

GRADE : 10
 SUBJECT : Maths
 TITLE : Paper 2
 EXAMINER : Mr A. Slaughter
 TOTAL MARKS : 100

DATE : / 11 / 20 12

SOLUTIONS

TIME : 2 hour(s)

1.1.	1. Range = $16 - 2$ $= 14$ ✓ <u> </u> ↓	1	1.2.	2.2. $M = T_{106}$ $= 22$ ✓ <u> </u> ↓	1
	2. IQR = $Q_3 - Q_1$ $= 13 - 6$ $= 7$ ✓ <u> </u> ↓	1	1.3.	1. \bar{x} $= \frac{15 \cdot 15 + 25 \cdot 20 + 35 \cdot 14}{15 + 20 + 14}$ $= \frac{1215}{49}$ $= 24,80$ ✓ <u> </u> ↓	
	3. $M = 11$ ✓ <u> </u> ↓	1		✓ midpoint ✓ x f Answer only ✓✓✓	3
	4. % of data between M and Q_3 $= 25\%$ ✓ <u> </u> ↓	1		2.1. $n = 39$ Position D_7 $= \frac{7}{10} (1 + 49)$ $= 35$ ✓ <u> </u> ↓	1
1.2.	1. Mode = 23 ✓ <u> </u> ↓	1		2.2. $20 < x \leq 30$ ✓ <u> </u> ↓	1
	2.1. $n = 211$ Position median $= \frac{1}{2} (1 + 211)$ $= 106$ ✓ <u> </u> ↓	1			

2.1. 1. B(-5; -4) C(2; -1)

$$m = \frac{-1 - (-4)}{2 - (-5)} = \frac{3}{7}$$

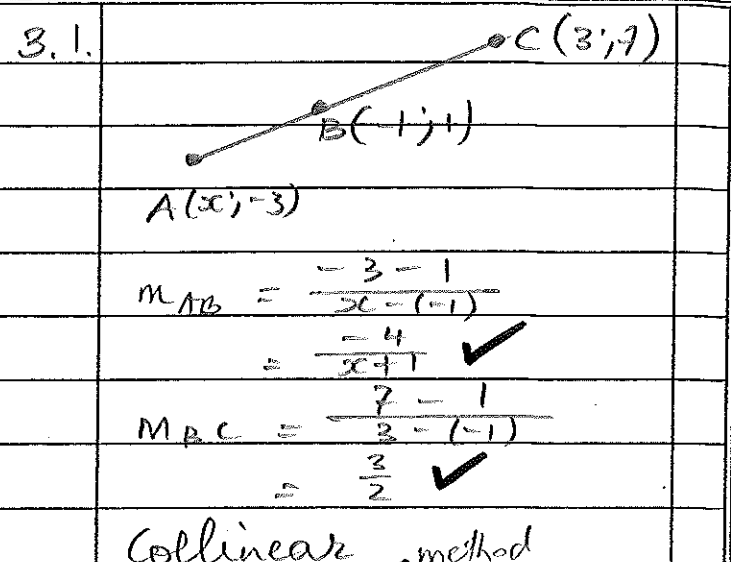
$$\therefore y = \frac{3}{7}x + c \checkmark$$

Sub (2; -1)

$$-1 = \frac{3}{7}(2) + c \checkmark$$

$$-\frac{13}{7} = c$$

$$\therefore y = \frac{3}{7}x - \frac{13}{7} \checkmark$$



2. A(-5; 3) B(-5; -4)

vertical

$$\therefore x = -5 \checkmark$$

Collinear method

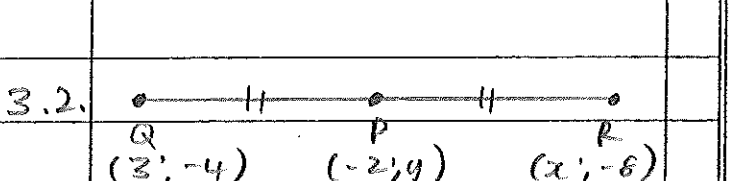
$$\therefore m_{AB} = m_{BC}$$

$$\frac{-4}{x+1} = \frac{3}{2}$$

$$-4 \cdot 2 = 3(x+1)$$

$$-\frac{11}{3} = x \checkmark$$

2.2. $m_{HBC} = \frac{3}{7} \checkmark$



2.3. $m_{BC} = \frac{3}{7}$

C(2; -1) D(5; -8)

$$m_{CD} = \frac{-8 - (-1)}{5 - 2} = -\frac{7}{3} \checkmark$$

1. $y = \frac{-4 + (-8)}{2} = -6 \checkmark$

$m_{BC} \cdot m_{CD} = \frac{3}{7} \cdot (-\frac{7}{3}) = -1 \checkmark$ product sub

$\therefore \hat{BCD} = 90^\circ$

2. $\frac{3+x}{2} = -2 \checkmark$

$$3+x = -4$$

$$x = -7 \checkmark$$

2.4. E(2; 6)

3.3.

