Afdeling A | Section A:

Vraag 1:

1.1 $x^2+y^2=r^2$ (6;8)

$\therefore (6)^2+(8)^2=r^2$ ①

$\therefore 36+64=r^2$ ①

$\therefore r^2=100$

$\therefore x^2+y^2=100$ ① (3)

1.2 $r=10$ ① (1)

1.3 (6;8) (-10;0):

$\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$ ①

$=\sqrt{(-10-6)^2+(0-8)^2}$ ①

$=\sqrt{(-16)^2+(-8)^2}$

$=\sqrt{256+64}$ ①

$=\sqrt{300}$ ①

$=\sqrt{100\times 3}$

$=10\sqrt{3}$ ① (5)

1.4 $M\left(\frac{x_1+x_2}{2};\frac{y_1+y_2}{2}\right)$ ①

$=M\left(\frac{6-10}{2};\frac{8-0}{2}\right)$ ①

$=M\left(\frac{-4}{2};\frac{8}{2}\right)$ ① ①

$=M(-2;4)$ (4)

1.5 $m_{AB}=\frac{y_2-y_1}{x_2-x_1}$ ①

$=\frac{0-8}{-10-6}$ ①

$=\frac{-8}{-16}$

$=\frac{1}{2}$ ① (3)

1.6 $m_{AQ}=\frac{8-2}{6+6}$ ①

$=\frac{6}{12}$

$=\frac{1}{2}$ ①

$m_{AB}=\frac{1}{2}$ ①

$\therefore m_{AQ}=m_{AB}$ ①

$\therefore$ A, B en Q is kollinieër. ①

Vraag 2:

2.1.1 $m_{PQ}=\frac{4-1}{3+3}$ ①

$=\frac{3}{6}$

$=\frac{1}{2}$ ①

$m=\frac{1}{2}$ (3;4):

①

$y-y_1=m(x-x_1)$

$\therefore y-4=\frac{1}{2}(x-3)$ ①

$\therefore 2y-8=x-3$

$\frac{2y}{2}=\frac{x}{2}+\frac{5}{2}$

$\therefore y=\frac{1}{2}x+\frac{5}{2}$ ① (6)

of | or

$\frac{y-y_1}{x-x}=\frac{y_2-y_1}{x_2-x_1}$ ①

(-3;1)
(3;4)

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

$\therefore \frac{y-1}{x+3}=\frac{3}{6}$

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

$\therefore 2(y-1)=x+3$ ①

$\therefore 2y-2=x+3$ ①

$\therefore 2y=x+5$

$y=\frac{1}{2}x+\frac{5}{2}$ ① (6)

2.1.2 $m=\frac{1}{2}$ (1;-3):

$y-y_1=m(x-x_1)$ ①

$\therefore y+3=\frac{1}{2}(x-1)$ ①

$\therefore 2y+6=x-1$

$\frac{2y}{2}=\frac{x}{2}-\frac{7}{2}$

$\therefore y=\frac{1}{2}x-\frac{7}{2}$ ① (4)

a.z. $y = 2x + 5$ .... ① $\quad x^2 + y^2 = 50$ ... ②

① in ②:

$\therefore x^2 + (2x+5)^2 = 50$ ①

$\therefore x^2 + 4x^2 + 20x + 25 = 50$ ①

$\therefore 5x^2 + 20x - 25 = 0$

$\therefore x^2 + 4x - 5 = 0$ ①

$\therefore (x+5)(x-1) = 0$

$\therefore x = -5$ ① of $x = 1$ ①

$\therefore y = 2(-5) + 5$ $\quad y = 2(1) + 5$

$\therefore y = -5$ $\quad y = 7$

✓ $(-5; -5)$ ① $\quad (1; 7)$ ① (7)

[17] ✓ $\quad$ [38] ✓

AFD / SEC. B
VR. / Q.3

3.1

3.1.1 $\frac{e}{\sin E} = \frac{f}{\sin F} = \frac{g}{\sin G}$ (1)(1)(1)

✓

(3)

3.1.2 $e^2 = f^2 + g^2 - 2fg\cos E$ (1)(1)(1)

✓

(3)

