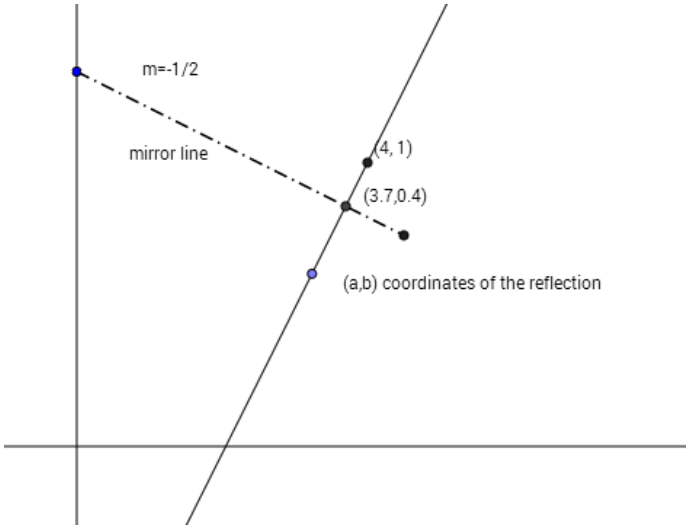
Student 3: Low Merit

NZQA Intended for teacher use only



Gradient of mirror line = $m = \frac{(2.25-0)}{(0-4.5)} = \frac{2.25}{-4.5} = -\frac{1}{2}$

the gradient of the perpendicular line is 2

y – 1 = 2(x - 4) y – 1 = 2x - 8 y= 2x - 7 2x – y –7 = 0 (2)

y – 0 = –0.5(x – 4.5) 2y = – x – 4.5 x + 2y – 4.5=0 (1)

x + 2y – 4.5 = 0 *x + 2y – 4.5*

– 2x – 4y + 9 = 0 *4x - 2y - 14*

2x – y – 7 = 0 $5x = \frac{18.5}{5} = 3.7$

– 5y + 2 = 0 $5y = \frac{2}{5} = 0.4$

The co-ordinates of the point of intersection of the mirror line and the perpendicular line are (3.7, 0.4) (3)

$\frac{a+4}{2} = 3.7$ $\frac{b+1}{2} = 0.4$ a = 3.4 b = – 0.2

(3.4, – 0.2) are the co-ordinates of the reflected point. (4)