Government of the Republic of Trinidad and Tobago

MINISTRY OF EDUCATION

SECONDARY ENTRANCE ASSESSMENT 2019 MATHEMATICS

SPECIMEN PAPER 2

MARK SCHEME

SECTION I

Item No.	Correct Response: 1 mark	Strand
1.	3 tenths	Number
2.	3 000	Number
3.	24	Number
4.	160	Number
5.	40	Number
6.	$\dfrac{1}{10}$	Number
7.	$30.40	Number
8.	10 962	Number
9.	10 cents	Number

Item No.	Correct Response: 1 mark	Strand
10.	**5**	Number
11.	**11cm**	Measurement
12.	**3**	Measurement
13.	**12th May**	Measurement
14.	**1 400 millilitres**	Measurement
15.	**10**	Geometry
16.	**A**	Geometry
17.	**24**	Geometry
18.	||| |||| ||| **13**	Statistics
19.	**Car**	Statistics
20.	**Mary**	Statistics

SECTION II

21. Number		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
$\sqrt{49}$ $\sqrt{25}$	• $\sqrt{49}$ with second missing term incorrect • $\sqrt{25}$ with first missing term incorrect	7, 5

22. Number		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
$125 \div 5 = 25$ $25 \times 4 = 100$ Rhoda bought 100 roses.	$125 \div 5 = 25$	125×4 500

23. Number		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
• $100\% - 33\frac{1}{3}\% = 66\frac{2}{3}\%$ **OR** $1 - \frac{1}{3} = \frac{2}{3}$ $\frac{2}{3} \times 180 = 120$ John had 120 marbles remaining. • $33\frac{1}{3}\%$ of $180 = 60$ **OR** $\frac{1}{3} \times 180 = 60$ $180 - 60 = 120$ John had 120 marbles remaining.	• $100\% - 33\frac{1}{3}\% = 66\frac{2}{3}\%$ **OR** $1 - \frac{1}{3} = \frac{2}{3}$ • $33\frac{1}{3}\%$ of $180 = 60$ **OR** $\frac{1}{3} \times 180 = 60$ $180 - 60 = $ "His answer" • $33\frac{1}{3}\%$ of $180 = $ "His answer" **OR** $\frac{1}{3} \times 180 = $ "His answer" $180 - $ "His answer" (follow through)	$180 - 33\frac{1}{3}$

24. Number		
Correct Response: 2 marks	**Partially Correct Response:** 1 mark	**Incorrect Response:** 0 mark
• No. of Passengers $= \$2\ 160 \div \$60 = 36$ No. of 12-seater maxi-taxis hired $= 36 \div 12 = 3$ • Cost of hiring one maxi-taxi $= \$60 \times 12 = \$720$ No. of 12-seater maxi-taxis hired $= \$2\ 160 \div \$720 = 3$ • Cost of filling a seat on multiple trips by 1 maxi-taxi $= \$2\ 160 \div 12 = \$180$ No. of trips for which each seat is used $= \$180 \div \$60 = 3$ **No. of trips by one maxi-taxi** being used repeatedly is the same as the **no. of maxis-taxis needed to make one trip each** for hire.	• No. of Passengers $= \$2\ 160 \div \$60 = 36$ • No. of 12-seater maxi-taxis hired $= \$2\ 160 \div \$720$ $=$ "His answer" • Cost of filling a seat on multiple trips by 1 maxi-taxi $= \$2\ 160 \div 12 = \$180$	

25. Number		
Correct Response: 2 marks	**Partially Correct Response:** 1 mark	**Incorrect Response:** 0 mark
• 100% profit on cost price $= \$3\ 125.00$ Selling price = Cost Price + Profit $= \$3\ 125\ .00 + \$3\ 125.00 = \$6\ 250.00$ • Cost of 1 bicycle $= \$3\ 125 \div 5 = \$625$ Selling price of 1 bicycle including 100% profit $= \$625 \times 2 = \$1\ 250$ Selling price of 5 bicycles $= \$1\ 250 \times 5 = \$6\ 250$	• 100% profit $= \$3\ 125.00$ • Cost of 1 bicycle $= \$3\ 125 \div 5 = \$625$ Selling price of 1 bicycle including 100% profit $= \$625 \times 2 = \$1\ 250$	• $\$3\ 125 \times 5$

