

National 5 Mathematics

Straight Lines - Solutions - 2014-2017

Marks are indicated in brackets after each question number

2014 Paper 1 Question 6, (3) (1)

a)  $A = (5, 200), B = (25, 500)$

$$m_{AB} = \frac{500 - 200}{25 - 5} = 15$$

Using  $y - b = m(x - a)$  with  $(5, 200)$  gives

$$y - 200 = 15(x - 5)$$

$$y - 200 = 15x - 75$$

$$y = 15x + 125$$

$$C = 15F + 125$$

b)  $C = 15F + 125$

Substitute  $F = 40$  gives

$$C = (15 \times 40) + 125$$

$$= 725$$

2014 Paper 1 Question 11, (2) (2)

a)  $4x + 3y = 12$

$$3y = -4x + 12$$

$$y = -\frac{4}{3}x + 4$$

So, the gradient is  $-\frac{4}{3}$

b) On the x-axis  $y = 0$ , so let  $y = 0$  to give

$$0 = -\frac{4}{3}x + 4$$

$$x = 3$$

Giving the point (3, 0)

**2015 Paper 1 Question 8, (3)**

Let  $A = (-2, 5)$ ,  $B = (3, 15)$

$$m_{AB} = \frac{15 - 5}{3 - (-2)} = 2$$

Using  $y - b = m(x - a)$  with (3, 15) we have

$$y - 15 = 2(x - 3)$$

$$y - 15 = 2x - 6$$

$$y = 2x + 9$$

**2016 Paper 1 Question 5, (3) (1)**

a)  $D = (3, 100)$ ,  $E = (15, 340)$

$$m_{DE} = \frac{340 - 100}{15 - 3}$$

$$= \frac{240}{12}$$

$$= 20$$

Using  $y - b = m(x - a)$  with (3, 100) gives

$$y - 100 = 20(x - 3)$$

$$y - 100 = 20x - 60$$

$$y = 20x + 40$$

$$W = 20A + 40$$

b)  $W = 20A + 40$

$$1 \text{ year} = 12 \text{ months}$$

$$W = (20 \times 12) + 40$$

$$= 280 \text{ kg}$$

2017 Paper 1 Question 6, (3)

$$m_{AB} = \frac{6 - (-2)}{-1 - 3}$$

$$= -2$$

Using  $y - b = m(x - a)$  with  $(3, -2)$  gives

$$y - (-2) = -2(x - 3)$$

$$y + 2 = -2x + 6$$

$$y = -2x + 4$$

2017 Paper 2 Question 11, (2)

$$3x - 5y - 10 = 0$$

$$3x - 10 = 5y$$

$$5y = 3x - 10$$

$$y = \frac{3}{5}x - 2$$

So, the gradient of the line is  $\frac{3}{5}$