

**GCSE MATHEMATICS**
**MARK SCHEME**

Practice Paper Foundation 2

Maximum marks: 76

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	210	B1	[1]
2	$\frac{9}{4}$	B1	[1]
3	0.049	B1	[1]
4	$5 < x \leq 9$	B1	[1]
5	(a) Less than $\frac{1}{2}$ (b) More than $\frac{1}{2}$	B1 B1	[2]
6	5.2 - 5.6  <i>Ignore further working if answer seen, e.g calculating area or circumference</i>	B1ft	[1]
7	Any three of: $1 + 2 + 3 + 4 = 10$ $1 \times 2 \times 3 + 4 = 10$ $1 + 2 + 3 \times 4 = 15$ $1 + 2 \times 3 \times 4 = 25$  <i>B1 for each</i>	B3	[3]
8	T, T, F, T  <i>B2 for 3 correct B1 for 2 correct</i>	B3	[3]
9	(a) $4x$ (b) $b + a$	B1 B1	

[2]

10 1.5 (cm) or 6 (cm) seen B1  
or scale factor = 4 (can be indicated on diagram)  
*Accept [1.4, 1.6]*  
*Accept [5.9, 6.1]*  
*Accept [3.6, 4.4]*

2 × their 6 ÷ their 1.5 oe M1  
or 2 × their [3.6, 4.4]

8 *Accept [7.2, 8.8]* A1

[3]

11 5, 5 and 14 B2  
Any order  
*Conditions are*  
*three positive numbers*  
*mode 5*  
*median 5*  
*range 9*  
*B1 for 2 or 3 conditions satisfied*

**Additional Guidance**

5, 5, -4 (satisfies three conditions but not positive) B1

5, 5, blank (satisfies two conditions) B1

Candidates who put more than 3 numbers score B0

Candidates who put 1 number score B0

[2]

12 (a) 4 B1  
(b) -5 B1

[2]

13 (a) 0.6 oe B1  
0.75, 0.75, 0.25 oe B1  
(b) 0.4 × their 0.75 M1  
0.3 oe A1ft  
*ft their tree diagram*

[4]

- 14 Alternative method 1** Price of 40 batteries using packs
- 40 ÷ 4 or 10 (packs used in offer A) M1  
**and**  
 40 ÷ 5 or 8 (packs used in offer B)  
 oe  
*8 is implied by the use of 6 packs in offer B*
- their 10 × 2.52 or 25.2(0) M1  
 or their 2.52 ÷ 3 × 2 or 1.68  
 or their 8 × 2.75 or 22  
 or  $\frac{3}{4} \times 40 \div 5$  or  $30 \div 5$  or 6  
 oe
- their 25.2(0) ÷ 3 × 2 M1  
 or 10 × their 1.68 or 16.8(0)  
 or  $\frac{3}{4} \times$  their 22  
 or their 6 × 2.75 or 16.5(0)  
 oe
- 16.8(0) and 16.5(0) A1  
 oe
- (Offer) B A1ft

**Additional Guidance**

Allow any correct working in pence up to M3  
 Allow consistent working in pence for M3 and A1ft  
 16.8(0) or 16.5(0) or 6 × 2.75 is minimum M0M1M1

**Alternative method 2 Price of 40 batteries using unit price**

- 2.52 ÷ 4 or 0.63 M1  
**and**  
 2.75 ÷ 5 or 0.55 oe
- 40 × their 0.63 or 25.2(0) M1  
 or 40 × their 0.55 or 22  
 oe
- their 25.2 ÷ 3 × 2 or 16.8(0) M1  
 or  $\frac{3}{4} \times 40 \times$  their 0.55  
 or 30 × their 0.55  
 or  $\frac{3}{4} \times$  their 22 or 16.5(0) oe A1
- 16.8(0) and 16.5(0) oe
- (Offer) B *Strand (iii)* A1ft  
*ft for correct decision based on their values, with one correct value and first two method marks*

**Additional Guidance**

Allow any correct working in pence up to M3  
 Allow consistent working in pence for M3 and A1ft  
 16.8(0) or 16.5(0) is minimum M0M1M1

**Alternative method 3 Price per battery**

252 ÷ 4 or 63		M1
<b>and</b>		
275 ÷ 5 or 55	oe	
their 63 ÷ 3 × 2 or 42	oe	M1
$\frac{3}{4} \times$ their 55 or 41(.25)	oe	M1
42 and 41(.25)	oe	A1
(Offer) B	<i>Strand (iii)</i>	Q1ft
	<i>ft for correct decision based on their values, with one correct value and first two method marks</i>	

**Additional Guidance**

Allow any correct working in pounds up to M3  
 Allow consistent working in pounds for M3 and A1Q1ft  
 42 or 41(.25) is minimum M0M1M1

