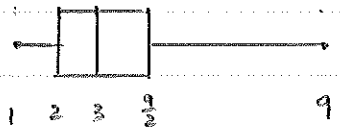
Gr 10 Maths Paper 2 /100

1. 1 2 2 2 3 4 4 5 9
   Q_1 M Q_3

1.1. I min = 1
II Q_1 = 2 ✓
III M = 3 ✓
IV Q_3 = $\frac{9}{2}$ ✓
V max = 9 ✓ 4

2. ✓box ✓whiskers



2

1.3. IQR = $\frac{9}{2} - 2$
= $\frac{5}{2}$ ✓ 1

2.1. $0 < x \leq 10$ ✓ 1

2. } dlSheet A
3 }

2.4. $r \leq 20$
$\therefore$ ✓$\frac{11+7}{25} \times 100$
= 72 % ✓ 2

2.5. $P_{65} = T_{\frac{65}{100}(1+25)}$ ✓

= $T_{16,9}$

= $\frac{T_{16} + T_{17}$

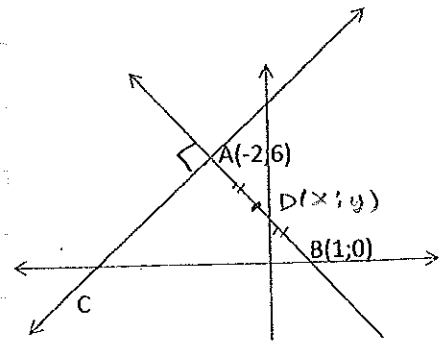
$\approx$ $10 < x \leq 20$ ✓ 2

11 | 11
✓7 | 18
5 | 23
2 | 25

3. $\bar{x} = 12$
$\frac{2x + x + 3 + x - 1 + 2x - 3 + x + 5}{5}$ ✓ = 12

$7x + 4$ ✓ $= 60$
$x = 8$ ✓ 3

4.

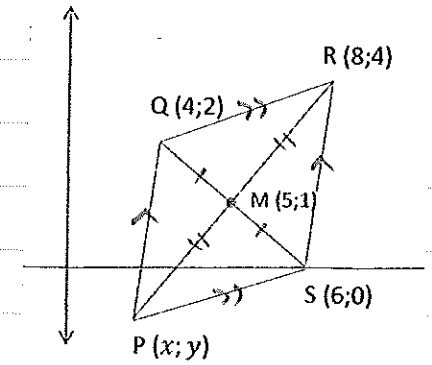


4.1. $x = \frac{-2+1}{2}$ $y = \frac{6+0}{2}$
$= -\frac{1}{2}$ $= 3$
$\therefore$ D$(-\frac{1}{2}; 3)$ ✓✓ 2

4.2. 1. A(-2;6) B(1;0)
$m = \frac{0-6}{1-(-2)} = -2$
$\therefore$ $y = -2x + c$ ✓
Sub B(1;0)
$0 = -2(1) + c$ ✓
$2 = c$
$\therefore$ $y = -2x + 2$ ✓ 3

2. $y = \frac{1}{2}x + c$ ✓ $\perp$
Sub A(-2;6)
$6 = \frac{1}{2}(-2) + c$ ✓
$7 = c$
$\therefore$ $y = \frac{1}{2}x + 7$ ✓ 3

5.



