


The x term in the expansion  $(4 + 2x)^3(2 + ax)^4$  is  $-4608x$   
 Find  $a$

$$\begin{aligned} \text{The expansion for } (4 + 2x)^3 &= 4^3 + 3 \times 4^2 \times (2x) + \dots \\ &= 64 + 96x + \dots \end{aligned}$$

$$\begin{aligned} \text{The expansion for } (2 + ax)^4 &= 2^4 + 4 \times 2^3 \times (ax) + \dots \\ &= 16 + 32ax + \dots \end{aligned}$$

$$(4 + 2x)^3(2 + ax)^4 = (64 + 96x + \dots)(16 + 32ax + \dots)$$

We want to find the x term =  $(64 + 96x + \dots)(16 + 32ax + \dots)$



$$-4608x = 64 \times 32ax + 96x \times 16$$

$$-4608x = 2048ax$$

$$-4608x - 1536x = 2048ax$$

$$-6144x = 2048ax$$

$$-6144 = 2048a$$

$$\frac{6144}{2048} = a$$

$$a = -3$$