**[5]**

<b>15</b>	(a)	32	B1
		65	B1
	(b)	1 <sup>st</sup> and 4 <sup>th</sup> terms that fit their rule eg 1 (2) (4) 8 Double 0 (2) (4) 6 Goes up in 2s or $2n - 2$ (oe) $\sqrt{2}$ , 2, 4, 16, square previous term 2, 2, 4, 6, Fibonacci 1, 2, 4, 7 Goes up 1 more each time <i>B1 for a valid rule but wrong values.</i>	B2

**[4]**

<b>16</b>	0.75	B1
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**[1]**

<b>17</b>	(a)	Any cube number	B1
	(b)	Any prime number	B1
	(c)	Any number that is a factor of 900	B1

**[3]**

<b>18</b>	(a)	$x(x - 1)$ or $x \times (x - 1)$ or $(x - 1)x$ or $(x - 1) \times x$	B1
	(b)	$5x^2$ or $-15x$ oe	M1
		$5x^2$ and $-15x$	A1
		$5x^2 - 23x$ or $x(5x - 23)$ <i>ft if M1A0 awarded and two terms in x correctly collected</i>	A1ft

**[4]**

19	(a) 25(%) : 75(%) or $\frac{1}{4} : \frac{3}{4}$ 1 : 3	oe SC1 3 : 1	M1  A1
	(b) 19.5 ÷ 3 or 26 ÷ 4 or 6.5  6.50	oe 19.5 ÷ 75 × 25  <i>Correct money notation</i>	M1   A1
	<b>Additional Guidance</b> Condone 6.50p on answer line provided £ sign is not crossed out		M1A1

[4]

**20 Alternative method 1**

$2(2x + 5)$ or $3(x - 1)$ or $7(x + 1)$	oe	M1
$2(2x + 5) + 3(x - 1)$	oe	M1
$4x + 10 + 3x - 3$	oe <i>Allow one error</i>	M1dep
$7x + 7$ with correct working seen as answer to area of T-shape and $7(x + 1) = 7x + 7$ seen for area of rectangle		A1
<b>or</b>		
$7x + 7$ with correct working seen as answer to area of T-shape with factorisation to $7(x + 1)$ and area of rectangle stated as $7(x + 1)$		

**Alternative method 2**

$5(x - 1)$ or $2(x + 6)$ or $7(x + 1)$	oe	M1
$5(x - 1) + 2(x + 6)$	oe	M1
$5x - 5 + 2x + 12$	oe <i>Allow one error</i>	M1dep
$7x + 7$ with correct working seen as answer to area of T-shape and $7(x + 1) = 7x + 7$ seen for area of rectangle		A1
<b>or</b>		
$7x + 7$ with correct working seen as answer to area of T-shape with factorisation to $7(x + 1)$ and area of rectangle stated as $7(x + 1)$		

**Alternative method 3**

$5(2x + 5)$ or $3(\frac{x}{2} + 3)$ or $7(x + 1)$	oe	M1
$5(2x + 5) - 2[3(\frac{x}{2} + 3)]$	oe <i>Allow one error</i>	M1
$10x + 25 - 3x - 18$	oe	M1dep
$7x + 7$ with correct working seen as answer to area of T-shape and $7(x + 1) = 7x + 7$ seen for area of rectangle		A1
<b>or</b>		
$7x + 7$ with correct working seen as answer to area of T-shape with factorisation to $7(x + 1)$ and area of rectangle stated as $7(x + 1)$		

[4]

21 (a)  $-y = 1.5x + 3$  oe  $3x + 2y = 6$  B3

**Additional Guidance**

B2  $y = 1.5x + 3$

B2  $-1.5x + 3$

B2  $y = -1.5x + c$

B1  $y = mx + 3$

B1  $y = 1.5x + c$

B1  $1.5x + 3$

B1  $-\frac{3}{2}$  oe

(b)  $y = 3x - 9$  oe B2

**Additional Guidance**

B1  $y = -3x + c$ ; c not 4

B1  $3x - 9$

B1  $-3 = 3 \times 2 + c$

[5]

22 0.3 B1

[1]

23 **Alternative method 1**

6 stated or shown on diagram as length from A to intersection of AB and horizontal line from D. B1

*Maybe on diagram*

$10^2 -$  their  $6^2$  or 64 or  $(BC)^2 + 6^2 = 10^2$  M1

*their 6 is the length from A to intersection of AB and horizontal line from D.*

*$10^2 +$  their  $6^2$  or 136*

$\sqrt{\text{their } 64}$  *64 must come from  $10^2 -$  their  $6^2$*  M1dep

8 *8 with no working M0* A1

**Alternative method 2**

6 stated or shown on diagram as length from A to intersection of AB and horizontal line from D. B1

