Slope calculation
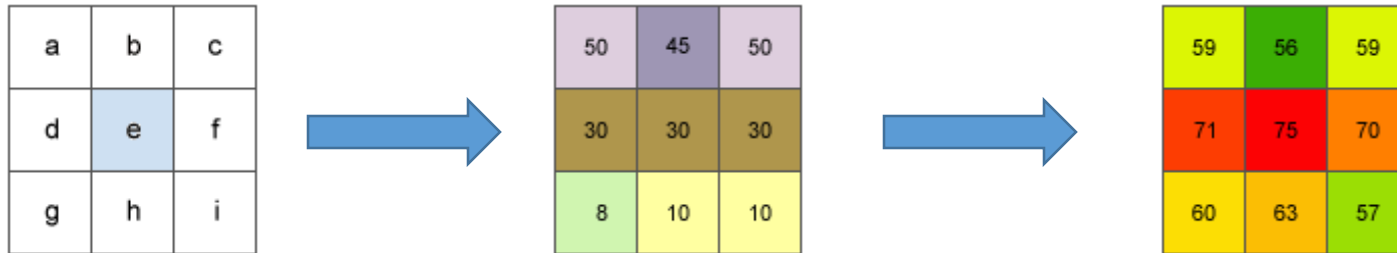

The rate of change in the x direction for cell *e* is calculated with the following algorithm,

- [dz/dx] = ((*c* + 2*f* + *i*) - (*a* + 2*d* + *g*) / (8 * *x_cellsize*)

The rate of change in the y direction for cell *e* is calculated with the following algorithm:

- [dz/dy] = ((*g* + 2*h* + *i*) - (*a* + 2*b* + *c*)) / (8 * *y_cellsize*)

- $[dz/dx] = ((c + 2f + i) - (a + 2d + g) / (8 * x\_cellsize) = ((50 + 60 + 10) - (50 + 60 + 8)) / (8 * 5) = (120 - 118) / 40 = 0.05$

The rate of change in the y direction for cell *e* is:

- $[dz/dy] = ((g + 2h + i) - (a + 2b + c)) / (8 * y\_cellsize) = ((8 + 20 + 10) - (50 + 90 + 50)) / (8 * 5) = (38 - 190) / 40 = -3.8$

Taking the rate of change in the x and y direction, the slope for the center cell *e* is calculated using

- $rise\_run = \sqrt{([dz/dx]^2 + [dz/dy]^2)} = \sqrt{((0.05)^2 + (-3.8)^2)} = \sqrt{(0.0025 + 14.44)}$

    $= 3.80032$

- $slope\_degrees = ATAN(rise\_run) * 57.29578 = ATAN(3.80032) * 57.29578 = 1.31349 * 57.29578$

    $= 75.25762°$