



for **AQA, Edexcel** and **OCR**  
**two-tier GCSE mathematics**

## **Resource sheets for *Higher 1***

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**[www.smpmaths.org.uk](http://www.smpmaths.org.uk)**

Cut out the 18 rectangular 'cover-up' pieces below.

Put the pieces on the board so that each piece covers a pair of expressions which multiply to give that answer.

For example,  $8a^3$  could cover  $4a$  and  $2a^2$  or it could cover  $8a^2$  and  $a$ .

The pieces can be put this way  or this way .

- Can you find a way to cover the whole board?

**Cover-up pieces**

$7a^2$	$3a^3$	$12a^4$	$8a^5$
$12a^8$	$12a^6$	$6a^7$	$10a^3$
$5a^2$	$15a^3$	$9a^3$	$14a^9$
$11a^{12}$	$a^8$	$6a^3$	$8a^3$
$16a^5$	$25a^2$		

**Cover-up board**

$11a^7$	$3a^2$	$2a$	$2a^2$	$3a^2$	$4a^2$
$a^5$	$a^3$	$a^5$	$4a$	$3a^2$	$a$
$4a^2$	$4a^3$	$7a$	$2a^5$	$6a^3$	$2a$
$a^3$	$12a^3$	$a$	$4a^3$	$3a^3$	$5a^2$
$5a$	$3a^2$	$3a$	$2a^2$	$2a^4$	$3a^3$
$5a$	$5a$	$a$	$7a^5$	$2a^4$	$5$

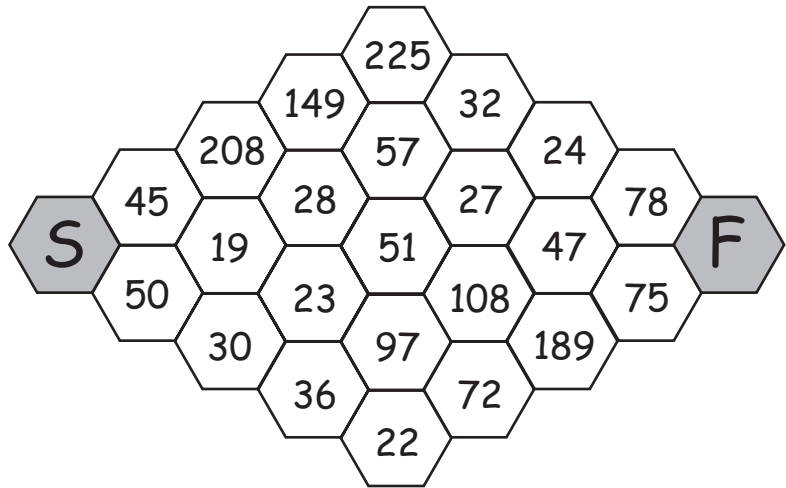
For each puzzle,

- find the value of each expression
- shade in your values on the diagram on the right
- your answers should make a path across the board from S to F

**Puzzle 1**

$a = 5$  and  $b = 3$

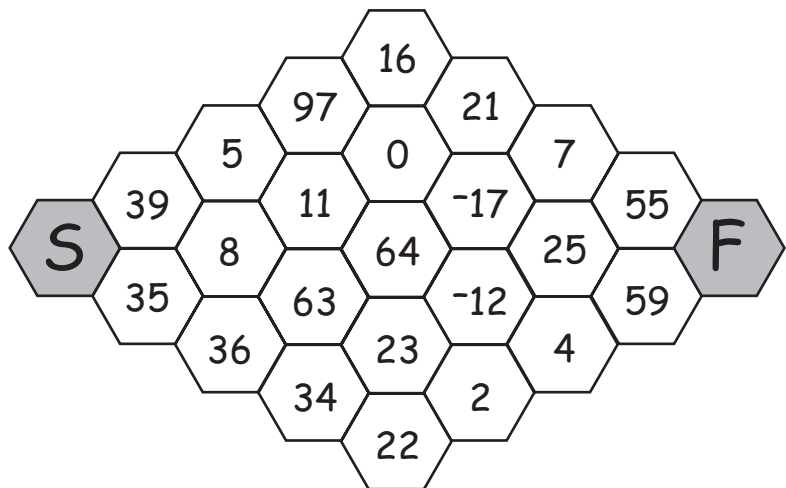
- |   |               |   |               |
|---|---------------|---|---------------|
| A | $2a + 3b$     | B | $a^2 + a - b$ |
| C | $2a^2 - b$    | D | $2ab - a + b$ |
| E | $3a^2 - 2b^2$ | F | $a^2b$        |
| G | $ab^2$        |   |               |



