

MATHEMATICS ANSWERS

Level One

Culs-de sac

- 1) $10000\text{m}^2 = 1 \text{ hectare.}$
Area $= 100 \times 118.14\text{m}$
 $= 11814.0\text{m}^2$
 $= 1.1814\text{ha}$
- 2) Area of rectangle:
 $= 50 \times 14.14$
 $= 707\text{m}^2$
- Area of Circle less segment:
 $= \pi r^2 \times \frac{3}{4}$ (or equivalent, e.g. $270/360$)
 $= \pi(10)^2 \times \frac{3}{4}$
 $= 235.62\text{m}^2$
- Area of triangle:
 $= \frac{1}{2}bh$
 $= \frac{1}{2} \times 10 \times 10$
 $= 50.0\text{m}^2$
- Total Area:
 $= 707 + 235.62 + 50$
 $= 992.6\text{m}^2$ (nearest 0.1m^2)
- 3) Remaining Area $= 11814.0 - 992.6$
 $= 10821.4\text{m}^2$ (or Answer to 1 minus Answer to 2)
- 4) Max lots $= 10821.4 \div 650\text{m}^2$
 $= 16.6 \text{ lots}$
 $= 16 \text{ lots}$ (NB if you round to 17 the area of each lot will be less than 650m^2)
- 5) Foot path length $= (2 \times 50) + (\frac{3}{4} \times \pi \times 2 \times 9.5)$
 $= 100 + (\frac{3}{4}\pi \times 19)$
 $= 144.77\text{m}$
- 6) Area of footpath $= 144.77 \times 1\text{m wide}$
 $= 144.77\text{m}^2$
- 7) Roundabout area:
 $= \pi r^2 = \pi(3)^2$
 $= 28.3\text{m}^2$
- 8) Final area $= \text{Road Area} - \text{roundabout} - \text{footpath area}$
 $= 992.6 - 28.3 - 144.77$
 $= 819.53 \text{ m}^2$
- 9) Cost: $= 819.53 \times \$16.50$
 $= \$13,522.25$