3.1.3 $\frac{1}{2}$ (1)

(1)

✓

3.2

3.2.1 $AC^2 = AB^2 + BC^2 - 2AB.BC\cos B$ (1)

$= 3^2 + 5^2 - 2(3)(5)\cos 120°$ (1)

$= 9 + 25 + 15$ (1)

$AC^2 = 49$ (1)

✓

$AC = 7$ (1)

(5)

3.2.2 $\frac{\sin D}{7} = \frac{\sin 81,8°}{8}$ (1)

$\sin D = \frac{7\sin 81,8°}{8}$ (1)

$= 0,866$

✓

$= 60°$ (1)

(4)

3.2.3 Area of $\Delta ABC = \frac{1}{2}AB.BC\sin B$ (1)

$= \frac{1}{2}(3)(5)\sin 120°$ (1)

$= 6,5$ (2)

✓

(4)

✓

[20]

VR. / Q 4

4.1 $BC^2 = AC^2 + AB^2 - 2AC.AB\cos C$ (1)

$6^2 = 8^2 + 5^2 - 2(8)(5)\cos C$ (1)

$36 = 64 + 25 - 80\cos C$ (1)

$\cos C = \frac{53}{80}$

$= 0,6625$ (1)

✓

$\hat{C} = 48,5°$ (1)

(5)

4.2 $\frac{\sin D}{14} = \frac{\sin 42°}{22}$ (1)

$\sin D = \frac{14\sin 42}{22}$ (1)(1)

$= 0,4258$ (1)

✓

$D = 25,2°$ (1)

(5)

4.3

4.3.1 Area of $\Delta DEF = \frac{1}{2}DE.EF\sin E$ (1)

$= \frac{1}{2}(16)(15)\sin 112°$ (1)

$= 111,3m^2$ (2)

✓

(4)

4.3.2 Area of $\Delta GED = \frac{1}{2}GD.DE\sin D$ (1)

$72 = \frac{1}{2}GD.DE\sin 150°$ (1)

$72 = \frac{1}{2}GD.16\sin 150°$ (1)

$72 = 4GD$

$GD = 18m$ (1)

✓

(4)

[18] ✓

[38] ✓

Afdeling C:

Vraestel A Verbonikas Wisk.

5 1.