A(4;5)

B(x;1)

C(8;-2)

$$AC = \sqrt{(5 - (-2))^2 + (4 - 8)^2}$$

$$= \sqrt{65} \quad \checkmark$$

$$AB = \sqrt{(x - 4)^2 + (1 - 5)^2}$$

$$= \sqrt{(x - 4)^2 + 16} \quad \checkmark$$

Eqm distant

$$\therefore AC = AB \quad \checkmark$$

$$\sqrt{65} = \sqrt{(x - 4)^2 + 16}$$

()² b s :

$$65 = (x - 4)^2 + 16$$

$$49 = (x - 4)^2 \quad \checkmark$$

$$\pm 7 = x - 4$$

$$4 \pm 7 = x$$

$$11 \text{ or } -3 = x$$

6

(OR)

$$65 = (x - 4)^2 + 16$$

$$0 = x^2 - 8x - 33 \quad \checkmark$$

$$0 = (x - 11)(x + 3) \quad \checkmark$$

$$\therefore x = 11 \text{ or } -3 \quad \checkmark$$

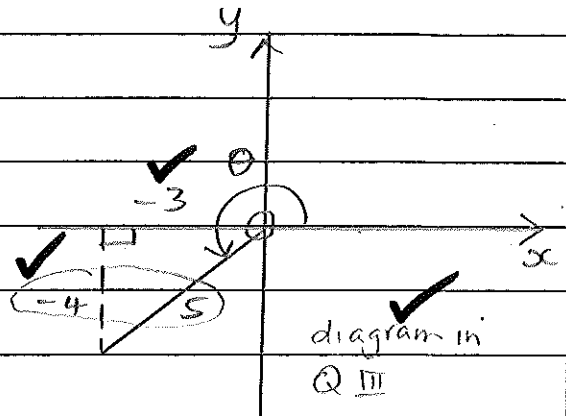
4.1.

1. $\sin \theta = -\frac{4}{5}$ $\frac{y}{r}$

$$\cdot \sin - \therefore Q \text{ III IV}$$

$$\cdot \tan + \therefore Q \text{ I III}$$

$$\therefore Q \text{ III}$$



3

$$x^2 + (-4)^2 = (5)^2$$

$$x^2 = 9$$

$$x = \pm 3$$

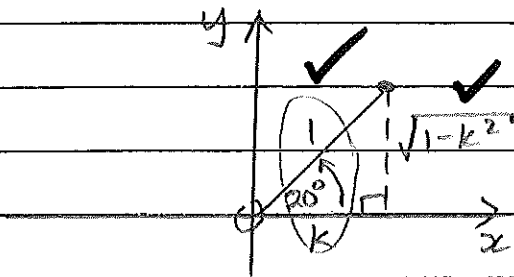
$$\therefore x = -3$$

2. $\cos \theta = \frac{x}{r}$

$$= -\frac{3}{5} \quad \checkmark$$

1

4.2. $\cos 20^\circ = \frac{k}{1} = \frac{x}{r}$



$$(k)^2 + y^2 = (1)^2$$

$$y^2 = 1 - k^2$$

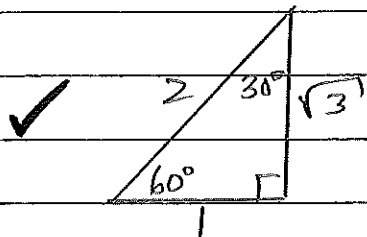
$$y = \pm \sqrt{1 - k^2}$$

$$\therefore y = \sqrt{1 - k^2}$$

$\therefore \tan 70^\circ = \frac{k}{\sqrt{1 - k^2}}$

$\frac{a}{k} \quad \text{3}$

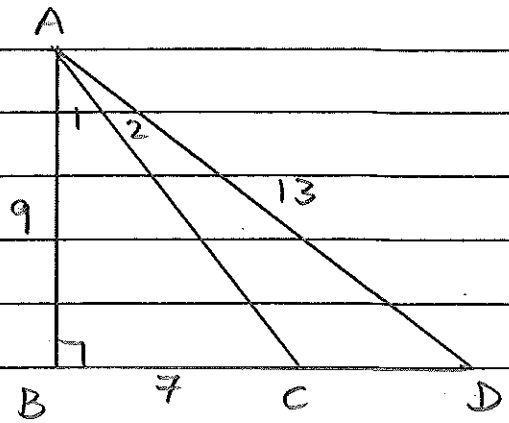
4.3. 1.