26. Number			
Correct Response: **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
• Fraction of working pens $= 1 - \frac{2}{5} = \frac{3}{5}$ Fraction of working red pens $= \frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$ $\frac{3}{20}$ represents 36 working red pens $\frac{1}{20}$ represents $36 \div 3 = 12$ The Whole or $\frac{20}{20}$ represents $12 \times 20 = 240$ • 36 red pens represent $\frac{1}{4}$ of the working pens Therefore, the total number of working pens $= 36 \times 4 = 144$ Fraction of working pens out of the total $= 1 - \frac{2}{5} = \frac{3}{5}$ 144 pens represent $\frac{3}{5}$ of the total pens bought $\frac{1}{5}$ of the total pens bought $= 144 \div 3 = 48$ The total number of pens bought $= 48 \times 5 = 240$	• Fraction of working pens $= 1 - \frac{2}{5} = \frac{3}{5}$ Fraction of working red pens $= \frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$ $\frac{3}{20}$ represents 36 working red pens • 36 red pens represent $\frac{1}{4}$ of the working pens Therefore, the total number of working pens $= 36 \times 4 = 144$ Fraction of working pens out of the total $= 1 - \frac{2}{5} = \frac{3}{5}$ 144 pens represent $\frac{3}{5}$ of the total pens bought	• Fraction of working pens $= 1 - \frac{2}{5} = \frac{3}{5}$ Fraction of working red pens $= \frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$ • 36 red pens represent $\frac{1}{4}$ of the working pens Therefore, the total number of working pens $= 36 \times 4 = 144$	• $\frac{1}{4} + \frac{2}{5}$ • $\frac{1}{4} \times 36$ • Random operations between pairs of numbers that appear in the item

27. Number

Correct Response: 3 marks	Partially Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
Pieces of string used from the roll: $\frac{1}{4} = \frac{6}{24}$, $\frac{3}{8} = \frac{9}{24}$, $\frac{7}{24}$ Longest piece: $\frac{9}{24}$, Shortest piece: $\frac{6}{24}$ Difference between the shortest and longest pieces of string used $= \frac{9}{24} - \frac{6}{24}$ $= \frac{3}{24} = \frac{1}{8}$	Pieces of string used from the roll: $\frac{1}{4} = \frac{6}{24}$, $\frac{3}{8} = \frac{9}{24}$, $\frac{7}{24}$ Longest piece: $\frac{9}{24}$, Shortest piece: $\frac{6}{24}$ Difference between the shortest and longest pieces of string used $= \frac{9}{24} - \frac{6}{24}$ $=$ "His answer"	• Pieces of string used from the roll: $\frac{1}{4} = \frac{6}{24}$, $\frac{3}{8} = \frac{9}{24}$, $\frac{7}{24}$ • Calculating a difference using only one of the correct fractions **and** showing the correct "follow through". e.g. $\frac{7}{24} - \frac{6}{24} = \frac{1}{24}$	$\frac{9}{24} + \frac{6}{24}$

28. Number

Correct Response: 3 marks	Partially Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
Marcy's age: 8yrs + 10yrs = 18yrs Dan's age: 18yrs – 4yrs = 14yrs Patrick's age: 14yrs ÷ 2 = 7yrs	• Any two ages correct • "His answer" for Marcy's age but correct follow through for Dan's and Patrick's ages.	• Any one age correct • "His answer" for Marcy's and Dan's ages but correct follow through for Patrick's age.	No age correct