5.1. Diags llgm bisect, so:

$S: \frac{x+8}{2} \quad O: \frac{y+2}{2}$

$10 = x+8 \quad 0 = y+2$

$2 = x \quad -2 = y$

$\therefore P(2;-2)$ ✓✓ **2**

5.2. $Q(4;2)\ M(5;1)\ S(6;0)$

$m_{QM} = \frac{1-2}{5-4} = -1$ ✓

$m_{MS} = \frac{0-1}{6-5} = -1$ ✓

$\therefore m_{QM} = m_{MS}$ ✓

$\therefore$ Q, M and S collinear **3**

5.3. $Q(4;2) \quad P(2;-2)$

$S(6;0) \quad R(8;4)$

$m_{QS} = \frac{0-2}{6-4} = -1$ ✓ $\quad m_{PR} = \frac{-2-2}{4-8} = 1$ ✓

$\therefore m_{QS} \cdot m_{PR} = (-1).(1)$

$= -1$ ✓

$\therefore QS \perp PR$

$\therefore$ PQRS is rhombus ✓R llgm and diags ⊥ ▷

OR **4**

$Q(4;2) \quad R(8;4)$

$QR = \sqrt{(4-2)^2 + (8-4)^2}$ ✓

$= \sqrt{20}$ ✓

$R(8;4) \quad S(6;0)$

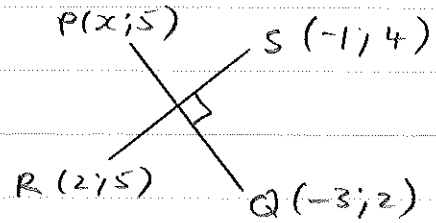
$RS = \sqrt{(0-4)^2 + (6-8)^2}$

$= \sqrt{20}$ ✓

$\therefore QR = RS$

$\therefore$ PQRS is rhombus ✓R llgm and 1 pr adj sides = ▷

6.



$m_{RS} = \frac{4-5}{-1-2} = \frac{1}{3}$ ✓ $\quad m_{PQ} = \frac{5-2}{x-(-3)} = \frac{3}{x+3}$

$\therefore -3 = \frac{3}{x+3}$ ✓ ⊥

x mult: $-3(x+3) = 3$

$x+3 = -1$

$x = -4$ ✓ **3** ▷

7.1. $5\tan\theta = 12$

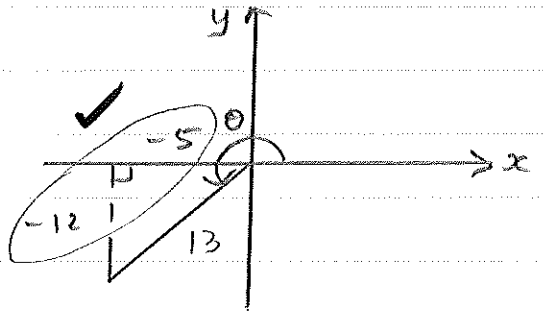
$\tan\theta = \frac{12}{5}$

• $\tan\theta$ + $\therefore$ I III

• $90° < \theta < 360°$ $\therefore$ II III IV

$\therefore$ Q III

$\tan\theta = \frac{12}{5}$ ✓ $\frac{y}{x}$ $\frac{-12}{-5}$



✓

$(-5)^2 + (-12)^2 = r^2$

$169 = r^2$

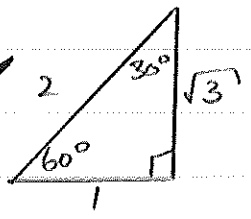
$\pm\sqrt{169} = r$

$13 = r$ ✓

$\therefore \cos\theta = \frac{x}{r}$

$= \frac{-5}{13}$ ✓ **4**

7.2. 1.



✓ **1**

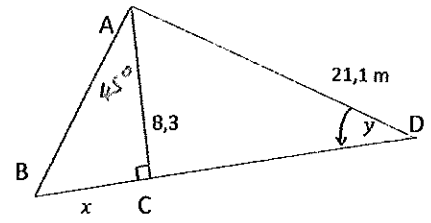
2. $\frac{1}{\sin 60°} = \frac{1}{\frac{a}{h}}$

$= \frac{1}{\frac{\sqrt{3}}{2}}$ ✓

$= 1 \times \frac{2}{\sqrt{3}}$

$= \frac{2}{\sqrt{3}}$ ✓ **2**

7.3.



