

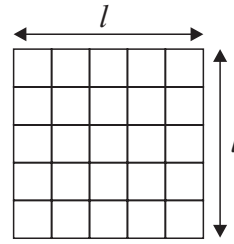
SAMPLE PAPER 4: PAPER 2

QUESTION 9 (65 MARKS)

Question 9 (a)

Length $l = 5 \text{ units} = 5 \times 20 \text{ m} = 100 \text{ m}$

Area $A = 5 \times 5 = 25 \text{ units squared} = 100 \text{ m} \times 100 \text{ m} = 10\,000 \text{ m}^2$



When converting units of length to metres, multiply by a factor of 20. (100 divided by 5)

When converting units squared of area to m^2 , multiply by a factor of 400. (10 000 divided by 25)

Question 9 (b)

ADMINISTRATION BLOCK

Area = Area of rectangle + Area of triangle

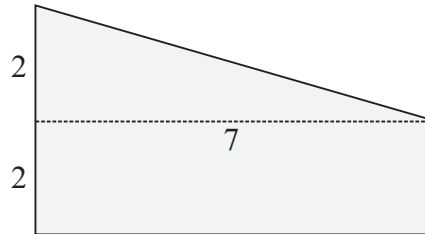
$$= 7 \times 2 + \frac{1}{2} \times 7 \times 2$$

$$= 14 + 7$$

$$= 21 \text{ units squared}$$

$$= 21 \times 400 \text{ m}^2$$

$$= 8400 \text{ m}^2$$



SCIENCE BLOCK

Area = Area of rectangle + Area of bigger triangle + Area of smaller triangle

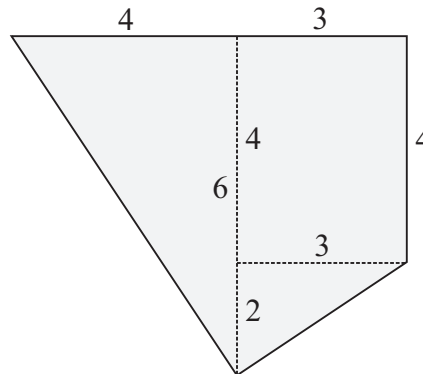
$$= 4 \times 3 + \frac{1}{2} \times 4 \times 6 + \frac{1}{2} \times 3 \times 2$$