29. Number			
Correct Response: **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
• **5 pencils and 5 rulers** cost "His answer" 5 pencils and 5 rulers **cost $40** 10 pencils and 10 rulers cost $40 × 2 = $80 • 5 pencils and 5 rulers cost "His answer" 1 ruler and 1 pencil cost $40 ÷ 5 = $8 Multiply by 10 to find for ten rulers and ten pencils: $8 × 10 = $80 • Guess and Check (or Trial and Error) Method to find cost of one pencil and one ruler, e.g.: **Guess** for Darren's Supplies: 3 pencils and 2 rulers cost $19 3 × <u>3</u> + 2 × <u>5</u> = 19 Cost of one pencil - $3 Cost of one ruler - $5 **Check** for Ann's Supplies 3 × 2 + 3 × 5 = $21 Cost of one pencil and one ruler = $3 + $5 = $8 Cost of 10 pencils and 10 rulers = $8 × 10 = $80	• **5 pencils and 5 rulers** cost "His answer" 5 pencils and 5 rulers **cost $40** • 5 pencils and 5 rulers cost "His answer" 1 ruler and 1 pencil cost $40 ÷ 5 = $8 • Guess and Check (or Trial and Error) Method to find cost of one pencil and one ruler, e.g.: **Guess** for Darren's Supplies: 3 pencils and 2 rulers cost $19 3 × <u>3</u> + 2 × <u>5</u> = 19 Cost of one pencil - $3 Cost of one ruler - $5 **Check** for Ann's Supplies 3 × 2 + 3 × 5 = $21	• 5 pencils and 5 rulers cost "His answer" • 5 pencils and 5 rulers cost "His answer" • Guess and Check (or Trial and Error) Method to find cost of one pencil and one ruler, e.g.: **Guess** for Darren's Supplies: 3 pencils and 2 rulers cost $19 $3 × \square + 2 × \square = 19$ (incorrect answers for cost of one ruler and cost of one pencil)	

30. Number			
Correct Response: **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**

Jabari is correct.
 	
The product will be 5 or more if it is multiplied by 1 or any number greater than one.
 	
The product will be smaller than 5 if it is multiplied by any number less than 1.
e.g. "zero" or "a proper fraction"
 	
Note: e.g. "zero" or "a proper fraction" must be given.
	• Jabari is correct.
	
	  Partially correct explanation is given.
	
	  No example is given.
	
	• Jabari is correct.
	
	  No correct explanation is given.
	
	  At least one correct example is given.
		Jabari is correct.
		
		Neither explanation **nor** example is given.
			Alana is correct.

31. Measurement		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**

Correct time on clock: 10:48
 	
Start time:
 	
    1 0 : 4 8
− 1 : 5 5
————————
      8 : 5 3
	• Correct time on clock: 10:48
	
	• Subtracting 1:55 from 10:38 correctly
	
	    1 0 : 3 8
	− 1 : 5 5
	————————
	      8 : 4 3
		• Adding 1:55 to 10:48
		
		    1 0 : 4 8
		+ 1 : 5 5
		————————
		  1 2 : 4 3
		
		• Adding 1:55 to 10:38
		
		    1 0 : 3 8
		+ 1 : 5 5
		————————
		  1 2 : 3 3

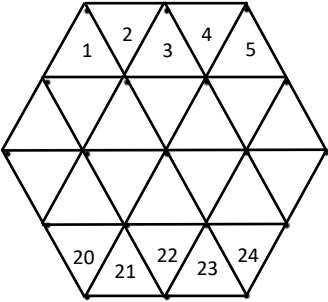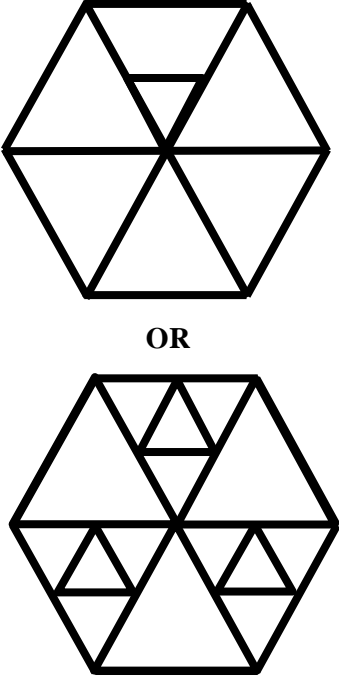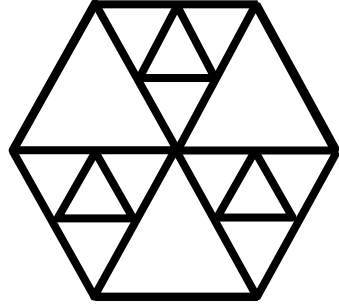| **32. Measurement**		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
• 4 litres = 4 000 millilitres 4 000 ÷ 250 = 16 Tariq finishes the 4 litres of sorrel in 16 days. • 1000 millilitres = 1 litre 250 millilitres = $\frac{1}{4}$ litre $4 \div \frac{1}{4} = 16$ Tariq finishes the 4 litres of sorrel in 16 days.	• 4 litres = 4 000 millilitres • 1000 millilitres = 1 litre 250 millilitres = $\frac{1}{4}$ litre	250 ÷ 4

