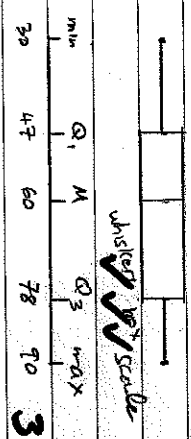


1. 35 40 54 55 (60) 72 76 80 90 (9)

$Q_1 = \frac{40+54}{2} = 47$   
 $Q_3 = \frac{76+90}{2} = 78$

- 1.1. I : min = 35 ✓  
 II :  $Q_1 = 47$  ✓  
 III :  $M = 60$  ✓  
 IV :  $Q_3 = 78$  ✓  
 V : max = 90 ✓



1.3. IQR =  $Q_3 - Q_1$   
 $= 78 - 47$   
 $= 31$

2. D/Sheet

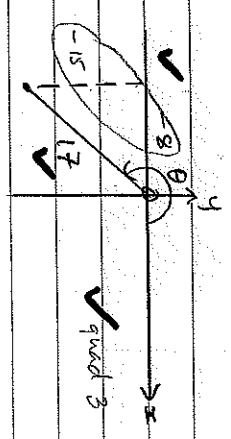
3.  $2x + 2x + 2x - 1 + 2x - 3 + x + 5 = 12$   
 $5x = 12$   
 $x = 2.4$

LCD = 5  
 $7x + 4 = 60$   
 $x = 8$

4.1.  $\cos(20^\circ + 30^\circ)$   
 $= \cos 50^\circ$   
 $= 0.643$

2.  $\sin^2 20^\circ + \cos^2 20^\circ$   
 $= (\sin 20^\circ)^2 + (\cos 20^\circ)^2$   
 $= 1$

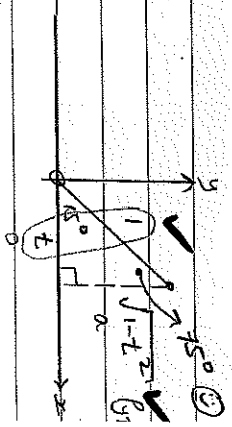
4.2.  $\tan \theta = \frac{15}{8}$   
 $\tan \theta + \dots$   
 $90^\circ < \theta < 360^\circ$



$\frac{y}{x} = \frac{15}{-8}$   
 $r = 17$  (Pythag)

$\therefore \sin \theta = \frac{y}{r}$   
 $= \frac{-15}{17}$

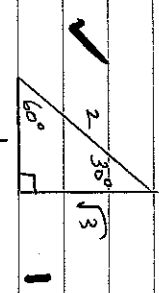
4.3.  $\cos 15^\circ = t = \frac{t}{r}$



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

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

4.4. 1.

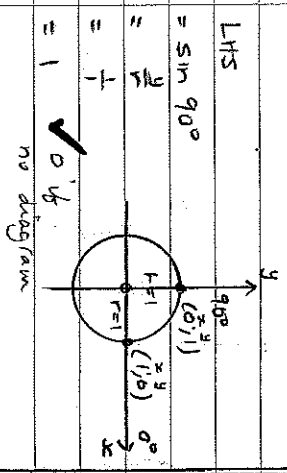


2.  $\frac{1}{\sin 30^\circ} + (\cos 30^\circ)^2$   
 $= \frac{1}{\frac{1}{2}} + (\frac{\sqrt{3}}{2})^2$   
 $= 2 + \frac{3}{4}$   
 $= \frac{11}{4}$

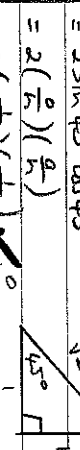
$= 1 \times \frac{2}{2} + \frac{3}{4}$   
 $= 2 + \frac{3}{4}$   
 $= \frac{11}{4}$

$\sin 90^\circ = 2 \sin 45^\circ \cos 45^\circ$

LHS =  $\sin 90^\circ = 1$   
 RHS =  $2 \sin 45^\circ \cos 45^\circ = 2 \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = 1$

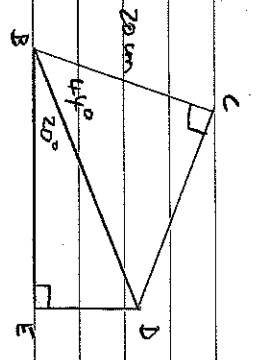


RHS =  $2 \sin 45^\circ \cos 45^\circ$   
 $= 2(\frac{\sqrt{2}}{2})(\frac{\sqrt{2}}{2})$   
 $= 2(\frac{\sqrt{2}}{2})(\frac{\sqrt{2}}{2})$   
 $= 2 \times \frac{1}{2} = 1$

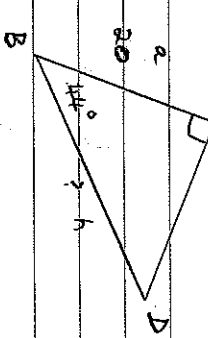


$\therefore$  LHS = RHS

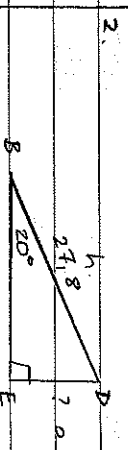
4.6. 1.



