

GCSE MATHEMATICS

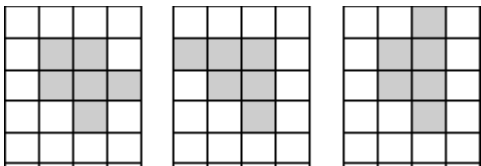
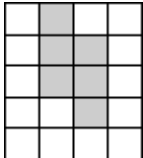
MARK SCHEME

Practice Paper Foundation 3

Maximum marks: 81

Calculator

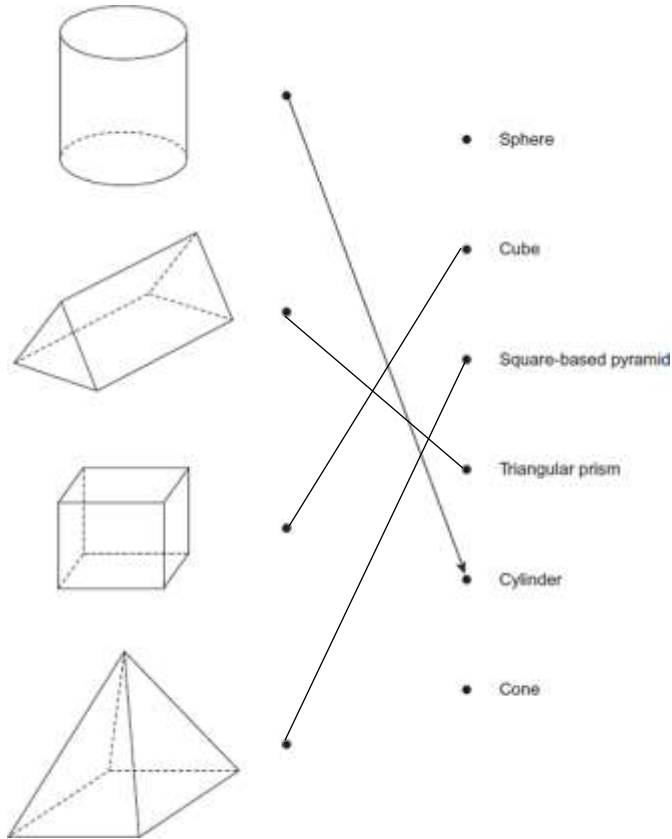
View detailed guidance on the conclusions you can draw from your students' performance in these papers on the MERiT welcome page. Understand how your students compare with others and target revision effectively by entering marks into MERiT.

- | | | | |
|---|--|----------------------|-----|
| 1 | (a) 20
(b) 18
(c) 16
(d) 8 | B1
B1
B1
B1 | [4] |
| 2 | 370 | B1 | [1] |
| 3 | (a) 30 016
<i>condone 30,016 or 30'016</i>
(b) zero point four three
or nought point four three
or point four three
or forty three hundredths
(c) (nine) hundred(s) or 900 or 100(s) | B1
B1
B1 | [3] |
| 4 | (a) 14
(b) 17 | B1
B1 | [2] |
| 5 | (a) 
<i>B1 1 line of symmetry</i>
<i>B1 No rotational symmetry</i>
(b) 
<i>B1 No line of symmetry</i>
<i>B1 Rotational symmetry order 2</i> | B2
B2 | [4] |

6	(a) 23	B1	
	(b) 30	B1	
	(c) Alternative method 1		
	13 + 23 + 7 + 14 + 11 or 68	M1	
	<i>5 values added. Allow 1 reading error</i>		
	17 + 11 + 13 + 20 or 61	M1	
	<i>4 values added. Allow 1 reading error</i>		
	Their 68 – their 61	M1dep	
	<i>Dep on one of previous Ms plus evidence of attempt at the other total.</i>		
	7	A1	
	Alternative method 2		
	+4, -12, +6, +6	M1	
	<i>Differences seen</i>		
	<i>Allow one error in reading</i>		
	4 – 12 + 6 + 6 = 4	M1	
	11 – 4	M1	
	7	A1	
			[6]
7	[4.9, 5.1] seen or [2.9, 3.1] seen	M1	
	their (5 + 3 + 5 + 3)	M1	
	16	A1	
	<i>[15.6, 16.4]</i>		
	<i>Do not ignore further work if using a clearly incorrect method seen for final answer</i>		
			[3]

8

B3



*B2 two correct
B1 one correct*

[3]

9 3 x 50 or 150 seen
or 2 ½ hours
2 hours 30 minutes

oe

SC1 for 1 hour 50 minutes

M1

M1

A1

[2]