33. Measurement

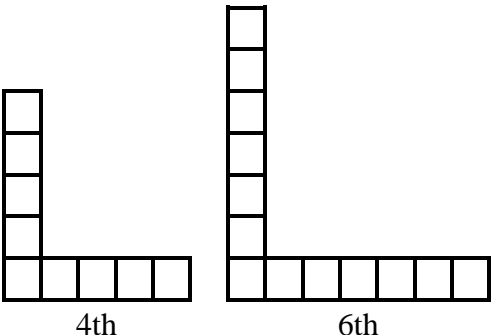| Correct Response: 3 marks	Partially Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
Block A weighs 0.94 kg Conversion of grams to kilograms or vice versa Block B weighs 160 g less than Block A: Mass of Block B = 0.94 kg – 0.16 kg = 0.78 kg Block C weighs 700 g more than Block B: Mass of Block C = 0.78 kg + 0.7 kg = 1.48 kg Total mass of Blocks A, B and C = 0.94 kg + 0.78 kg + 1.48 kg = 3.2 kg Total mass is 3 kg to the nearest kilogram.	• Block A weighs 0.94 kg Conversion of grams to kilograms or vice versa Block B weighs 160 g less than Block A: Mass of Block B = 0.94 kg – 0.16 kg = 0.78 kg Block C weighs 700 g more than Block B: Mass of Block C = 0.78 kg + 0.7 kg = 1.48 kg • Inaccurate answer for mass of Block B or C but accurate addition of all three blocks (follow through)	• Block A weighs 0.94 kg Conversion of grams to kilograms or vice versa Block B weighs 160 g less than Block A Mass of Block B = 0.94 kg – 0.16 kg = 0.78 kg • Inaccurate answer for mass of Block B and C but accurate addition of all three blocks (follow through)	Mass of Block A = 0.94 kg + 0.16 kg = 1.1 kg Mass of Block B = 1.1 + 0.7 = 1.8 kg

34. Measurement

Correct Response: 3 marks	Partially Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
• No. of 15 cm × 15 cm tiles needed = 90 000 ÷ 225 = 400 No. of boxes needed = 400 ÷ 40 = 10 Cost of tiles needed = $50 × 10 = $500 No. of 20 cm × 20 cm tiles needed = 90 000 ÷ 400 = 225 No. of boxes needed = 225 ÷ 25 = 9 Cost of tiles needed = $55 × 9 = $495 It is $5 cheaper to tile the area of the floor using the 20 cm × 20 cm tile.	• No. of 15 cm × 15 cm tiles needed = 90 000 ÷ 225 = 400 No. of boxes needed = 400 ÷ 40 = 10 Cost of tiles needed = $50 × 10 = $500 No. of 20 cm × 20 cm tiles needed = 90 000 ÷ 400 = 225 No. of boxes needed = 225 ÷ 25 = 9 Cost of tiles needed = $55 × 9 = $495 No conclusion on which tile is cheaper. • Inaccurate answer for one of the two options but correct conclusion based on working.	Cost of 15 cm × 15 cm tiles needed with "His answer". Cost of 20 cm × 20 cm tiles needed with "His answer". Inaccurate answer for both options but correct conclusion based on **logical** working.	

35. Geometry

Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
• 24 tiles were used to cover the hexagon. 	• Drawing of triangles inside the hexagon but counting inaccurately. • Drawing of triangles inside the hexagon but not counting.	• Drawing of triangles inside the hexagon of different sizes. e.g. **OR** • Attempting to draw another shape in the hexagon.