7.3.1. $A\hat{B}C = 45°$ ✓ SR $\angle$s $\Delta = 180°$

$\therefore x = 8,3$ ✓ SR isos Δ

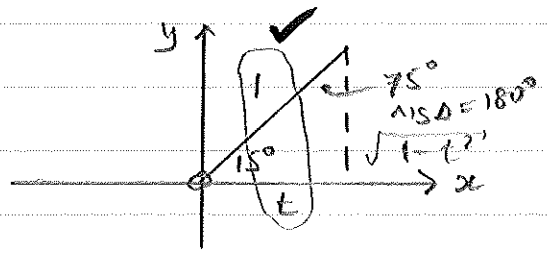
$\angle$s = **2**

7.3.2. $\sin y = \frac{8,3}{21,1}$ ✓

$y = \sin^{-1}\left(\frac{8,3}{21,1}\right)$

$= 23,16°$ ✓ **2**

7.4. $\cos 15° = t = \frac{t}{1}$ $\frac{x}{r}$



✓

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

$y^2 = 1 - t^2$

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

$\therefore y = \sqrt{1-t^2}$ ✓

$\cos 75° = \frac{\sqrt{1-t^2}}{1}$ $\frac{a}{h}$

$= \sqrt{1-t^2}$ ✓ **3**

7.5. 1. $2\tan x - 5,8 = 0$

$\tan x = \frac{29}{10}$ ✓

$x = \tan^{-1}\left(\frac{29}{10}\right)$ ✓

$= 70,97°$ ✓ **2**

7.5. 2. $4\sin x - 3 = \cos 32°$

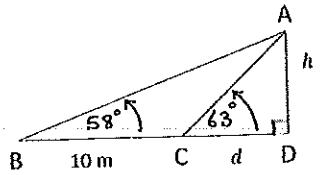
$= 0,84...$ ✓

$\sin x = 0,96...$ ✓

$x = \sin^{-1}(0,96...)$

$= 74,16°$ ✓ **3**

8.



8.1. $\tan 63° = \frac{h}{d}$ ✓ $\frac{o}{a}$

$d\tan 63° = h$ ✓ **2**

8.2. $\tan 58° = \frac{h}{d+10}$ ✓ $\frac{o}{a}$

$(d+10)\tan 58° = h$ ✓ **2**

8.3. $d\tan 63° = (d+10)\tan 58°$ ✓

$d\tan 63° = d\tan 58° + 10\tan 58°$ ✓

$d\tan 63° - d\tan 58° = 10\tan 58°$

$d(\tan 63° - \tan 58°) = 10\tan 58°$ ✓

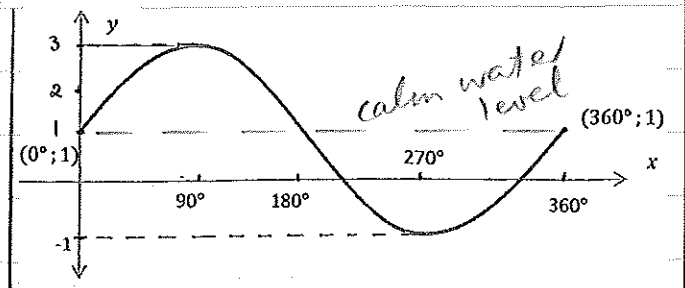
$d = \frac{10\tan 58°}{\tan 63° - \tan 58°}$ ✓ **4**

$= 44,17$ m

8.4. $44,17\tan 63° = h$ ✓

$86,69$ m $= h$ ✓ **2**

9.1.



9.1. $y = 2\sin x + 1$

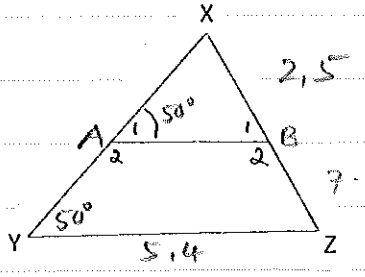
$= a\sin x + b$

1. $a = 2$ ✓ **1**

2. $b = 1$ ✓ **1**

9.2. d/Sheet A

10.