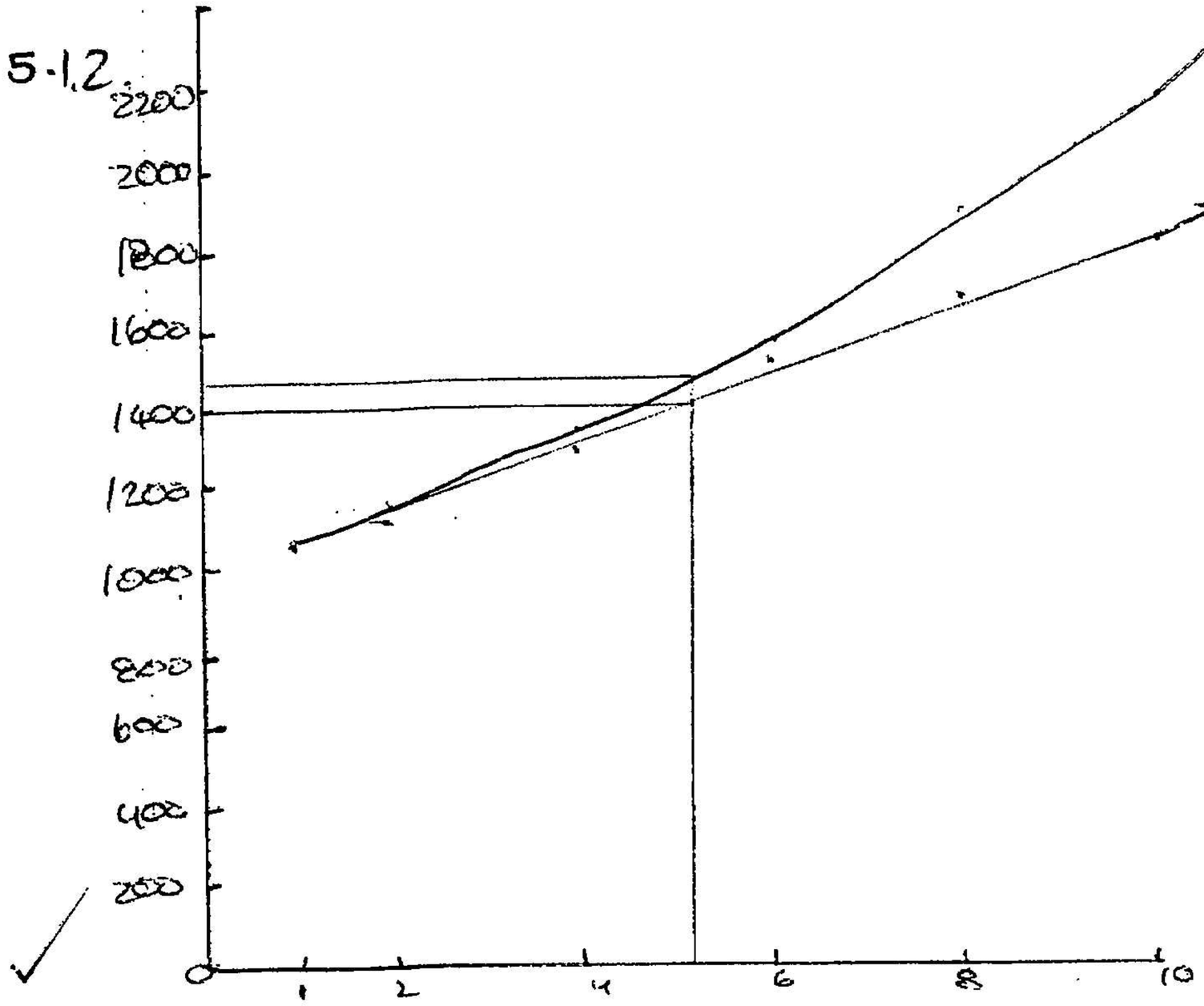
5.1.1.

Jare	1	2	4	6	8	10
(a)	1080	1166	1360	1586	1850	2158.
(b)	1080	1160	1320	1480	1640	1800.

(4)

✓

5.1.2



✓ ✓ (4)

5.1.3. (a) (1)

5.1.4.1 Opsie (a) Rente = R 469 (2)

5.1.4.2 Opsie (b) Rente = R 400 (2)

✓

[13]

Vraestel A (Verb. Wisk)

.21. $A = 19000\left(1 + \frac{24 \div 4}{100}\right)^{n \times 4}$

$= 19000\left(1 + \frac{6}{100}\right)^{4n}$

✓ $= 19000\,(1{,}06)^{4n}$ (4)

5.221 $A = 19000\left(1 + \frac{6}{100}\right)^{4}$

$= 23987{,}06$

✓ Rente = R 4987 (2)

5.222 $A = 19000\,(1{,}06)^{4 \times 4}$

$= 48266$

✓ Rente = R 29266 (2)

5.223 $A = 19000\,(1{,}06)^{4 \times 10}$

$= 192428$

✓ Rente = R 176428. (2)

[10]. ✓

3.1. R 12 200 + 41% van (51840 - 50000)

= 12200 + 41% x 1840

= 12200 + 754,40

✓ = R 12954,40 (4).

3.2. R51840 + 18,5% = 9590,40

R51840 + R9590,40

= R61430,40

R 16300 + 42% van (61430,40 - 60000)

= 16300 + 42% x 1430

✓ = 16300 + 600,77

= R 16900,77 (5)

[9] ✓

5.4 3,5C x R 18500

= R 647,50

2,75C x R 95300

= R 2620,75.

