# Factoring Practice – Solutions

1. $3x^2+18x+27=3\left(x^2+6x+9\right)=3(x+3)^2$

2. $b^2+3b-28=(b+7)(b-4)$

3. $(5)(-6)=-30,\quad -3+10=7$, so:
   $5x^2+7x-6=5x^2-3x+10x-6=x(5x-3)+2(5x-3)=(5x-3)(x+2)$

4. $x^3-25x=x\left(x^2-25\right)=x(x+5)(x-5)$

5. $4c^2-36=4\left(c^2-9\right)=4(c+3)(c-3)$

6. $y^2-8y-20=(y-10)(y+2)$

7. $a^2+7a-6$ is *prime*

8. $n^4-16=\left(n^2\right)^2-4^2=\left(n^2+4\right)\left(n^2-4\right)=\left(n^2+4\right)(n+2)(n-2)$

9. $9r^2-24r+16=(3r)^2-2(3r)(4)+4^2=(3r-4)^2$

10. $(6)(-6)=-36,\ -4+9=5$, so
    $6a^2+5a-6=6a^2-4a+9a-6=2a(3a-2)+3(3a-2)=(3a-2)(2a+3)$

11. $4x^3-16x^2-48x=4x\left(x^2-4x-12\right)=4x(x-6)(x+2)$

12. $4z^2+6z+9=(2z)^2+(\ )(2z)(3)+3^2$
    This does not fit the pattern $a^2+2ab+b^2$ and is *prime*

13. $8s^4-8s^3+2s^2=2s^2\left(4s^2-4s+1\right)=2s^2(2s-1)^2$

14. $6y^3+14y^2+4y=2y\left(3y^2+7y+2\right)=2y(3y+1)(y+2)$

15. This is of the form $a^3-b^3$, so use the special factoring formula $a^3-b^3=(a-b)\left(a^2+ab+b^2\right)$.
    $27-y^3=(3-y)\left(9+3y+y^2\right)$