

EQUATIONS OF TREND LINES





a The line passes close to (90, 90) and (20, 10). Since approximations are used to determine points on the line, your equation may differ slightly from the one below.

Gradient = $\frac{90-10}{90-20} \approx 1.14$ Let maths mark = *M* and chemistry mark = *C* Using *m* = 1.14, (20, 10) and *C* = *mM* + *b*: $10 = 1.14 \times 20 + b$ 10 = 22.8 + bb = -12.8

Equation of trend line: C = 1.14M - 12.8

b Let M = 70

C = 1.14M - 12.8 $C = 1.14 \times 70 - 12.8$ = 67

Check: (70, 67) is a point on the line.

c Let C = 48

C = 1.14M - 12.8 48 = 1.14M - 12.8 60.8 = 1.14M $M = 60.8 \div 1.14$ ≈ 53.333

The marks appear to be in whole numbers so the maths mark was about 53.

Check: (53, 48) is a point on the line.

HOTsheet

TASK 2

Temperature and rainfall

a Approximations for 2 points: (10, 22.5) and (70, 6)

$$m = \frac{22.5 - 6}{10 - 70}$$

=-0.275

(*Note*: The slope of the line appears much steeper than this because the scales on the two axes are different.)

t = -0.275r + b

Using (70, 6):

 $6 = -0.275 \times 70 + b$

$$6 = -19.25 + b$$

b = 25.25 (the estimated *b* intercept)

Equation is: t = -0.275r + 25.25

b Let r = 110

t = -0.275r + 25.25= -0.275 × 110 + 25.25 = -5

The temperature would be estimated to be -5° C.

Since this is below the freezing point of water, this 'rainfall' would probably be snow or sleet.