Jaarliks 674,50
+ 2620,75
R3268,25

Maandeliks R 3268,25
12

= R272,35 [5]

✓

Afdeling D

Boogmaat ②

Vraag 6

G	30	60°	90°	180°	225
R	$\frac{\pi}{2}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{5\pi}{4}$

(6)

2. $67,2 \div 57,3$
$= 1,17$ rad. (2)

3. $6,283 \times 57,3$
$= 360°$ (2) [7]

Vraag 7

1. $S = r\theta$
$38,6 = 7,8\theta$
$4,94$ rad $= \theta$
$283,16° = \theta$ (4)

2. Oppv $= \frac{1}{2} r s$
$= \frac{1}{2}(7,8)(38,6)$
$= 150,5$ (3)

3. $\theta = 29° \div 57,3$
$= 0,51$ rad

Oppv $= \frac{1}{2} r^2 \theta$
$30 = \frac{1}{2}(14)^2 \theta$
$30 = 98\theta$
$0,306 = \theta$
$17,5° = \theta$ (6)

[13]

Vraag 8

1. $\theta = 70° \div 57,3$
$= 1,22$ rad (2)

8.2 Oppv $= \frac{1}{2} r^2(\theta - \sin\theta)$
$= \frac{1}{2}(12)^2(1,22 - \sin 70°)$
$= 72(0,280)$
$= 20,1$. (4)

8.3 Vol = oppv $\times$ h
$= 20,1 \times 50$
$= 100,9$. (3)

[9]

Vraag 9

$\omega = 2\pi f$
$= 2\pi(3)$
$= 18,8$ rad/sek. (3)

$V = \omega r$
$= 18,8(6)$
$= 112,8$ cm/sek (3)

[6]

[37]

SECTION E. RATIO, PROPORTION & SIMILARITY

UR/Q.10

10.1 CH ① (1)

✓

10.2

10.2.1 $\frac{PM}{MQ} = \frac{PS}{SR}$ ① (MS // QR)

$\frac{4,2}{2,8} = \frac{PS}{2,4}$ ①

$PS = 3,6$ ① (3)

✓

✓ 10.2.2 $PQ = 7$ ① (1)

10.3 $\frac{AD}{DB} = \frac{AE}{EC}$ ① (DE // BC)

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

$(x-2)(x+2) = (x-3)(x+4)$

$x^2 - 4 = x^2 + x - 12$

$x = 8$ ①

✓

(6)

[11]

UR/Q 11

11.1

✓ 11.1.1 $\hat{P}$ ① (1)

✓ 11.1.2 $\hat{Q}$ ① (1)

✓ 11.1.3 $\frac{DE}{PQ} = \frac{DF}{PR} = \frac{EF}{QR}$ ①

① ① (3)

11.2

11.2.1

In $\triangle ABC$ and $\triangle ADE$

✓ $\hat{A} \overset{①}{=} \hat{A}$ [Common / Gen ∠]

✓ ✓ $\hat{B} \overset{①}{=} \hat{D}_1$ [Corr. ∠ / coreenkL^e]

✓ $\hat{C} \overset{①}{=} \hat{E}_1$ [Corr. ∠ / coreenk L^e] (3)

11.2.2 $\frac{AB}{AD} = \frac{BC}{DE}$ ① (DE // BC)

$\frac{12}{4}$ ① $= \frac{BC}{4}$ ①

$4BC = 48$ ①

$BC = 12$ ① (5)

✓

✓

[13]

UR/Q 12

12.1 $\frac{KP}{KQ} = \frac{PL}{LR}$ ① (KL // QR)

$\frac{3}{KQ} = \frac{4}{8}$ ① (3)

✓

$KQ = 6$ ①

✓12.2 x ① (1)

✓12.3 y ① (1)

✓12.4 x ① (1)

✓12.5 III (Similar) ① (1)

12.6 $\frac{PK}{LM} = \frac{KL}{MR} = \frac{PL}{LR}$ ⑥ (3)

① ①

✓

12.7 $\frac{PK}{LM} = \frac{PL}{LR}$ ① (Similar $\triangle$s)

$\frac{3}{LM} = \frac{4}{8}$ ①

$LM = 6$ ① (3)

✓

[3]

[91] ✓

Section F | Afdeling F:

Vraag | Question 13:

