

Mean, Median, Mode and Range-Answers

Key Stage 3: 2003 Paper 1 Level 3-5

1.

Tier & Question					Shoe sizes	
3-5	4-6	5-7	6-8			
18	13	6			Correct response	Additional guidance
a	a	a		1m	6	
b	b	b		1m U1	2	

Key Stage 3: 2003 Paper 1 Level 4-6

2.

Tier & Question					Shoe sizes	
3-5	4-6	5-7	6-8			
18	13	6			Correct response	Additional guidance
a	a	a		1m	6	
b	b	b		1m U1	2	

Key Stage 3: 2005 Paper 1 Level 3-5

3.

Tier & Question					Range of ages		
3-5	4-6	5-7	6-8	12			5
						Correct response	Additional guidance
a	a			1m		<p>Gives two ages with a difference of 7 years eg</p> <ul style="list-style-type: none"> ▪ 1 and 8 ▪ 7 and 14 ▪ 7 and 0 ▪ 20 and 13 	<p>! <i>Ages given using part-years</i> Accept provided the difference is 7 years eg, accept</p> <ul style="list-style-type: none"> • 6 months and $7\frac{1}{2}$
b	b			1m	0		<p>! <i>Response given in words</i> Accept provided there is no ambiguity eg, accept</p> <ul style="list-style-type: none"> • Zero • Nothing <p>eg, do not accept</p> <ul style="list-style-type: none"> • No range <p>! <i>Units amended</i> Accept responses giving a short time interval eg, accept</p> <ul style="list-style-type: none"> • A few minutes • A couple of hours

4.

Tier & Question				Mean and median	
3-5	4-6	5-7	6-8		
19	12	5		Correct response	Additional guidance
a	a	a	1m	Shows that the mean is 10 eg <ul style="list-style-type: none"> • $9 + 11 + 10 = 30$, $30 \div 3$ • $(9 + 11 + 10) \div 3$ • 10 is already 10, then 9 is 1 below and 11 is 1 above 	<p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> • $30 \div 3$ • $30 \div 10 = 3$ • $9 + 11 = 20$, $20 \div 2$ • Add one to 9 and take one off 11 • 10 is halfway between 9 and 11 <p>✓ <i>Method described</i> eg</p> <ul style="list-style-type: none"> • You add them up then divide by how many there are <p>✗ <i>Incorrect statement</i> eg</p> <ul style="list-style-type: none"> • $9 + 10 + 11 \div 3 = 10$ • $3 \div 30 = 10$
			1m	Gives a correct explanation of why the median is 10 eg <ul style="list-style-type: none"> • 10 is the middle number when the numbers are in order • The median is the middle number when the numbers go from smallest to largest 	<p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> • It is the middle number • It's the middle largest • It's the second smallest • 9 (10) 11 • It is in between <p>✗ <i>Incomplete or incorrect explanation</i> eg</p> <ul style="list-style-type: none"> • 9 10 11 • 10 is halfway between 9 and 11
b	b	b	1m	Gives four values that total 40 and whose middle two numbers, when ordered, add to 20, with none of the values being 10 eg <ul style="list-style-type: none"> • 8 9 11 12 • 0 0 20 20 • 9 11 9 11 • 7 13 9 11 	✓ <i>Fractions, decimals and negatives</i>

Key Stage 3: 2005 Paper 1 Level 4-6

5.

Tier & Question					Range of ages		
3-5	4-6	5-7	6-8	12			5
						Correct response	Additional guidance
a	a				1m	<p>Gives two ages with a difference of 7 years eg</p> <ul style="list-style-type: none"> ■ 1 and 8 ■ 7 and 14 ■ 7 and 0 ■ 20 and 13 	<p>! <i>Ages given using part-years</i> Accept provided the difference is 7 years eg, accept</p> <ul style="list-style-type: none"> • 6 months and $7\frac{1}{2}$
b	b				1m	0	<p>! <i>Response given in words</i> Accept provided there is no ambiguity eg, accept</p> <ul style="list-style-type: none"> • Zero • Nothing <p>eg, do not accept</p> <ul style="list-style-type: none"> • No range <p>! <i>Units amended</i> Accept responses giving a short time interval eg, accept</p> <ul style="list-style-type: none"> • A few minutes • A couple of hours

6.

