**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education**

## MARK SCHEME for the October/November 2014 series

# 0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

**0607/22** 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 should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2014 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.





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| | | | | |
|---|---|---|---|---|
| **1** | | $-1, 5$ | **2** | **B1** each |
| **2** | | $n^2 - 2n$ oe | **3** | **B2** for $n^2 + kn$ or $(n-1)^2 + k$<br>or **M1** for second differences equal or any other quadratic expression |
| **3** | | $\frac{27}{64}$ | **2** | **B1** for 27 or 64 in answer<br>or **M1** for $\frac{1}{\sqrt{\left(\frac{16}{9}\right)^3}}$ oe or better |
| **4** | | $a = 3, b = -3$ | **3** | **M1** for $\times \frac{\sqrt{2}-1}{\sqrt{2}-1}$ or $3 = 2a + a\sqrt{2} + b\sqrt{2} + b$<br>**A1** for one correct |
| **5** | **(a)** | 25 | **2** | **M1** for $7^2 + 24^2$ |
| | **(b)** | 4.8 oe | **2** | **M1** for $\sin\alpha = \frac{y}{8}$ oe |
| **6** | **(a)** | $(x-8)(x+3)$ | **2** | **SC1** for $(x+a)(x+b)$<br>where $ab = -24$ or $a + b = -5$ |
| | **(b)** | $(q+1)(p-t)$ | **2** | **B1** for $p(q+1) - t(q+1)$<br>or $q(p-t) + p - t$ |
| **7** | | $\frac{30}{56}$ oe | **3** | **M2** for $\frac{5}{8}\times\frac{3}{7} + \frac{3}{8}\times\frac{5}{7}$ oe<br>or **M1** for one of these products |
| **8** | **(a)** | $y = \frac{6}{\sqrt{x}}$ | **2** | **M1** for $y = \frac{k}{\sqrt{x}}$ or for $\frac{y}{3} = \frac{\frac{1}{\sqrt{x}}}{\frac{1}{\sqrt{4}}}$ |
| | **(b)** | 2 | **1FT** | |
| | **(c)** | $\left(\frac{6}{y}\right)^2$ oe | **2FT** | **FT** *their* **(a)** only if $y = \frac{k}{\sqrt{x}}$ or $y = k\sqrt{x}$ or $y = \frac{k}{x^2}$<br>**M1** for correct multiplication and division<br>**M1** for correct squaring |
| **9** | **(a)** | $-2$ | **1** | |
| | **(b)** | $3^p$ | **2** | **B1** for $\log_3 q$ or $p \log 3$ seen<br>or **SC1** for answer $10^{p \log 3}$ |

| | | | |
|---|---|---|---|
| **10 (a) (i)** | (4, 0) | **1** | |
| **(ii)** | (0, 3) | **1** | |
| **(iii)** | (2, 1.5) | **1FT** | **FT** *their* **(i)**, **(ii)** but can recover |
| **(b)** | $y = \frac{4}{3}x$ oe | **3** | **M1 FT** for gradient of $l = -\frac{3}{4}$<br>**M1** for gradient = $\frac{-1}{\text{gradient of } l}$<br>If 0 scored,<br>**SC1** for answer in form $y = kx$ oe, $k > 0$ |
| **11** | Triangle vertices (2, 1), (2, 2), 6, 1) | **2** | **SC1** for stretch factor 2 with $x$-axis invariant |
| **12** | $a = -1$, $b = 4$, $c = 0$ | **3** | **B2** for $a(x-2)^2 + 4$<br>or<br>**B2** for $x(4-x)$ or $x(x-4)$<br>or<br>**M1** for $c = 0$ and $4a + 2b = 4$ and $16a + 4b = 0$ and **M1** for eliminating $a$ or $b$<br>or<br>**M1** for<br>$0a + 0b + c = 0$<br>$4a + 2b + c = 4$<br>$16a + 4b + c = 0$<br>and **M1** for eliminating two of $a$, $b$, c |