2. $\sin 30^\circ = \frac{1}{2}$

$\frac{a}{k} \quad \text{1}$

5.1.



1. $\tan \hat{A}_1 = \frac{7}{9}$

$\hat{A}_1 = 37,87^\circ$

2

2. $\cos \hat{A}_{1+2} = \frac{9}{13}$

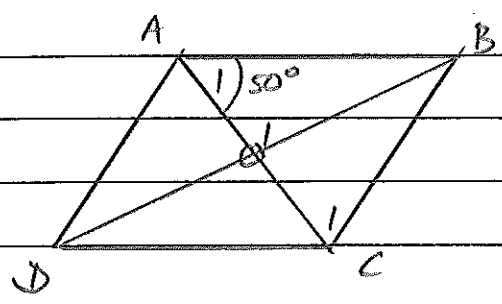
$\hat{A}_{1+2} = 46,18...^\circ$

$37,87^\circ + \hat{A}_2 = 46,18...^\circ$

$\hat{A}_2 = 8,32^\circ$

3

5.2.



AC = 24

1.1. $\hat{C}_1 = 50^\circ$ ✓

1

1.2. 90° ✓

1

5.2. 2. $AD = 12$ ✓ SR
diags rhomb
bisect

$\cos 50^\circ = \frac{12}{AB}$ ✓

LD = AB
x thru

$AB \cdot \cos 50^\circ = 12$

$AB = \frac{12}{\cos 50^\circ}$
 $= 18,67$ ✓

3

6.1.

$\frac{(\sin 38^\circ)^2}{\tan 28^\circ - 2 \cos 38^\circ}$

$= -0,48$ ✓✓ or 0 2

6.2. 1.

$-32 = -112 \cos x$

$\frac{2}{7} = \cos x$ ✓

$73,40^\circ = x$ ✓

2

2. Let $A = 3x$

$\tan A + 2 = 3,86 \dots$ ✓

$\tan A = 1,86 \dots$

$A = 61,78 \dots^\circ$ ✓

$3x = 61,78 \dots^\circ$

$x = 20,59^\circ$ ✓ 3

7.1.

$y = a \sin x - q$

$y = -1 \cdot \sin x + 2$

1. $a = -1$ ✓

1

2. $-q = +2$

$\therefore q = -2$ ✓

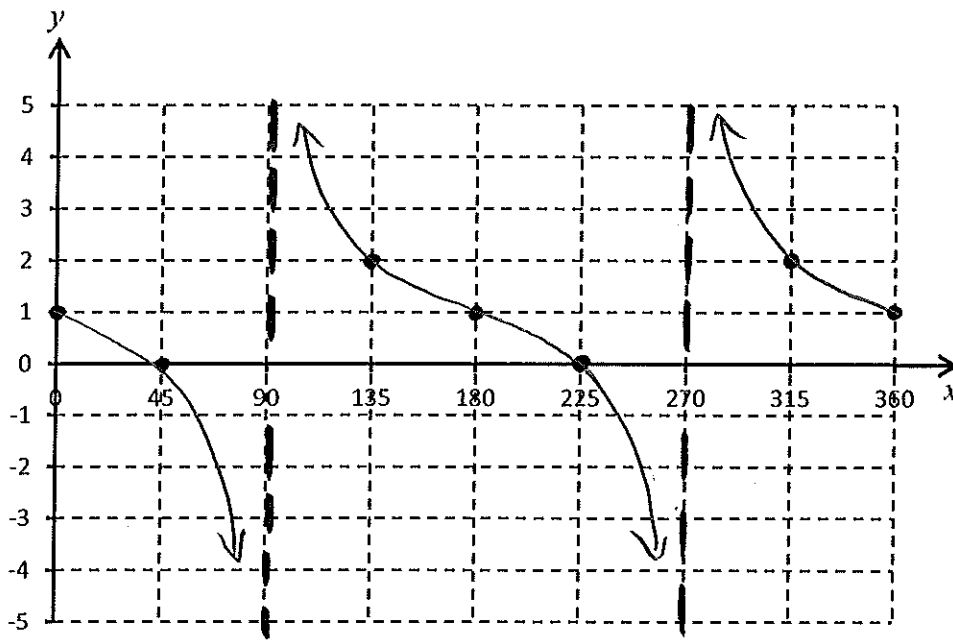
1

Name and Surname : SLT

Teacher : Soln

ANSWER SHEET

7.2.