10 $2x + 2x + 18x$

or $x + x + 9x (= 132)$

oe or for 1st trial
eg $2 \times 8 + 18 \times 4 = 88$

$22x = 132$ or $11x = 132$

oe or for 2nd improved trial
eg $2 \times 10 + 18 \times 5 = 110$

6

M1

M1

A1

Alternative method

2 + 9 or 4 + 18

132 ÷ their 11 or 132 ÷ their 22

6

M1

M1dep

A1

[3]

11 (a) 40

(b) 1 + 2

their 3 divided by 6

$\frac{1}{2}$ or 0.5 oe

B1

M1

A1

[3]

12	(a)	23		B1	
			<i>If no answer on answer line, accept answer in sequence If contradictory answers on answer line and in sequence, answer line takes precedence Accept 23 written in sequence and 'add 4.5' (or equivalent) seen on answer line</i>		
	(b)	6		B1	
			<i>If no answer on answer line, accept answer in sequence If contradictory answers on answer line and in sequence, answer line takes precedence Accept 6 written in sequence and 'subtract 4' (or equivalent) seen on answer line</i>		
	(c)	$\frac{13}{23}$		B2	
			<i>B1 correct numerator or denominator. If no answer on answer line, accept answer in sequence If contradictory answers on answer line and in sequence, answer line takes precedence If correct answer in sequence and correct rule or next term on answer line B2</i>		
					[4]
13		23		B1	[1]
14	(a)	90 and 213		B1	
		71	<i>ft their 90 – 19 or 400 – their 213 – 97 – 19</i>	B1ft	
	(b)	$\frac{97 + 19}{400}$ or $\frac{97}{400}$ or $\frac{19}{400}$		M1	
		or 97 + 19 or 116 oe			
		$\frac{116}{400}$ or $\frac{58}{200}$ or $\frac{29}{100}$		A1	
		or 0.29			
		or 29%			
		Additional Guidance			
		oe example $\frac{310}{400} \times \frac{97}{310} + \frac{90}{400} \times \frac{19}{90}$		M1	
					[4]
15	(a)	46		B1	
	(b)	1.5 seen or implied or 14 seen		B1	
		oe			
		28 × 1.5 or 28 + 14	<i>Attempt to multiply speed by time eg 28 × 1.3 or 36.4 or 90 × 28 or 2520 or 130 × 28 or 3640</i>	M1	
		42		A1	
					[3]

16	(a)	130		B1	
	(b)	Vertically opposite		B1	[2]
17		Divide by 3.14 or π		B2	
		Square root	<i>B1 for reversed order or one step only in correct position</i>		[2]
18	(a)	$2 = 5t^2$	oe	M1	
		0.4 seen	oe <i>Implied by -0.6(3...)</i>	M1dep	
		0.6(3...)	<i>Must be the positive value only</i>	A1	
	(b)	Alternative method 1			
		$1 = 5t^2$	oe	M1	
		0.4(4...) or 0.45		A1	
		Indicates less than	<i>ft their (a)</i>	A1ft	
		Alternative method 2			
		$5 \times (1/2 \times \text{their } 0.6(3...))^2$	oe <i>their 0.6(3...) from (a)</i>	M1	
		0.5	<i>ft their (a)</i>	A1ft	
		Indicates less than	<i>ft their (a)</i>	A1ft	
		Alternative method 3			
		States that the ball is accelerating		M1	
		States that this means the 2 nd metre takes less time		A1	
		Indicates less than		A1	
		Additional Guidance			
		Explanation must mention acceleration			[6]
19	(a)	Alternative method 1			
		3×5 or 15 (children) or 20 (children)	eg 3 : 15	M1	
		15 and 20 and No	oe <i>No, they had 5 extra children</i>	A1	
		Alternative method 2			
		$20 \div 5$ or 20 (children) or 4 (adults)	eg 4 : 20	M1	
		4 and No	oe <i>No, they needed 1 more adult</i>	A1	

Additional Guidance

Allow misreads for the other sports on Saturday **or** walking on Sunday **or** walking on Saturday and Sunday:

$27 \div 5$ **or** 5.4 (adults) M1A0

$18 \div 5$ **or** 3.6 (adults) M1A0

$30 \div 5$ **or** 6 (adults) M1A0

$50 \div 5$ **or** 10 (adults) M1A0

(b) $\frac{1}{3}$ **or** $\frac{9}{27}$ **or** $\frac{8}{24}$ B1
oe fraction

(c) $12 \div 3$ M1
or $30 \div 5$
or $16 \div 2$
4 adults (archery) or 6 adults (walking) or 8 adults (sailing)
NB 4, 6, 3 implies M0

$12 \div 3$ M1
and $30 \div 5$
and $16 \div 2$
4 adults (archery) and 6 adults (walking) and 8 adults (sailing)
*Condone misread of **one** bar height if number of adults rounded up*

