



## Gold

- a** Express  $4^{5x+3}$  in the form  $2^y$ , giving  $y$  in the form  $ax+b$ , where  $a$  and  $b$  are constants.
- b** Solve the equation  $3^{0.5x-1} = \frac{\sqrt{3}}{81}$

## Silver

Let  $A = \frac{1}{5}x^2$  and  $B = \sqrt{5}x^{-\frac{1}{2}}$ . Simplify the following expressions fully.

- a**  $A^2$
- b** Hence, or otherwise, find  $(AB)^2$ .

## Bronze

- a** Given that  $5^x = 125$ , find  $x$ .
- b** Simplify the following expression fully.

$$x^2(5x^{-\frac{1}{2}})^3$$