- ✓ y int
- ✓ x int's
- ✓ asymptotes
- ✓ shape

4

8.1. ΔPQR ✓
 8.2. In Δ 's PS_1T_1, PQR
 1. $\hat{P} = \hat{P}$ ✓ ^{SR} common
 2. $\hat{S}_1 = \hat{Q}$ ✓ ^{SR} Corr Δ 's =,
 || lines
 $\therefore \Delta PST \parallel \Delta PQR$ AAA ✓ **3**

8.3. $\Delta PST \parallel \Delta PQR$
 $\frac{QR}{PS} = \frac{PQ}{PS}$ ¹⁰⁺² || Δ 's
 $\frac{QR}{3} = \frac{5 \cdot 12}{2}$
 $\therefore QR = 18$ ✓ **2**

9. $AB \parallel SQ$ ✓ ^S midpt thm ✓ **3**
 $DC \parallel SQ$ ✓ ^S midpt thm
 $\therefore AB \parallel DC$ $\parallel SQ$

10.1. $AO = OC$ ✓ ^{SR} radii
 $FO = FG + GO$
 $EO = HE + HO$
 but,
 $FG = HE$ given
 $GO = HO$ radii
 $\therefore EO = FO$ ✓ **3**
 $\therefore AECF$ is diags bisect
 || gm **3**

10.2 .1. $\hat{E}_1 = x$ ✓ ^{SR}
 $\therefore \hat{E}_2 = 180^\circ - x$ ✓ ^{SR} str line
 $= 180^\circ$
 $\therefore \hat{F}_2 = 180^\circ - x$ ✓ ^{SR} alt Δ 's =,
 || lines
 $\therefore \hat{F}_1 = x$ ✓ ^{SR} str line
 $= 180^\circ$
 $\therefore \hat{E}_1 = \hat{F}_1 = x$ ✓ **3**

2. In Δ 's AED, CFB
 1. $\hat{E}_1 = \hat{F}_1$ ✓ ^S (10.2.1)
 2. $\hat{A}_1 = \hat{C}_2$ ✓ ^{SR} alt Δ 's =,
 || lines
 3. $AD = BC$ ✓ ^{SR} opp sides
 || gm =

R ✓

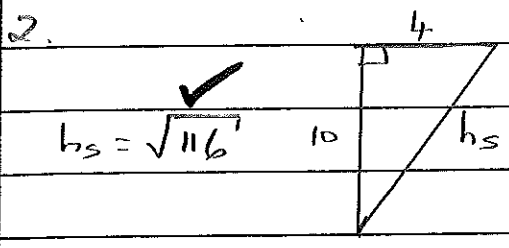
∴ ΔAED ≅ ΔCFB AACorS 4

11.2. 1. $V = \pi r^2 \cdot h$
 $500 = \pi r^2 h$ ✓
 $\frac{500}{\pi r^2} = h$ 1

10.2. 3. DE || BF given
 DE = BF ✓ ≅ Δ'S
 ∴ DEBF is 1 pr opp ✓
 || gm sides || & = 2

2. TSA
 $= 2 \times \text{circle} + \text{rectangle}$
 $= 2\pi r^2 + 2\pi r h$
 $= 2\pi r^2 + 2\pi r \left(\frac{500}{\pi r^2}\right)$
 $= 2\pi r^2 + \frac{1000}{r}$
 $= 2\pi r^2 + 1000 \cdot r^{-1}$ 2

11.1. 1. V ✓
 $= \frac{1}{2} \left(\frac{4}{3} \pi (4)^3\right) + \frac{1}{3} \pi (4)^2 \cdot 10$
 $= 301,59 \text{ cm}^3$ ✓ 3



TSA ✓
 $= \frac{1}{2} (4\pi (4)^2) + \pi (4) \cdot \sqrt{116}$
 $= 235,87 \text{ cm}^2$ ✓ 4

3. V_{new}
 $= \pi r_{\text{new}}^2 h_{\text{new}}$
 $= \pi (3r)^2 \left(\frac{1}{2} h\right)$
 $= \pi \cdot 9r^2 \cdot \frac{1}{2} h$
 $= \frac{9}{2} \pi r^2 h$
 $= \frac{9}{2} \cdot 500$
 $= \sqrt{2250} \text{ cm}^3$ 2

11.1. 1/2

- no units : no penalty
- wrong units : penalty