18 *Must be from 12, 30 and 16* A1

Additional Guidance

Condone all M marks for misread of Saturday for any bar:

Archery : $27 \div 3 = 9$

Walking : $20 \div 5 = 4$

Sailing : $18 \div 2 = 9$ (Total = 22)

Condone all M marks for misread of both days for any bar:

Archery : $39 \div 3 = 13$

Walking : $50 \div 5 = 10$

Sailing : $34 \div 2 = 17$ (Total = 40)

NB $1 + 3 = 4$ M0

NB $1 + 5 = 6$ M0

$12 \div 3 + 30 \div 5 + 15 \div 2 = 4 + 6 + 8 = 18$ M1M1A0
 (the 8 is from wrong working but one misread of a bar height is allowed)

[6]

20 1 2 4 8 B1

[1]

21 Alternative method 1

60 × 40 or 2400 oe M1

their 2400 – 2000 or 400 M1dep
or 2000 – their 2400

$\frac{\text{their 400}}{2000} (\times 100)$ or 0.2 oe M1dep

20(%) A1

Alternative method 2

60 × 40 or 2400 oe M1

their 2400 – 2000 or 400 M1dep
or 2000 – their 2400

10% = 2000 ÷ 10 or 1% = 2000 ÷ 100 **and** correctly finds multiplier using M1
build up or division to find percentage equivalent to total their 400
oe

*Correct build up to find percentage equivalent to total
their (their 2400 – 2000) or their (2000 – their 2400)
implies M3*

20(%) A1

Alternative method 3

60 × 40 or 2400 M1

$\frac{\text{their 2400}}{2000} (\times 100)$ or 120(%) or 1.2 M1dep

their 120 – 100 or their 1.2(0) – 1(.00) M1dep
or 100 – their 120
or 1(.00) – their 1.2(0) or 0.2

oe
20(%) A1

Additional Guidance

20% on answer line and no working M1M1M1A1

480 × 5 (= 2400) from 5 years scores minimum M1

60 × 40 = 1800 and 200 scores minimum M1M1

60 × 40 = 1800 and 200 and $\frac{200}{2000}$ M1M1M1A0

60 × 40 = 1800 and $\frac{200}{2000}$ M1M1M1A0

$\frac{2000}{\text{their 2400}}$ (= 1.2) does not score second method mark on ALT3

[4]

22 (a) $\frac{3}{5}$ or 0.6 B1

(b) 35 or 35.0 or 34.99(...) B1
Do not accept 34.9

[2]

23 Alternative method 1

6 × 18 or 108 (16.2 + 18.1 + 15.9 + 17.8 + 21 + x) ÷ 6 = 18 M1

their 108 – (16.2 + 18.1 + 15.9 + 17.8 + 21) M1dep
*oe eg complete repeated subtraction.
 Look for total written under or by table.*

19 SC1 89 seen A1

Alternative method 2

18 – each value in table, eg M1
 1.8, –0.1, +2.1, +0.2, –3
Allow one error

Totals their subtractions M1dep
 their (1.8 + –0.1 + 2.1 + 0.2 + –3) or 1
and adds to 18

19 A1

Additional Guidance

16.2 + 18.1 = 34.2, 34.2 + 15.9 = 60.1 M1
 60.1 + 17.8 = 77.9, 77.9 + 21.0 = 88.9
 6 × 18 = 118

118 – 88.9 = 30.9 M1dep, A0

(16.2 + 18.1 + 15.9 + 17.8 + 21 + x) ÷ 6 = 18 M1

x = 118 – 89.7 M1dep

x = 28.3 *Allow incorrect solution of equation if full method* A0

1.8 – 0.1 + 2.1 + 0.3 – 3 = 1.1 M1

19.1 M1dep, A0

[3]

24 30 or 2 × 3 × 5 B1

[1]

25 (a) 5.15 B1

5.25 B1

(b) 20.6 *ft 4 × their 5.15* B1ft

21 *ft 4 × their 5.25* B1ft

[4]

26

$\begin{pmatrix} 12 \\ 15 \end{pmatrix}$ or $\begin{pmatrix} 10 \\ -4 \end{pmatrix}$ or $\begin{pmatrix} -10 \\ 4 \end{pmatrix}$ M1

$\begin{pmatrix} 2 \\ 19 \end{pmatrix}$ A1

SC1 Answer $\begin{pmatrix} 2 \\ y \end{pmatrix}$ or $\begin{pmatrix} x \\ 19 \end{pmatrix}$

[2]

27 (a) (2, 16) B1

(b) –2 and 6 B1

[2]