36. Geometry

Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark
 4th 6th	• 4th element correct only • 6th element correct only	• No element correct

37. Geometry

Correct Response: 3 marks	Partially Correct Response: 2 marks	Partially Correct Response: 1 mark	Incorrect Response: 0 mark

Triangles B and D are similar.
 	
They are both equilateral triangles.
 	
All their angles are equal.
	• Triangles B and D are similar.
	
	  They are both equilateral triangles.
	
	• Triangles B and D are similar.
	
	  All their angles are equal.
		Triangles B and D are similar.	• Any other pairs given as similar triangles.

38. Statistics		
Correct Response: **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**

Scale: $30 \div 5 = 6$
 	
Jeremy's Medals: $6 \times 3.5 = 21$
	• Scale: $30 \div 5 = 6$
	
	• Scale: $30 \div 5 = 6$
	
	   Jeremy's Medals: $6 \times 3.5 =$ "His answer"
	
	• Scale: $30 \div 5 = 6$
	
	   Jeremy's Medals: $6 \times 4 = 24$
		• 3
		• 3.5

39. Statistics			
Correct Response: **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**

• Identify Chocolate – 150
 	
  Identify Vanilla – 75
 	
  100 strawberry ice-creams were sold.
 	
• Eliminating Chocolate and Vanilla as liked most and least, respectively.
 	
  Deducing that 100 strawberry ice-creams were sold.
	• Identify both Chocolate **and** Vanilla correctly:
	
	  Chocolate – 150
	
	  Vanilla – 75
	
	• Eliminating Chocolate **and** Vanilla as liked most and least, respectively.
	
	  Making no deduction or a wrong deduction
		• Identify **either** Chocolate **or** Vanilla correctly:
		
		  Chocolate – 150
		
		  Vanilla – 75
		
		• Eliminating **either** Chocolate as liked most **or** Vanilla as liked least.
		
		  Making no deduction or a wrong deduction
			• 150
			• 75
			• 125

40. Statistics			
Correct Response: **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
Before adding 4 more cars, the modal toy is the video games. 4 more cars will increase the number sold (frequency) to 20. However, the video games remain the toy with the highest number sold (frequency) which is 32. Therefore the modal toy does not change.	Before adding 4 more cars, the modal toy is the video games. 4 more cars will increase the number sold (frequency) to 20. However, the video games remain the toy with the highest number sold (frequency) which is 32. No conclusion given on the modal toy.	The modal toy is the video games. No explanation given.	The incorrect modal toy selected is the doll, car or board games.

SECTION III

41. Number				
Correct Response: **4 marks**	**Partially Correct Response:** **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
No. of the students who borrowed 3 books or more $= 63 + 81 = 144$ $\frac{3}{5}$ of students $= 144$ $\frac{1}{5} = 144 \div 3 = 48$ Total no. of students $= 48 \times 5 = 240$ No. of students not borrowing any book $= 240 - (34 + 36 + 63 + 81)$ $= 240 - 214 = 26$	No. of the students who borrowed 3 books or more $= 63 + 81 = 144$ $\frac{3}{5}$ of students $= 144$ $\frac{1}{5} = 144 \div 3 = 48$ Total no. of students $= 48 \times 5 = 240$	No. of the students who borrowed 3 books or more $= 63 + 81 = 144$ $\frac{3}{5}$ of students $= 144$ $\frac{1}{5} = 144 \div 3 = 48$	No. of the students who borrowed 3 books or more $= 63 + 81 = 144$	

42. Number				
Correct Response: **4 marks**	**Partially Correct Response:** **3 marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
Rate at time and a half $= \$60 \times 1.5 = \$90$ Overtime wage $= \$3\ 480 - (\$60 \times 40)$ $= \$3\ 480 - \$2\ 400$ $= \$1\ 080$ Total overtime hours $= 1\ 080 \div 90 = 12$ No. of hours worked on Saturday $=$ Twice the no. worked on Sunday $= (12 \div 3) \times 2$ $= 4 \times 2$ $= 8$	Rate at time and a half $= \$60 \times 1.5 = \$90$ Overtime wage $= \$3\ 480 - (\$60 \times 40)$ $= \$3\ 480 - \$2\ 400$ $= \$1\ 080$ Total overtime hours $= 1\ 080 \div 90 = 12$	Rate at time and a half $= \$60 \times 1.5 = \$90$ Overtime wage $= \$3\ 480 - (\$60 \times 40)$ $= \$3\ 480 - \$2\ 400$ $= \$1\ 080$	Rate at time and a half $= \$60 \times 1.5 = \$90$	