10.1. $\hat{A}_1 = \hat{Y}$ $R = 50°$ given

$\therefore AB \parallel YZ$ ✓ corr ∠'s = **1**

10.2. In Δ's XA_1B_1, XYZ

1. $\hat{X} = \hat{X}$ ✓SR common

2. $\hat{A}_1 = \hat{Y}$ ✓SR given

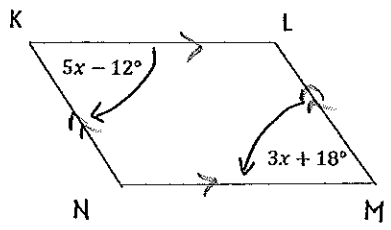
$\therefore \Delta XAB \parallel\parallel \Delta XYZ$ ✓R AAA **3**

10.3. $\frac{AB}{YZ} = \frac{XB}{XZ}$ ×AB XYZ

$\frac{AB}{5,4} \checkmark = \frac{2,5}{7,5}$ **2**

$\therefore \hat{AB} \checkmark = \frac{9}{5}$ 1,8

11.1.



11gm

$5x - 12° = 3x + 18°$ ✓SR opp ^'s 11gm =

$2x = 30°$

$x = 15°$

$\therefore \hat{M} = 3(15°) + 18°$

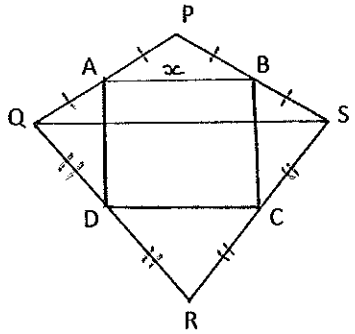
$= 63°$ D

$\therefore \hat{K} = 63°$ ✓ proved D

$\therefore \hat{N} = 117°$ D ✓ Coint ^'s = 180°, 11 lines

$\therefore \hat{L} = 117°$ D opp ^'s 11gm = **3**

11.2. kite



AB ∥ QS midpt thm } ✓SR

but QS ∥ DC midpt thm }

$\therefore$ AB ∥ DC ✓S ∥ QS

AB = x

$\therefore$ QS = 2x midpt thm } ✓SR

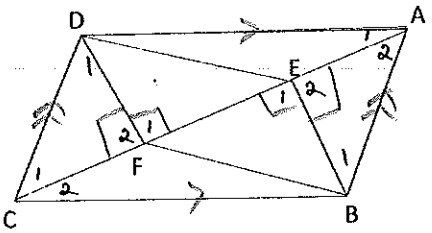
$\therefore$ DC = x midpt thm }

$\therefore$ AB = DC ✓S = x

$\therefore$ ABCD is ✓R 1 pr opp sides

11gm ∥ & = **5**

11.3.



11.3. 1. In Δ's $F_2D_1C_1$, $E_2B_1A_2$

1. DC = AB ✓SR opp sides 11gm =

2. $\hat{C}_1 = \hat{A}_2$ ✓SR alt ^'s =, 11 lines

3. $\hat{F}_2 = 90°$ given **4**

$= \hat{E}_2$ ✓S

$\therefore \Delta FDC \equiv \Delta EBA$ AA ✓R

D

11.3. 2. $\hat{F}_1 = \hat{E}_1 = 90°$

$\therefore$ DF ∥ EB ✓S alt ^'s = ✓R

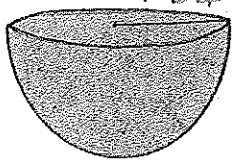
DF = BE ✓S Δ ≡

$\therefore$ EBFD is 1 pr opp sides

11gm ∥ & = ✓R

D **4**

12.



12.1. $V = \frac{1}{2} \cdot \frac{4}{3}\pi r^3$ ✓

$= \frac{1}{2} \cdot \frac{4}{3}\pi (4)^3$ ✓

$= 134,04\ cm^3$ ✓ **2**

12.2. TSA

$= \frac{1}{2} 4\pi r^2 + \pi r^2$ ✓

$= \frac{1}{2} 4\pi (4)^2 + \pi (4)^2$ ✓

$= 150,80\ cm^2$ ✓ **3**

12.3. $V = \frac{4}{3}\pi r^3$

$V_{new} = \frac{4}{3}\pi (2r)^3$

$= \frac{4}{3}\pi \cdot 8r^3$

$= 8 \cdot \frac{4}{3}\pi r^3$

$V : V_{new}$

$\frac{4}{3}\pi r^3 : 8 \cdot \frac{4}{3}\pi r^3$

$1 : 8$ ✓ **1**