Tier & Question				Mean and median	
3-5	4-6	5-7	6-8		
19	12	5		Correct response	Additional guidance
a	a	a	1m	Shows that the mean is 10 eg <ul style="list-style-type: none"> ■ $9 + 11 + 10 = 30$, $30 \div 3$ ■ $(9 + 11 + 10) \div 3$ ■ 10 is already 10, then 9 is 1 below and 11 is 1 above 	<p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> • $30 \div 3$ • $30 \div 10 = 3$ • $9 + 11 = 20$, $20 \div 2$ • Add one to 9 and take one off 11 • 10 is halfway between 9 and 11 <p>✓ <i>Method described</i> eg</p> <ul style="list-style-type: none"> • You add them up then divide by how many there are <p>✗ <i>Incorrect statement</i> eg</p> <ul style="list-style-type: none"> • $9 + 10 + 11 \div 3 = 10$ • $3 \div 30 = 10$
			1m	Gives a correct explanation of why the median is 10 eg <ul style="list-style-type: none"> ■ 10 is the middle number when the numbers are in order ■ The median is the middle number when the numbers go from smallest to largest 	<p>✓ <i>Minimally acceptable explanation</i> eg</p> <ul style="list-style-type: none"> • It is the middle number • It's the middle largest • It's the second smallest • 9 (10) 11 • It is in between <p>✗ <i>Incomplete or incorrect explanation</i> eg</p> <ul style="list-style-type: none"> • 9 10 11 • 10 is halfway between 9 and 11
b	b	b	1m	Gives four values that total 40 and whose middle two numbers, when ordered, add to 20, with none of the values being 10 eg <ul style="list-style-type: none"> ■ 8 9 11 12 ■ 0 0 20 20 ■ 9 11 9 11 ■ 7 13 9 11 	✓ <i>Fractions, decimals and negatives</i>

Key Stage 3: 2006 Paper 1 Level 4-6

7.

Tier & Question					Favourite sport	
3-5	4-6	5-7	6-8			
18	12	5			Correct response	Additional guidance
a	a	a	1m		<p>Indicates No and gives a correct explanation</p> <p>eg</p> <ul style="list-style-type: none"> ■ You can only find the mean of a set of numbers ■ The data are in words not in figures so the mean cannot be found ■ You can't add words up then divide by how many there are ■ There are no numerical values 	<p>✓ <i>Minimally acceptable explanation</i></p> <p>eg</p> <ul style="list-style-type: none"> • They are words • You need numbers • There are no quantities (or figures) • You need to add them together • You can't divide them (by 10) <p>✗ <i>Incomplete explanation</i></p> <p>eg</p> <ul style="list-style-type: none"> • You can't find the mean of sports • You can't have fractions of a word • Not enough information <p>✗ <i>Their explanation shows misconceptions about the mean</i></p> <p>eg</p> <ul style="list-style-type: none"> • You can't add them up and divide by 5 • You can't divide a word by a word • You can't find the mean of words unless you use the frequencies • It doesn't say whether Hanif asked them to give the sports marks out of ten • You can't put them in order because they are words not numbers <p>✗ <i>Numerical values assigned</i></p> <p>eg</p> <ul style="list-style-type: none"> • Yes, football and swimming are 8 letters, cricket and netball are 7 and hockey is 6
b	b	b	1m	(U1)	<p>Indicates Yes and gives a correct explanation</p> <p>eg</p> <ul style="list-style-type: none"> ■ The mode is the most common thing, so you can find it for numbers or words ■ The mode is football as it was chosen most often, by four people ■ You can see from the table what was the most popular sport 	<p>✓ <i>Minimally acceptable explanation</i></p> <p>eg</p> <ul style="list-style-type: none"> • Most common • Most popular • More like football • Highest is football • Football is favourite <p>✗ <i>Mode identified but not explained</i></p> <p>eg</p> <ul style="list-style-type: none"> • The mode is football • Four of the ten chose football so this is the mode • Football appears more than once <p>✗ <i>Incomplete or incorrect explanation</i></p> <p>eg</p> <ul style="list-style-type: none"> • Most • You can see how many picked each sport • There's more than one of some results • You can find the mode from both numbers and words • Football was chosen the most as five people said that

Key Stage 3: 2007 Paper 2 Level 3-5

Tier & Question						Names	
3-5	4-6	5-7	6-8				
10	3					Correct response	Additional guidance
a	a			1m	Claire		✓ <i>Unambiguous indication of name</i> eg, for Claire • C
b	b			1m U1	Gives the names Claire then Tom		

Key Stage 3: 2007 Paper 2 Level 4-6

9.

Tier & Question						Names	
3-5	4-6	5-7	6-8				
10	3					Correct response	Additional guidance
a	a			1m	Claire		✓ <i>Unambiguous indication of name</i> eg, for Claire • C
b	b			1m U1	Gives the names Claire then Tom		

Key Stage 3: 2008 Paper 1 Level 3-5

10.

Tier & Question						Temperatures	
3-5	4-6	5-7	6-8				
16	9					Correct response	Additional guidance
a	a			1m	6		
b	b			1m	-3		

Key Stage 3: 2008 Paper 1 Level 4-6

11.