13.1

T	E	
1	1 7 9 5 3	①
2	8 5 5 5 7 8	
3	5 4 2 0 5 6 2	①
4	4 0 0 3 8 0 2	
5	0 1 2 5	①
6	5 3 5 7	
7		
8	6 0	①

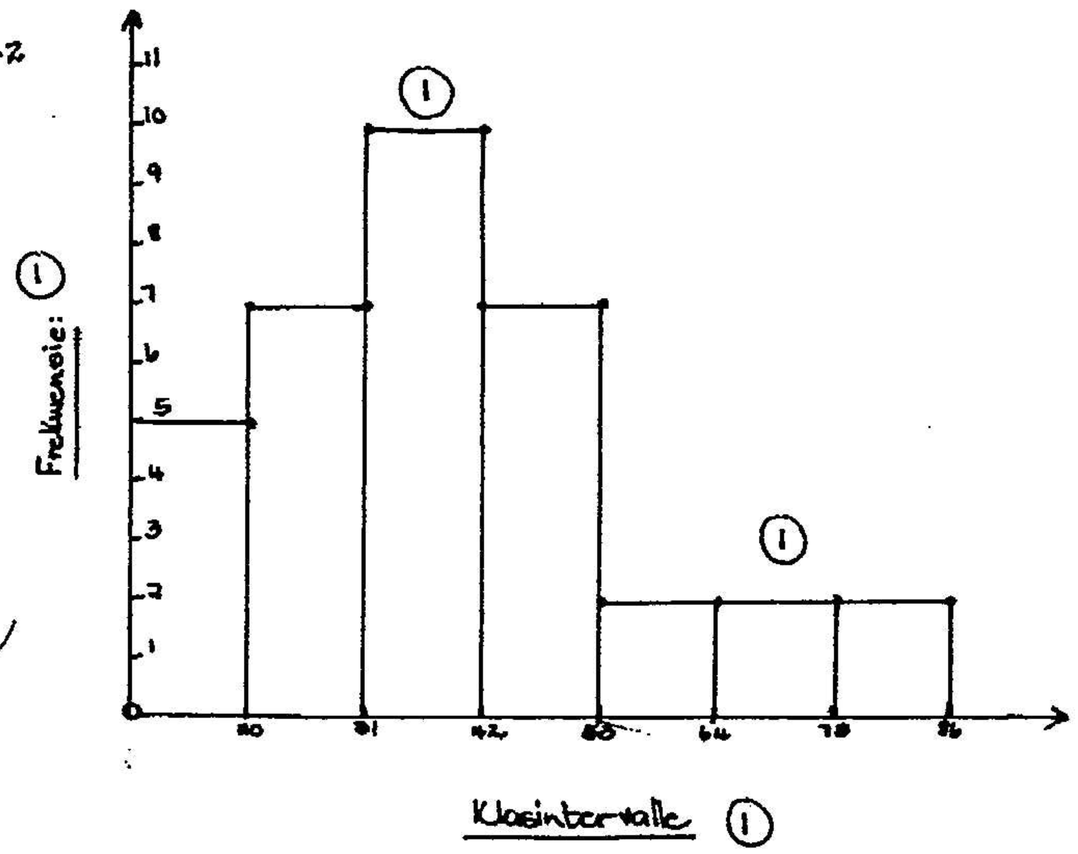
✓ (4)

13.2.1

Klasinterval	Telling	Frekwensie	Kumulatiewe frekwensie
10 - 20	𝍸	5	5
21 - 31	𝍸 II	7	12
32 - 42	𝍸 𝍸	10	22
43 - 53	𝍸 II	7	29
54 - 64	II	2	31
65 - 75	II	2	33
76 - 86	II	2	35
	(2)	(3)	(3)