43. Measurement				
Correct Response: 4 marks	**Partially Correct Response: 3marks**	**Partially Correct Response: 2 marks**	**Partially Correct Response: 1 mark**	**Incorrect Response: 0 mark**

Perimeter of Rectangle
= Perimeter of Square
= 9 cm $\times$ 4
= 36 cm
 	
Rectangle:
Length + Width
= Perimeter $\div$ 2
= 18 cm
Width = 18 cm $\div$ 3 = 6 cm
Length = 6 cm $\times$ 2 = 12 cm
 	
Area of Rectangle
= 6 cm $\times$ 12 cm = 72 cm^2
Area of Square
= 9 cm $\times$ 9 cm = 81 cm^2
 	
Difference in areas
= 81 cm^2 – 72 cm^2
= 9 cm^2
	• Perimeter of Rectangle
	  = Perimeter of Square
	  = 9 cm $\times$ 4
	  = 36 cm
	
	Rectangle:
	Length + Width
	= Perimeter $\div$ 2
	= 18 cm
	Width = 18 cm $\div$ 3 = 6 cm
	Length = 6 cm $\times$ 2 = 12 cm
	
	Area of Rectangle
	= 6 cm $\times$ 12 cm = 72 cm^2
	Area of Square
	= 9 cm $\times$ 9 cm = 81 cm^2
	
	• Correct reasoning with errors in calculation.
		Perimeter of Rectangle
		= Perimeter of Square
		= 9 cm $\times$ 4
		= 36 cm
		
		Rectangle:
		Length + Width
		= Perimeter $\div$ 2
		= 18 cm
		Width = 18 cm $\div$ 3 = 6 cm
		Length = 6 cm $\times$ 2 = 12 cm
			Perimeter of Rectangle
			= Perimeter of Square
			= 9 cm $\times$ 4
			= 36 cm	

44. Geometry				
Correct Response: **4 marks**	**Partially Correct Response:** **3marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
	• Accurate lines of symmetry drawn for A & B and A & C. Shape C is partially completed. (2 of 3 sides drawn accurately) • Accurate line of symmetry drawn for A & B. Inaccurate line of symmetry drawn for A & C. Shape C is completed correctly based on line of symmetry drawn for A & C.	• Accurate lines of symmetry drawn for A & B and A & C. • Accurate line of symmetry drawn for A & B. Inaccurate line of symmetry drawn for A & C. Shape C is partially completed based on line of symmetry drawn for A & C. (2 of 3 sides drawn accurately)	• Accurate line of symmetry drawn for A & B **OR** A & C.	No line of symmetry drawn.

45. Statistics				
Correct Response: **4 marks**	**Partially Correct Response:** **3marks**	**Partially Correct Response:** **2 marks**	**Partially Correct Response:** **1 mark**	**Incorrect Response:** **0 mark**
Mean no. of runs made before the 4th inning $= \frac{80+40+60}{3} = \frac{180}{3} = 60$ Mean no. of runs made after the 4th inning $= 60 + 5 = 65$ Total no. of runs made after the 4th inning $= 65 \times 4 = 260$ No. of runs made in the 4th inning $= 260 - 180$ $= 80$	• Mean no. of runs made before the 4th inning $= \frac{80+40+60}{3} = \frac{180}{3} = 60$ Mean no. of runs made after the 4th inning $= 60 + 5 = 65$ Total no. of runs made after the 4th inning $= 65 \times 4 = 260$ • Correct reasoning with errors in calculation	Mean no. of runs made before the 4th inning $= \frac{80+40+60}{3} = \frac{180}{3} = 60$ Mean no. of runs made after the 4th inning $= 60 + 5 = 65$	Mean no. of runs made before the 4th inning $= \frac{80+40+60}{3} = \frac{180}{3} = 60$	