EXAM PAPERS PRACTICE

# GCSE AQA Math 8300

## Structure & Calculation

# Mark Scheme

*"We will help you to achieve A Star "*

**M1.**

**Alternative method 1**

Orders numbers
7.6 9.6 12.4 12.6 15.4 17.4

*Smallest to largest or largest to smallest*

7.6 and 17.4
and
9.6 and 15.4
and
12.4 and 12.6

*Pairs in any order*

**Alternative method 2**

(9.6 + 12.6 + 15.4 + 7.6 + 12.4 + 17.4) ÷ 3 or 25
or
(9.6 + 12.6 + 15.4 + 7.6 + 12.4 + 17.4) ÷ 6 or 12.5

*Implied by one correct pair*

7.6 and 17.4
and
9.6 and 15.4
and
12.4 and 12.6

*Pairs in any order*

**[2]**

**M1.**

$\frac{15}{35}$

**[1]**

**M3.** $101.4^{\frac{1}{2}}$ estimated as 10

*condone − 10*

($6.43^0$ =) 1

$7.99^{\frac{2}{3}}$ estimated as 4

14

*condone −6 if −10 used*

*ft fully correct evaluation with B2 scored*

**[4]**

**M4.**

No and shows an example of an even multiple of 3 + a multiple of 2 = an even number

*eg No and 6 + 4 = 10*

**[1]**

**M5.** Correct order **and** all four correct

values seen in same format

3, 3.15, 3.25, 3.5(0)

or 3, $3\frac{15}{100}$ , $3\frac{25}{100}$ , $3\frac{50}{100}$

or 3, $3\frac{3}{20}$ , $3\frac{1}{4}$ , $3\frac{1}{2}$

or 300(%), 315(%), 325(%), 350(%)

or $\sqrt{9}$, 3.15, $\frac{13}{4}$, $3\frac{1}{2}$ after values

seen in same format

*oe*

*B2 all four correct values in same format*

*or*

*three correct values in same format and correct order for their values*

*B1 three correct values in same format*

*SC1* $\sqrt{9}$, *3.15,* $\frac{13}{4}$, $3\frac{1}{2}$ *with no working*

**[3]**

**M6.**(a) 20(p)

*Accept £ 0.20(p)*

(b) 10 × (25 − their 20)

or 10 × 25 − 10 × their 20 *oe*

*ft their 20 from (a) if < 25*

50(p)

*Accept £ 0.50(p)*

**[3]**

**M7.**

$x^{-\frac{2}{3}}$ or $a = -\frac{2}{3}$

*B2* $(x^{\frac{-1}{3}})^2$ or $(x^2)^{\frac{-1}{3}}$ or $(x^{\frac{2}{3}})^{-1}$ or

$(x^{-2})^{\frac{1}{3}}$ or $(x^{\frac{1}{3}})^{-2}$ or $\frac{1}{x^{\frac{2}{3}}}$ or $-\frac{2}{3}$

*B1* $(\sqrt[3]{x})^2$ or $(\sqrt[3]{x^2})^{-1}$ or $(\frac{1}{x^2})^{\frac{1}{3}}$

or $\frac{1}{(x^2)^{\frac{1}{3}}}$ or $(\frac{1}{\sqrt[3]{x}})^2$ *or base x with any negative index.*

**[3]**

**M8.**

(a) 63

(b) $5(y + 1)$ or $5y + 5$

or $(4 + 1)(y + 1)$ or $4y + 4 + y + 1$

**Additional Guidance**
Condone $(4 + 1) \times (y + 1)$

Condone $5 \times (y + 1)$ or $5 \times y + 5$

Condone missing final bracket $5 \times (y + 1$

Do not ignore further incorrect work

(c) $(x + 1)(y + 1)$

or $x(y + 1) + y + 1$

or $y(x + 1) + x + 1$

or $xy + x + y + 1$

**Additional Guidance**
Condone $(x + 1) \times (y + 1)$

Condone $x \times (y + 1) + y + 1$

Do not ignore further incorrect work

(d) $(2x + 1)(y + 1)$

or $2x(y + 1) + y + 1$

or $y(2x + 1) + 2x + 1$

or $2xy + 2x + y + 1$

**Additional Guidance**
Condone $(2x + 1) \times (y + 1)$

Condone $2x \times (y + 1) + y + 1$

Do not ignore further incorrect work

**[4]**

**M9.**(a) 15 and 10 in either order

*B1 15 with a number less than or equal to 15*
***or***
*two numbers with a total of 25*

(b) 17 and 11 in either order

*B1 two numbers giving a range of 6 for set C*
***or***
*two numbers with a total of 28*

**[4]**

**M10.**

(a) 375.112(1656)

*Condone if correctly rounded to 7 significant figures or better eg 375.1122*

(b) $20^2$ or 400 or $\sqrt[3]{1000}$ or 10 or 5

400 – 10 ÷ 5 = 398 or
400 – 2 = 398

**[3]**

**M11.**

$x$ = 81 and $y$ = 19

*B1 100 – (a square number) correctly evaluated*

*or 100 – (a prime number) correctly evaluated*

*or A list of square numbers up to and including 81 with one error or omission and a list of prime numbers up to and including 19 with one error or omission*

*or A correctly evaluated trial of a square number plus a prime number.*

*e.g. 49 + 53 = 102*

**M12.**

(a) 0.0048

(b) 0.000 012

(c) $2.5 \times 10^6$

**[3]**

**M13.** 4 540 000 000 or $4540 \times 10^6$

$4.54(0) \times 10^9$

*SC1 their 4 540 000 000, with digits 454, correctly converted to standard form*

*SC1 $4.54(0) \times 10^3$ (million)*

*SC1 $4.5 \times 10^6$*

**[2]**

**M14.**

$\sqrt{48}$ or $k = 48$

*ft value seen in the form $a\sqrt{b}$ where $a$ and $b$ are integers > 1*

**[3]**

**M2.**

$\frac{10}{3\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}}$ or $\frac{10\sqrt{5}}{15}$

$\frac{10}{3\sqrt{5}} \times \frac{3\sqrt{5}}{3\sqrt{5}}$ or $\frac{30\sqrt{5}}{45}$

or $\frac{\sqrt{20}}{3}$

*oe*

*Must multiply numerator and denominator*

*eg $\frac{10}{\sqrt{45}}$ is M0*

*$\frac{10}{\sqrt{45}} \times \frac{\sqrt{45}}{\sqrt{45}}$ is M1*

$\frac{2\sqrt{5}}{3}$

**[2]**