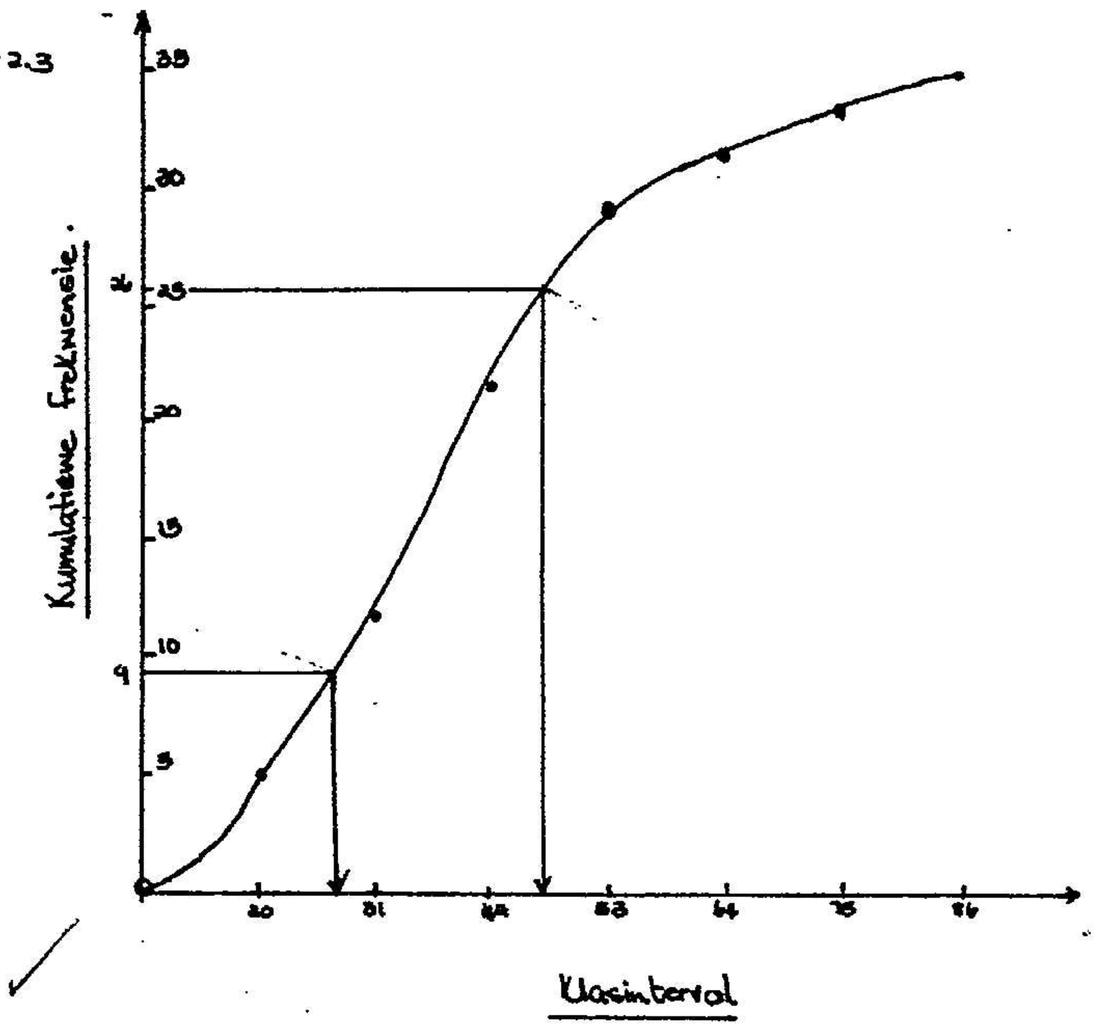
✓ (8)

13.2.2



① ① ① ① (4)

13.2.3



✓ (2)

13.2.4 Eerste Kwartiel – 28 ① ①
✓ Derde Kwartiel – 46 ① (2)

13.3 11 13 15 17 19 25 25 25 27 28 28 30 32 32 34 35 35 36 40 40 40 42 43 44 48 50 51 52 55 63 65 65 67 80 86 (2)

✓ ① ①

13.4 28 en 40 (2)

✓ 13.5 35 ① (1)

✓ 13.6 $\frac{1007}{35}$ ① ①
= 29 ① (3)

✓ 13.7 Gebied | range = 86 − 11 ①
= 75 ① (2)

✓

13.8 $s = \sqrt{\frac{\sum x^2 - n\bar{x}^2}{n-1}}$ ①

$= \sqrt{\frac{65968 - 35(8^2)}{35-1}}$ ①

$= \sqrt{\frac{65968 - 29435}{34}}$ ①

$= \sqrt{\frac{36523}{34}}$ ①

$= \sqrt{1074,205882}$

$= 32,7760802$

$\approx 32,78$ ① (5) ✓ [37].

✓