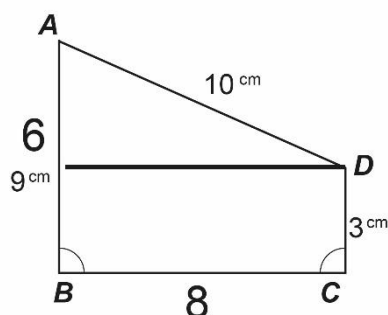
*Maybe on diagram*

3, 4, 5 Pythagorean triple shown M1

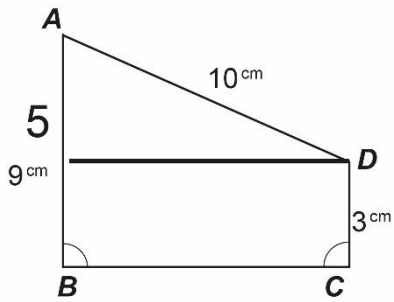
6, 8 shown or stated M1dep

8 *8 with no working M0* A1

**Additional Guidance**



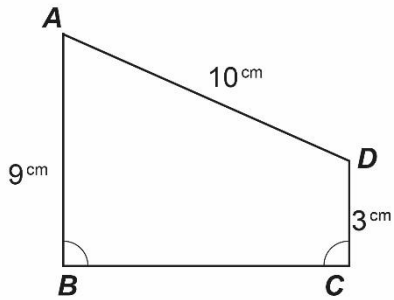
Minimum for 4 marks



B0  
M1  
M1dep  
A0

$$10^2 - 5^2 = 75$$

$$\sqrt{75} \approx 8.5$$

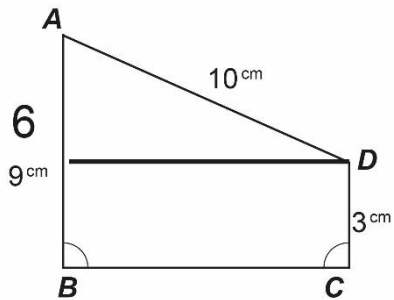


B0  
M0

$$10^2 - 5^2 = 75$$

$$\sqrt{75} \approx 8.5$$

Use of cos rule. If left with cos 90 M0



B1  
M0

$$10^2 = x^2 + 6^2 - 2 \times 6 \times x \times \cos 90$$

[4]

- 24 7 × 6 or 42 or  
8 × 9 or 72 or  
9 × 4 or 36 or  
10 × 1 or 10  
or 160

M1

(their 42 + their 72 + their 36 + their 10) ÷ 20

M1dep

*At least one product shown or one correct value*

*Must have the sum of 4 products divided by 20*

*Condone missing brackets*

*(7 × 6 + 8 × 9 + 9 × 4 + 10 (× 1)) ÷ 20 is M2*

8

A1

[3]

<b>25</b>	$2x + 2x - 10 + x + 25 + 2x + 30$ or $ax + 45$ or $7x + b$	M1  <i>Allow one error in <b>their</b> 7 terms</i> oe $25 + 30 - 10$ or $45$
	$2x + 2x - 10 + x + 25 + 2x + 30 = 360$ or $7x + 45$ or <i>their</i> $ax + 45 = 360$ or <i>their</i> $7x + b = 360$	M1dep  oe $360 - \mathbf{their} 45$ or $315$
	$7x + 45 = 360$	M1dep  oe $\mathbf{their} 315 \div 7$
	45	A1

**Additional Guidance**

$x = 45$ with no working	M3A1
$45 + 315 = 360, \frac{315}{7} = 45$	M3A1
$2x = 90, x = 45$ (no incorrect working seen)	M3A1
$360 - 45 = 215, \frac{215}{7} = 30.714$	M3A0
$45 + 215 = 360, \frac{215}{7} = 30.714$	M3A0
Embedded answer	M3A0
Beware of $25 + 30 - 10 = 45$	M1

[4]

**26 Alternative method 1**

$64 + x + x + 24 = 360$	oe	M1
$2x = 360 - 24 - 64$		M1
or $x = 136$		
their $\frac{136}{360} \times 5220$	oe	M1
1972		A1

**Alternative method 2**

$360 - 64$ or 296		M1
$\frac{296 - 24}{2}$ or 136	oe	M1
their $\frac{136}{360} \times 5220$	oe	M1
1972		A1

[4]



**27 Alternative method 1**

45 000 ÷ 1000 or 45 M1

45 ÷ 0.75 M1

or 45 × 1.33...

or their 45 ÷ 0.75

oe

eg 45 ÷ 3 × 4

60 A1

Unit 60 minutes or 60 min(s) A1

or 1 hour or 1h(r)

**Alternative method 2**

0.75 × 1000 or 750 M1

45 000 ÷ 750 M1

or 45 000 ÷ their 750

oe

60 A1

60 minutes or 60 min(s) B1

or 1 hour or 1h(r)

*Strand (i) Correct notation*

**Additional Guidance**

For the B mark 60 minutes or 1 hour must not come from incorrect working

Ignore fw after 60 minutes or 1 hour

Digit 6 implies M0M1 eg 60 000, 6000, 600, 6 or 0.6 M0M1

750 ÷ 45 000 = 0.016... (units would be minutes<sup>-1</sup>) M1M0A0B0

750 ÷ 45 000 = 0.016... and 0.016... × 60 = 1 hour  
(method is incorrect) M1M0A0B0

Do not accept 60 m for the B mark M1M1A1B0

[4]