UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

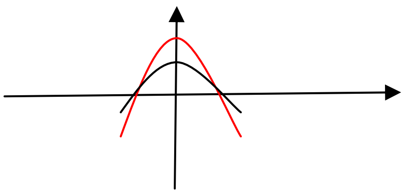
0607/21 Paper 2 (Extended), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1	$(x) = 5, (y) = -1$	**2**	**B1** each, or **M1** for attempt to eliminate x or y (allow 1 numerical slip) **[2]**
2	08 13 oe	**3**	**M1** for distance/speed seen (implied by 0.3) **A1** for 18 minutes **[3]**
3	$(\pm)\sqrt{\dfrac{2A}{\pi}}$	**3**	**M1** for $\times$ 2 correctly **M1** for $\div\ \pi$ correctly **M1** for $\sqrt{\ }$ correctly All independent, in any order **[3]**
4 (a)	$2\sqrt{13}$ or $\sqrt{52}$ as final answer	**2**	**M1** for $4^2 + 6^2$
(b)	$4\sqrt{5}$ or $\dfrac{12\sqrt{5}}{3}$ or $\sqrt{80}$	**2**	**M1** for $\cos\theta = \dfrac{g}{12}$ or better **[4]**
5		**2**	**B1** for parabola with vertex twice as high **B1** for cutting x-axis in same places as $y = \mathrm{f}(x)$ (Ignore curve below the x axis) **[2]**
6 (a)	1, 3	**2**	**B1** each
(b)	$5+2\sqrt{2}$	**2**	**M1** for $3\sqrt{2}\sqrt{2}-\sqrt{2}+3\sqrt{2}-1$ or better **[4]**
7 (a) (i)	6	**1**	
(ii)	7	**1**	
(b)	$\dfrac{7}{12}$ oe	**1**	
(c)	$\dfrac{2}{6}$ oe	**1 ft**	If $\dfrac{2}{6}$ not seen, then ft their part **(a)(i)** **[4]**
8 (a)	$(x + 8)(x - 6)$	**2**	**SC1** for any pairs of brackets giving two correct terms when multiplied out.
(b)	$(y + 2z)(x - 3)$	**2**	**M1** for $x(y + 2z) - 3(y + 2z)$ or $y(x - 3) + z(2x - 6)$ (or better) **[4]**
9	$(\pm)1.2$ oe	**3**	**M2** for $y=\dfrac{6}{\sqrt{x}}$ oe or **M2** for $\dfrac{y}{3}=\dfrac{\frac{1}{\sqrt{25}}}{\frac{1}{\sqrt{4}}}$ oe (**M1** for $y=\dfrac{k}{\sqrt{x}}$ oe, where $k \neq 1$, then **dep M1** for $y=\dfrac{\text{their } k}{\sqrt{25}}$) **[3]**

10 **(a)**	33	**1**	Ignore extra terms
(b)	$n^2 - 3$	**3**	**M1** for reaching second differences same **M1** for $an^2 + bn + c$ (implies first **M**) $a \neq 0$ **[4]**
11	40	**2**	**M1** for $\left(\frac{6}{3}\right)^3$ or $\left(\frac{3}{6}\right)^3$ seen **[2]**
12 **(a)** **(i)**	4	**1**	
(ii)	–3	**1**	
(b)	288	**3**	**M1** for $a \log b = \log b^a$ correctly used once (Implied by 3^2 or 2^5 seen) **M1** for $\log p + \log q = \log pq$ correctly used (Implied by $y = 3^2 \times 2^5$ but can be seen to be correctly used with incorrect values of p, q.) Note log 288 scores 2/3 **[5]**