Tier & Question					Temperatures	
3-5	4-6	5-7	6-8			
16	9				Correct response	Additional guidance
a	a			1m	6	
b	b			1m	-3	

12.

Tier & Question					100 metres	
3-5	4-6	5-7	6-8			
25	16	7			Correct response	Additional guidance
a	a	a		1m	4	
b	b	b		2m	2.8 or equivalent	
				or 1m	Identifies the values 13.6 and 16.4 or equivalent or Shows a complete correct method with not more than one computational error eg <ul style="list-style-type: none"> ▪ $16 - 13 = 3$, $0.6 - 0.4 = 0.2$, $3 + 0.2$ 	<p>! <i>For 1m, key not interpreted</i> Condone only if the correct range has been evaluated eg, accept</p> <ul style="list-style-type: none"> • 2 8 <p>eg, do not accept</p> <ul style="list-style-type: none"> • 16 4 - 13 6 <p>x <i>For 1m, conceptual error</i> eg</p> <ul style="list-style-type: none"> • $16 - 13 = 3$, $0.6 - 0.4 = 0.2$, $3 + 0.2 = 3.2$
	c	c		1m	15.3 or equivalent	

Key Stage 3: 2008 Paper 2 Level 4-6

13.

Tier & Question					Darts	
3-5	4-6	5-7	6-8			
21	12	2			Correct response	Additional guidance
				1m	Gives all three correct numbers, ie 10, 15 and 20 [any order]	

Key Stage 3: 2009 Paper 2 Level 3-5

14.

Tier & Question						Shoe sizes
3-5	4-6	5-7	6-8	Mark	Correct response	Additional guidance
16	7					
a	a			1m	12	
b	b			1m	3	
c	c			1m	<p>Indicates Both the same and gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Use given values eg</p> <ul style="list-style-type: none"> • Range of boys is 4, range of girls is 4 • 8 – 4 is the same as 9 – 5 • 5 to 9 = 4 to 8 <p>Reason generally about spread eg</p> <ul style="list-style-type: none"> • Boys cover 5 sizes, girls cover 5 sizes 	<p>✓ Minimally acceptable explanation eg</p> <ul style="list-style-type: none"> • 4, 4 • 8 – 4, 9 – 5 • Both 4 <p>! Ambiguous notation eg</p> <ul style="list-style-type: none"> • 4 – 8, 5 – 9 <p>Condone</p> <p>✓ Minimally acceptable explanation eg</p> <ul style="list-style-type: none"> • Both have the same number of sizes <p>! Explanation implies references to the number of blank sizes eg</p> <ul style="list-style-type: none"> • Boys have one blank, girls have one blank • Because the girls didn't have size 9 and the boys didn't have size 4 <p>Condone</p> <p>x Ambiguous or incorrect explanation eg</p> <ul style="list-style-type: none"> • 5 in each • They both have a range of five sizes • Girls: 4, 5, 6, 7, 8 • Boys: 5, 6, 7, 8, 9

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Key Stage 3: 2009 Paper 2 Level 4-6

15.

Tier & Question						Shoe sizes	
3-5	4-6	5-7	6-8	Mark	Correct response	Additional guidance	
16	7						
a	a			1m	12		
b	b			1m	3		
c	c			1m	<p>Indicates Both the same and gives a correct explanation</p> <p>The most common correct explanations:</p> <p>Use given values eg</p> <ul style="list-style-type: none"> • Range of boys is 4, range of girls is 4 • 8 – 4 is the same as 9 – 5 • 5 to 9 = 4 to 8 <p>Reason generally about spread eg</p> <ul style="list-style-type: none"> • Boys cover 5 sizes, girls cover 5 sizes 	<p>✓ Minimally acceptable explanation eg</p> <ul style="list-style-type: none"> • 4, 4 • 8 – 4, 9 – 5 • Both 4 <p>! Ambiguous notation eg</p> <ul style="list-style-type: none"> • 4 – 8, 5 – 9 <p>Condone</p> <p>✓ Minimally acceptable explanation eg</p> <ul style="list-style-type: none"> • Both have the same number of sizes <p>! Explanation implies references to the number of blank sizes eg</p> <ul style="list-style-type: none"> • Boys have one blank, girls have one blank • Because the girls didn't have size 9 and the boys didn't have size 4 <p>Condone</p> <p>✗ Ambiguous or incorrect explanation eg</p> <ul style="list-style-type: none"> • 5 in each • They both have a range of five sizes • Girls: 4, 5, 6, 7, 8 • Boys: 5, 6, 7, 8, 9 	

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