

## Essential Skills 14

The skills in this series of worksheets appear frequently.

These are the GIFTS you must take to succeed

### Synthetic Division



1. Show that  $(x - 1)$  is a factor of  $x^3 + 4x^2 - x - 4$  and factorise fully.
2. Show that  $(x + 2)$  is a factor of  $x^3 + 2x^2 - 4x - 8$  and factorise fully.
3. Show that  $(x + 1)$  is a factor of  $x^3 - 7x - 6$  and factorise fully.
4. Show that  $(x - 1)$  is a factor of  $x^3 - 2x^2 - 11x + 12$  and factorise fully.
5. Show that  $(x + 3)$  is a factor of  $x^3 + 6x^2 + 11x + 6$  and factorise fully.
6. Show that  $(x - 2)$  is a factor of  $2x^3 - 3x^2 - 3x + 2$  and factorise fully.
7. Show that  $(x + 1)$  is a factor of  $x^3 - x^2 - 5x - 3$  and factorise fully.
8. Show that  $x = -1$  is a root of  $2x^3 + 7x^2 + 2x - 3 = 0$  and find the other roots.
9. Show that  $x = 1$  is a root of  $3x^3 + x^2 - 3x - 1 = 0$  and find the other roots.
10. Show that  $x = 2$  is a root of  $x^3 - x^2 - 8x + 12 = 0$  and find the other roots.



### APPLYING QUESTIONS

1.  $(x - 1)$  is a factor of  $2x^3 + px^2 + 2x - 15$ .  
Calculate  $p$  and factorise fully.
2. Find the coordinates of the points of intersection of  $f(x) = x^3 + 4x^2 - 32x + 30$   
and  $g(x) = 5x - 2x^2$