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 May/June 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
### Abbreviations
- **cao**: correct answer only
- **dep**: dependent
- **FT**: follow through after error
- **isw**: ignore subsequent working
- **oe**: or equivalent
- **SC**: Special Case
- **nfww**: not from wrong working
- **soi**: seen or implied

### Question 1
1 (a) 13 h 35 mins or 13 h 34.8 to 35 mins
1 (b) [0]750 oe
1 (c) 825 or 825.0 to 825.1...

### Question 2
2 (a) (i) Triangle (–1, 1), (–1, 2) (–3, 1)

(ii) Triangle (–1, –1), (–1, –2), (–3, –1)

(iii) Reflection \( y = -x \)

(b) Stretch [stretch factor] 3

### Question 3
3 (a) (i) 74.4[0]

(ii) 21.7 or 21.73 to 21.74

(b) (i) 132.5[0]

(ii) 2.33 or 2.332
### Question 4

(a) \((-4, 11)\)

(b) 7.21 or 7.211... or \(2\sqrt{13}\)

(c) \(y = -\frac{2}{3}x + 4\) oe

(d) \((3, 2)\)

(e) \(y = \frac{3}{2}x - \frac{5}{2}\) oe

(f) Kite

### Question 5

(a) \(x(40 - 2x)(30 - 2x)\)

(b) 2.19 or 2.192...

(c) 10

(d) 22.8 would produce negative width/length

(e) 3030 or 3032 to 3032.3...

### Question 6

(a) (i) \(4n - 2\)

(ii) \((4n - 2) \times 10^{(a+1)}\) oe

(b) (i) \(2 \times 10^{[1]} , 2 \times 10^{-1} , 2 \times 10^{-3} , 2 \times 10^{-5}\)

(ii) \((2n - 1) \times 10^{(3n-2)}\)

### Mark Scheme

1. For \((-4, 11)\) or \((8, 3)\)
2. For \(\sqrt{4^2 + 6^2}\)
3. For gradient \(-\frac{1}{2}\)
4. For \(y = mx + c\) oe
5. For any cubic curve \((+x^3)\) with max & min
6. For \(4n + k\) or \(10^{(a+1)}\) or \(10^{(3n-2)}\) or \(10^{(a+1)} - (3 - 2a)\) FT dep on \((a)(ii)\) in correct form
7 (a) 86.0 or 86.03 to 86.04
(b) 246° or 245.5 to 245.6
(c) 13 000 or 13 030 to 13 035

2 M1 for \( \frac{AB}{150} = \cos 55 \) oe
4 M2 for \( \cos = \frac{120^2 + 150^2 - 235^2}{2 \times 120 \times 150} \) (120.6)
or M1 for \( 235^2 = 120^2 + 150^2 - 2 \times 120 \times 150 \cos \theta \)

3 M2 for \( \frac{1}{2} \times 150 \times \text{their} 86 \times \sin 55 \) oe
\( + \frac{1}{2} \times 120 \times 150 \times \sin (\text{their} DAC) \) oe
or M1 for 1 of above areas soi by 5283 to 5285. … or 7746. ...

8 (a) 6.8 or 6800
(b) Correct plotting 7 correct points and drawing smooth curve

2 M1 for clear evidence of midpoints used soi by figs 68
5 All FTS dep on increasing curve
B2 for correct cfs seen 8, 29, 60, 83, 93, 98, 100 or SC1 for correct cfs with 1 error
B1FT for 7 corrects height plotted
B1FT for points plotted at 5, 6, 7, 8, 9, 10, 12
B1 dep FT for smooth curve dependent on increasing and dependent on B1 for heights

10 (i) 10
(ii) 1600 to 1900

2FT B1 dep for 90 FT dependent on increasing curve
2FT B1dep FT for 5.8 (or 5800) or 7.6 (or 7600) seen or answer 1.8 dependent on increasing curve

9 (a) (i) \( \frac{x}{x+40} = \frac{15}{20} \) oe
\( 20x = 15x + 40 \times 15 \) oe

1
1 Accept 600 for 40 \times 15

(ii) 121 or 120.9… or 15\sqrt{65}

2 M1 for \( \sqrt{120^2 + 15^2} \)

(iii) 40.3 or 40.24 to 40.35 or 5\sqrt{65}

2FT M1 for \( \text{their} (a)(i) \times \frac{40}{120} \) oe

© Cambridge International Examinations 2015
(b) (i) 38 700 or 38 740 to 38 752

(ii) 5140 or 5139 to 5142

10 (a) \[
\frac{6}{10} + \frac{4}{10} \text{ oe}
\]

\[
\frac{4}{9} \times \frac{3}{9} + \frac{2}{9} \text{ correctly positioned twice}
\]

(b) (i) 18 \frac{90}{90} \text{ oe}

(ii) 24 \frac{90}{90} \text{ oe}

(iii) 64 \frac{90}{90} \text{ oe}

11 (a)

(b) \(x = -3\)
\(y = -2\)

(c) \(-2 \leq y \leq \frac{1}{3}\)

11 (a) Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape

A1 RH branch cuts both +ve axes

A1 asymptotes approximately right with no overlap

M1 Basic shape
(d) ![Graph showing a correct shape for reflection of part of (a) in x-axis]

Correct shape
B1 for reflection of any part of (a) in x-axis

(e) -4.75
-2.125 or -2.12 or -2.13

1

12  (a) (i) -2
(ii) -7

1FT

(b) (i) 6 - 6x oe

(ii) \( \frac{4 - x}{2} \) or \( \frac{2 - \frac{x}{2}}{2} \) oe

B1 for \( 4 - 2(3x - 1) \)

2

(iii) \( \frac{11 - 13x}{(3x - 1)(4 - 2x)} \)

B1 for \( x = 4 - 2y \) or \( 2x + y = 4 \)

2

M2 for \( \frac{2(4 - 2x) - 3(3x - 1)}{(3x - 1)(4 - 2x)} \)

or B1 for \( 2(4 - 2x) - 3(3x - 1) \)

3

SC2 for \( \frac{5 - 13x}{(3x - 1)(4 - 2x)} \)

or M1 for common denominator \( (3x - 1)(4 - 2x) \)