 4)(x - 7)$$

8)  $2b^2 + 17b + 21$

$$(2b + 3)(b + 7)$$

9)  $5p^2 - p - 18$

$$(5p + 9)(p - 2)$$

10)  $28n^4 + 16n^3 - 80n^2$

$$4n^2(7n - 10)(n + 2)$$

11)  $3b^3 - 5b^2 + 2b$   
 $b(3b - 2)(b - 1)$

12)  $7x^2 - 32x - 60$   
 $(7x + 10)(x - 6)$

13)  $30n^2b - 87nb + 30b$   
 $3b(2n - 5)(5n - 2)$

14)  $9r^2 - 5r - 10$   
Not factorable

15)  $9p^2r + 73pr + 70r$   
 $r(p + 7)(9p + 10)$

16)  $9x^2 + 7x - 56$   
Not factorable

17)  $4x^3 + 43x^2 + 30x$   
 $x(x + 10)(4x + 3)$

18)  $10m^2 + 89m - 9$   
 $(m + 9)(10m - 1)$

**Critical thinking questions:**

19) For what values of  $b$  is the expression factorable?  
 $x^2 + bx + 12$   
 $13, 8, 7, -13, -8, -7$

20) Name four values of  $b$  which make the expression factorable:  
 $x^2 - 3x + b$   
Many answers.  
Ex:  $0, 2, -4, -10, -18$