$$= 12 + 12 + 3$$

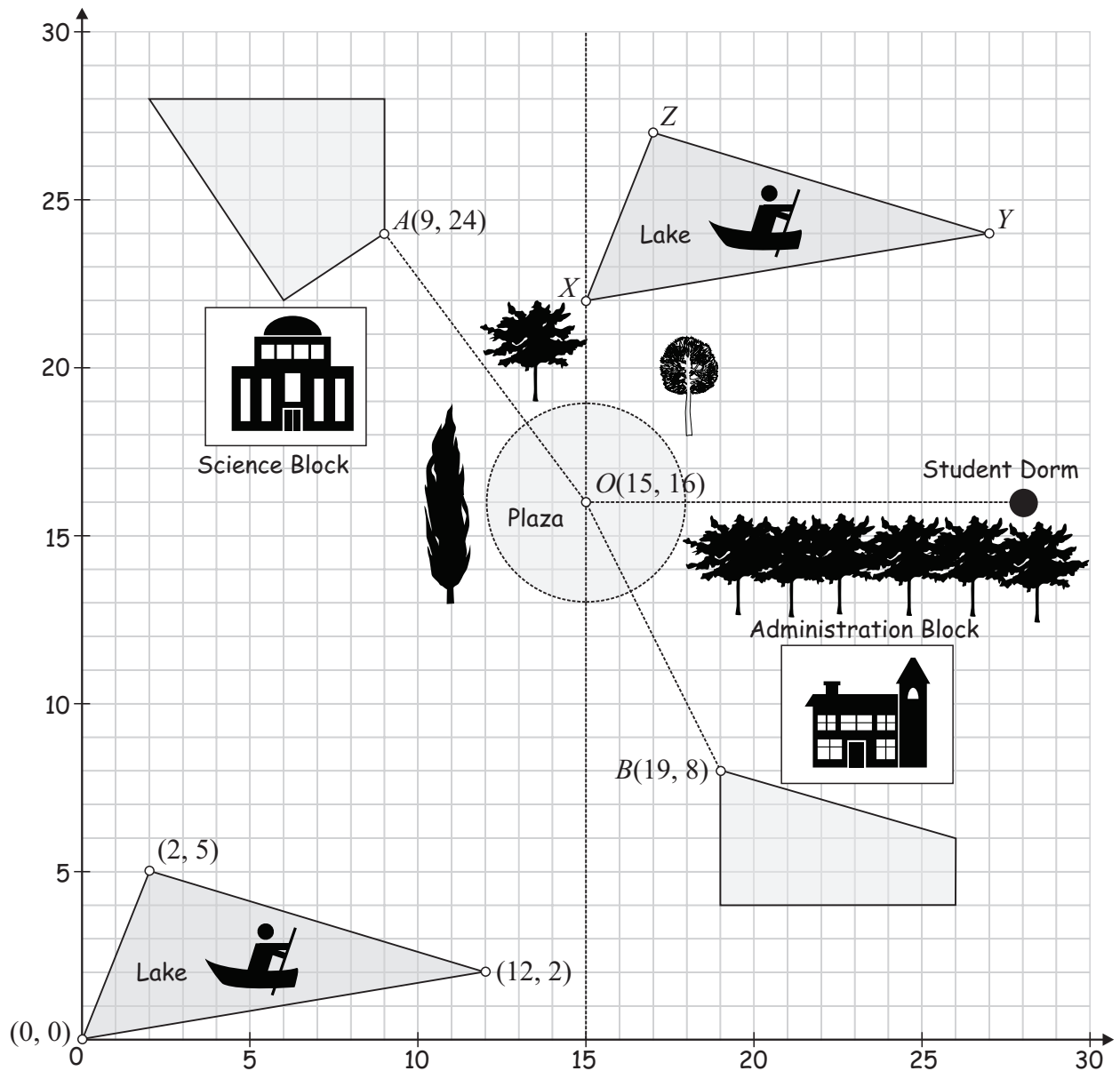
$$= 27 \text{ units squared}$$

$$= 27 \times 400 \text{ m}^2$$

$$= 10\,800 \text{ m}^2$$



Question 9 (c) (i)



Question 9 (c) (ii)

$$\begin{aligned}
 (x_1, y_1) &= (2, 5) \\
 (x_2, y_2) &= (12, 2) \\
 A &= \frac{1}{2} |x_1 y_2 - x_2 y_1| = \frac{1}{2} |(2)(2) - (12)(5)| \\
 &= \frac{1}{2} |4 - 60| \\
 &= \frac{1}{2} |-56| \\
 &= 28 \text{ units squared} \\
 &= 28 \times 400 \text{ m}^2 \\
 &= 11200 \text{ m}^2
 \end{aligned}$$

Question 9 (d) (i)

$$A = (9, 24), O(15, 16), B(19, 8)$$

Question 9 (d) (ii)

$$\begin{aligned}
 |PQ| &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \\
 A(9, 24), O(15, 16) \\
 |AO| &= \sqrt{(15 - 9)^2 + (16 - 24)^2} = 10 \text{ units} \\
 O(15, 16), B(19, 8) \\
 |OB| &= \sqrt{(19 - 15)^2 + (8 - 16)^2} = 8.94 \text{ units} \\
 |AO| + |OB| &= 10 + 8.94 = 18.94 \text{ units} \\
 &= 18.94 \times 20 \approx 379 \text{ m}
 \end{aligned}$$

Question 9 (e) (i)

Radius of the circle $r = 3$ units = 60 m

Length of circumference: $l = 2\pi r = 2\pi(60) = 377$ m

Question 9 (e) (ii)

Distance walked = $13 \times 20 + \frac{1}{4}(377) = 354.3$ m

Question 9 (e) (iii)

Distance = 354.3 m = 0.3543 km

Speed = 2.5 km/h

Time = ?

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{0.3543 \text{ km}}{2.5 \text{ km/h}} = 0.14172 \text{ hr} = 0.14172 \times 60 \text{ s} \approx 9 \text{ mins}$$

Time of arrival: 10:09 am
