



minutes

1a. Write down the first three terms, in ascending powers of  $x$ , of the binomial expansion of  $(1 + px)^{12}$ , where  $p$  is a non zero constant. **(2)**

Given that, in the expansion  $(1 + px)^{12}$ , the coefficient of  $x$  is  $(-q)$  and the coefficient of  $x^2$  is  $11q$ .

b. Find the value of  $p$  and the value of  $q$ .

## Solutions

1a.

$1 + 12px + \frac{12 \times 11}{2}(px)^2$	<b>M1 M1</b>
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1b.

$12p(x) = -q(x)$ $66p^2(x^2) = 11q(x^2)$	<b>M1</b>
$66p^2 = -132p$ $p = -2$	<b>M1</b>
$q = 24$	<b>M1</b>

