## Clue 1 - Place Value

A series of numbers were found with a grid.
"It looks like each number has a 3 \& a 5 in it," observed the Inspector.
"Yes, but they are not always in the same place," commented Smithkins, his assistant.

| Number | Letter | Number | Letter |
| :--- | :--- | :--- | :--- |
| 65223.4 |  | 5431 |  |
| 965674.34 |  | 548793.48 |  |
| 4518.73 |  | 953.26 |  |
| 51764.83 |  | 500.73 |  |
| 5431.6 |  | 43.57 |  |
| 4851.34 |  | 549376.21 |  |
| 954.3 |  | 7951.34 |  |
| 9574.136 |  | 1524.93 |  |
| 56274.34 |  | 1524.39 |  |


| $5 \downarrow \quad 3 \rightarrow$ | hundred | ten | unit | tenth | hundredth |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Hundred <br> thousand | A | J | S | C | N |
| Ten <br> thousand | O | B | D | R | K |
| Thousand | P | I | T | H | Y |
| Hundred | - | V | U | . | E |
| Ten | Q | - | F | L | Z |
| Unit |  | , | - | W | G |
| tenth |  |  | M | - | X |

Clue 2-Turning the case around


Rotation

| Shape | Direction | How much | New shape | Letter |
| :---: | :---: | :---: | :---: | :---: |
|  | clockwise | $180^{\circ}$ |  |  |
| $\dagger$ | Anti-clockwise | $90^{\circ}$ |  |  |
|  | clockwise | $90^{\circ}$ |  |  |
| $\dagger$ | clockwise | $90^{\circ}$ |  |  |
|  | Anti-clockwise | $90^{\circ}$ |  |  |
| . | Anti-clockwise | $360^{\circ}$ |  |  |
|  | clockwise | $180^{\circ}$ |  |  |
| $\dagger$ | anticlockwise | $180^{\circ}$ |  |  |
| $\bigcirc$ | clockwise | $135^{\circ}$ |  |  |
| $\bigcirc$ | Anti-clockwise | $90^{\circ}$ |  |  |
| , | Anti-clockwise | $90^{\circ}$ |  |  |
| $\dagger$ | clockwise | $180^{\circ}$ |  |  |
|  | clockwise | $135^{\circ}$ |  |  |
| $\dagger$ | clockwise | $270^{\circ}$ |  |  |
| $\square$ | clockwise | $180^{\circ}$ |  |  |
|  | clockwise | $90^{\circ}$ |  |  |
|  | clockwise | $45^{\circ}$ |  |  |
|  | Anti-clockwise | $90^{\circ}$ |  |  |
| $\bigcirc$ | clockwise | $180^{\circ}$ |  |  |
| $\ldots$ | Anti-clockwise | $270^{\circ}$ |  |  |

## Clue 3-Something to reflect on!

"There's 4 mirror lines here," commented Smithkins.
"Yes, but once we've got the new pigpen letters, it is important to keep the paper portrait to read them."
"It looks like the numbered arrows show the order of the words to make the sentence."

$1 \longmapsto$


Clue 4 - Lost in translation.

"This looks like pig pen again but it doesn't make sense," said Smithkins. "It looks like we have to do some translation first," observed the Inspector, reading the instructions.
"I did a little French at school - will that help?" enquired Smithkins.
"Not that sort of translation - this means moving something without rotating or resizing - sliding it really," commented the Inspector.

Translate

| Line | left | right | up | down |
| :---: | :---: | :---: | :---: | :---: |
| $A B$ |  | 1 | 4 |  |
| $A B$ |  | 5 | 4 |  |
| $A B$ | 1 |  | 2 |  |
| $A B$ |  | 2 | 2 |  |
| $A B$ | 3 |  |  | 2 |
| $A B$ |  | 2 |  | 2 |
| $A B$ |  | 4 |  | 2 |
| $A B$ | 3 |  |  | 4 |
| $A B$ |  | 1 |  | 4 |
| $A B$ |  | 4 |  | 4 |
| $C D$ | 2 |  | 5 |  |
| $C D$ |  | 2 | 5 |  |
| $C D$ | 1 |  | 3 |  |
| $C D$ | 4 |  |  | 2 |
| $C D$ | 4 |  |  | 3 |
| $C D$ | 2 |  |  | 3 |
| $C D$ |  | 4 |  | 3 |
| $E F$ | 6 |  | 4 |  |
| $E F$ |  | 2 | 2 |  |
| $E F$ | 4 |  |  |  |

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"Not that sort of translation - this means moving something without rotating or resizing - sliding it really," commented the Inspector.

Translate

| Line | $x$ axis | $y$ axis |
| :---: | :---: | :---: |
| $A B$ | +1 | +4 |
| $A B$ | +5 | +4 |
| $A B$ | -1 | +2 |
| $A B$ | +2 | +2 |
| $A B$ | -2 | -2 |
| $A B$ | +2 | -2 |
| $A B$ | +4 | -2 |
| $A B$ | -3 | -4 |
| $A B$ | +1 | -4 |
| $A B$ | +4 | -4 |
| $C D$ | -2 | +5 |
| $C D$ | +2 | +5 |
| $C D$ | -1 | +3 |
| $C D$ | -4 | -2 |
| $C D$ | -4 | -3 |
| $C D$ | -2 | -3 |
| $C D$ | +4 | -3 |
| $E F$ | -6 | +4 |
| $E F$ | +2 | +2 |
| $E F$ | -4 | -2 |


|  |
| :---: |
|  |  |
|  |  |
|  |
|  |
| (1) (1) (1) ${ }^{\text {a }}$ |
| $\bigcirc \bigcirc \bigcirc$ |
|  |

