

## Solution Sheet 7, June 9, 2012

### Answers

1.  $2 \cdot (6)^2$
2. 249 - count the number of 5's
3. (a) Take the point on the axis of symmetry of the parabola. This is a maximum or a minimum.  
(b)  $\frac{c^4}{2}$
4. (a) take  $x = y$  and  $z = x + 1$ , this is true for all integers  $x$ .
5. (a)  $\text{Area } ABC = \text{Area } ADC + \text{Area } BDC$   
(b) By cos rule,  $\cos(72^\circ) = \frac{x-8}{x}$ , where  $x = 2 \cdot 2^{\log_2 5}$ . Since  $\cos(72^\circ) > 0$ ,  $\cos(72^\circ) = \frac{-1+\sqrt{5}}{4}$ .  
(c) As above,  $\cos(36^\circ) = \frac{-1+\sqrt{5}}{4}$