

## Achievement Standard 91256 (Mathematics and Statistics 2.1)

## Apply coordinate geometry methods in solving problems

## Practice assessment

## Solutions

$$1. d = \sqrt{(-4 - -10)^2 + (-6 - 4)^2}$$

$$= \sqrt{36 + 100}$$

$$= \sqrt{136}$$

$$= 11.7 \text{ m (1 dp)}$$

$$2. \text{ gradient} = \frac{6 - 4}{9 - -10}$$

$$= \frac{2}{19}$$

$$3. \text{ Midpoint} = \left( \frac{-10 + -4}{2}, \frac{-6 + 4}{2} \right)$$

$$= (-7, -1)$$

4. Equating rules gives

$$2x - 2 = -\frac{1}{2}x + 3$$

$$2.5x = 5 \quad \text{[rearranging and simplifying]}$$

$$x = 2$$

$$y = 2 \times 2 - 2 \quad \text{[substituting } x = 2 \text{ in } y = 2x - 2]$$

$$= 2$$

BB has coordinates (2,2)

$$5. y = -\frac{1}{2}x + 3 \text{ has gradient } -\frac{1}{2} \quad \text{[comparing with } y = mx + c]$$

So gradient of perpendicular is 2 [product of gradients is -1]

Footpath has gradient 2 and passes through (6,-4) so equation is:

$$y - -4 = 2(x - 6) \quad \text{[substituting in } y - y_1 = m(x - x_1)]$$

$$y + 4 = 2x - 12 \quad \text{[expanding]}$$

$$y = 2x - 16 \quad \text{[rearranging]}$$