$\cos 44^\circ = \frac{20}{BD}$   
 $BD = \frac{20}{\cos 44^\circ} = 27.8$



$\cos 44^\circ = \frac{20}{BD}$   
 $BD = \frac{20}{\cos 44^\circ} = 27.8$



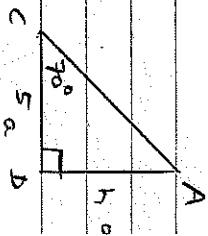
$\sin 20^\circ = \frac{h}{27.8}$

$\therefore 27.8 \cdot \sin 25^\circ = DE$   
 $9.51 \text{ cm} = \checkmark$  **2**

4.7. 1.  $\sin 2x = \frac{1}{2}$   
 $A = 2x$   
 $\sin A = \frac{1}{2}$   
 $A = \sin^{-1}(\frac{1}{2})$   
 $= 30^\circ \checkmark$   
 $\therefore 2x = 30^\circ$   
 $x = 15^\circ \checkmark$  **2**

2.  $\sin x = 3 = \cos 32^\circ$   
 $2 \tan x - 3 = 0.84 \dots$   
 $\tan x = 1.92 \dots$   
 $x = \tan^{-1}(1.92)$   
 $= 62.54^\circ$  **3**

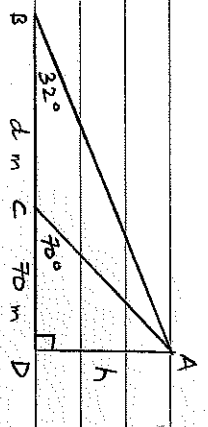
$\therefore (d+5) \tan 32^\circ = h$  **2**



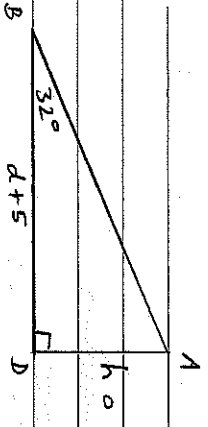
$\tan 70^\circ = \frac{h}{d+5}$   
 $5 \cdot \tan 70^\circ = h$  **1**

$h = (d+5) \tan 32^\circ \dots 1$   
 $h = 5 \tan 70^\circ \dots 2$

$(d+5) \tan 32^\circ = 5 \tan 70^\circ$   
 $d+5 = \frac{5 \tan 70^\circ}{\tan 32^\circ}$   
 $= 21.98 \dots$   
 $\therefore d = 16.98 \text{ m}$  **3**



5.1.  $\tan 32^\circ = \frac{h}{d+5}$  **2**



Question 1.1

Diagram Sheet A

Question 2

21  $40 < t \leq 60$  **1**

| Time (hours)      | f  | Midpoint (x) | fx   |
|-------------------|----|--------------|------|
| $0 < t \leq 20$   | 25 | 10           | 250  |
| $20 < t \leq 40$  | 44 | 30           | 1320 |
| $40 < t \leq 60$  | 60 | 50           | 3000 |
| $60 < t \leq 80$  | 38 | 70           | 2660 |
| $80 < t \leq 100$ | 16 | 90           | 1440 |

23  $\bar{x} = \frac{\sum f \cdot X}{n} = \frac{8670}{183} = 47.38$  C.A. **3**

24  $\frac{38 + 16}{183} \times 100 = 20.77$  **2**

25  $P_{65} = \frac{8670}{100} (1 + 183) = 119.1$  **2**

$40 < t \leq 60$  **2**



|     |  |   |      |
|-----|--|---|------|
|     | <p>9.1 <math>AD = 27</math> (OD <math>\perp</math> chord AB)</p> <p>Let <math>OD = x</math></p> <p><math>\therefore OC = (x+3)</math></p> <p><math>OA = OC</math></p> <p><math>\therefore OA = (x+3)</math></p> <p><math>OA^2 = AD^2 + OD^2</math> (Pythag)</p> <p><math>(x+3)^2 = 27^2 + x^2</math></p> <p><math>x^2 + 6x + 9 = 729 + x^2</math></p> <p><math>6x = 720</math></p> <p><math>x = 120</math></p> <p><math>\therefore</math> radius <math>OA = 120 + 3</math></p> <p><math>= 123</math> units</p> | 4 | [13] |
| 9.2 | <p>9.2 <math>\Delta AOD</math> and <math>\Delta BOD</math>:</p> <p>(1) <math>AO = OB</math> (radii)</p> <p>(2) <math>AD = DB</math> (OD <math>\perp</math> chord AB)</p> <p>(3) <math>OD = OD</math> (common)</p> <p><math>\therefore \Delta AOD \equiv \Delta BOD</math> (S.S.S)</p>  | 4 |      |
| 9.3 | <p><math>\therefore \hat{O} = 2\hat{ABC}</math> (<math>\angle</math> at centre = <math>2 \times \angle</math> at circum)</p> <p><math>\hat{O} = 2y = 2 \times 24 = 48^\circ</math></p> <p><math>\therefore \hat{O}_2 = \hat{O}_1 = \hat{O} = 48^\circ</math></p> <p><math>\therefore \hat{O}_2 = \hat{O}_1 = 48^\circ</math> (conjugate <math>\Delta</math>'s)</p>   | 5 | [13] |

s+r