**Puzzle 2**

$x = 4$  and  $y = 1$

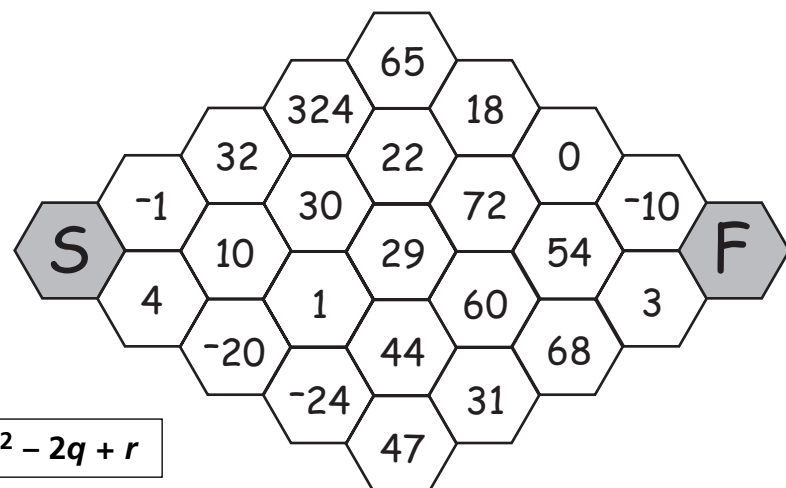
- |   |                |   |               |
|---|----------------|---|---------------|
| A | $5x + 3y$      | B | $xy + x$      |
| C | $xy^2$         | D | $4x^2 - 9y^2$ |
| E | $x^2 - y + 5x$ | F | $x^3 - y$     |
| G | $y^3 + y^2$    | H | $(y + x)^2$   |



**Puzzle 3**

$p = 3, q = 2$  and  $r = -1$

- |   |               |   |            |   |                |
|---|---------------|---|------------|---|----------------|
| A | $5pq + r$     | B | $2pq + qr$ |   |                |
| C | $3p^2q$       | D | $q^2 + pr$ |   |                |
| E | $r^2 + q - p$ | F | $pq + pr$  |   |                |
| G | $2p^2 + q^2$  | H | $qp^2$     | I | $p^2 - 2q + r$ |



Cut out the 18 rectangular 'cover-up' pieces below.

Put the pieces on the board so that each piece covers a pair of expressions which multiply to give that answer.

For example,  $6ab$  could cover  $2a$  and  $3b$  or it could cover  $3a$  and  $2b$ .

The pieces can be put this way  or this way .

- Can you find a way to cover the whole board?

**Cover-up board**

$7a$	$b$	$5b^2$	$a$	$a^2$	$3a^2$
$a$	$4a$	$3a$	$b$	$4a$	$2b$
$3a^2$	$b$	$2a$	$4b^2$	$2b$	$3a$
$7ab$	$2$	$3b$	$5$	$2a$	$3a$
$ab^2$	$4b^2$	$4a$	$b^2$	$2a^2$	$11ab$
$6a$	$2b$	$5b$	$b$	$a$	$ab$

**Cover-up pieces**

$8b^2$	$6ab$	$8b^3$	$6a^2b$
$3a^2b$	$7a^2$	$5ab^2$	$4a^3$
$12ab$	$4ab$	$3ab$	$5b^2$
$11a^2b^2$	$10a$	$9a^2$	$4ab^2$
$2a^3$	$7a^2b^3$		

