higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICS
NQF LEVEL 2
(Second paper)

17 February 2025

This marking guideline consists of 8 pages.

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QUESTION 1

1.1
- **Mean –** Is the average value of the given observations ✓✓
- **Mode –** Is the most repeated value in the given observations✓✓ (4)

1.2 1.2.1

Stem	Leaf
1	79✓
2	357✓
3	00359✓
4	01777✓
5	0556✓
6	236✓

(6)

1.2.2 $\frac{907}{22} = 41{,}227$ ✓✓ (2)

1.2.3 $\frac{40+41}{2} = 40{,}5$ ✓✓ (2)

1.2.4 47✓✓ (1)

1.2.5 $Max_{value} = 66$ ✓

$Min_{value} = 17$ ✓ (2)

1.2.6 $Range = 66 - 17$✓

$= 49$✓ (2)

1.2.7 $Q_{1\,position} = \frac{1}{4}(n+1)$

$= \frac{1}{4}(22+1)$

$= 5{,}75$ ✓

$Q_1 = P_5 + 0{,}75(P_6 - P_5)$

$= 27 + 0{,}75(30 - 27)$ ✓

$= 29{,}25$✓ (3)

1.2.8 $Q_{3\,position} = \frac{3}{4}(n+1)$

$= \frac{3}{4}(22+1)$

$= 17{,}25$ ✓

$Q_3 = P_{17} + 0{,}25(P_{18} - P_{17})$

$= 55 + 0{,}25(55 - 55)$ ✓

$= 55$ ✓ (3)

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1.3 11; 13; 15; 24; 24; 38; 44; 65; 74 ✓

Position of the 57th percentile

$= \frac{57}{100}(n+1)$

$= \frac{57}{100}(9+1)$

$= 5{,}7$ ✓

Position $5^{th} = 24$ ✓

The 57th percentile $= 24 + 0{,}7(38 - 24)$

$= 33{,}8$ ✓ (4)

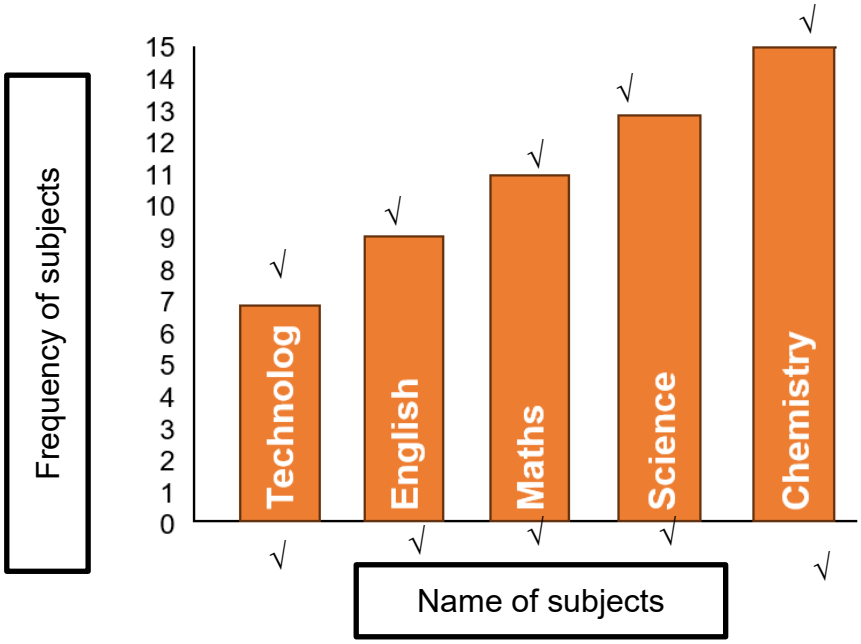
1.4 1.4.1

Subject	Tally	Frequency
Maths	𝍸 𝍸 1 ✓	11
English	𝍸 llll	9 ✓
Science	𝍸 𝍸 lll ✓	13
Technology	𝍸 ll	7 ✓
Chemistry	𝍸 𝍸 𝍸 ✓	15

(5)

1.4.2 55 ✓ (1)

1.4.3



(5)

Correct naming or labelling of bars = (½ for each bar + ½ for each label) **[40]**

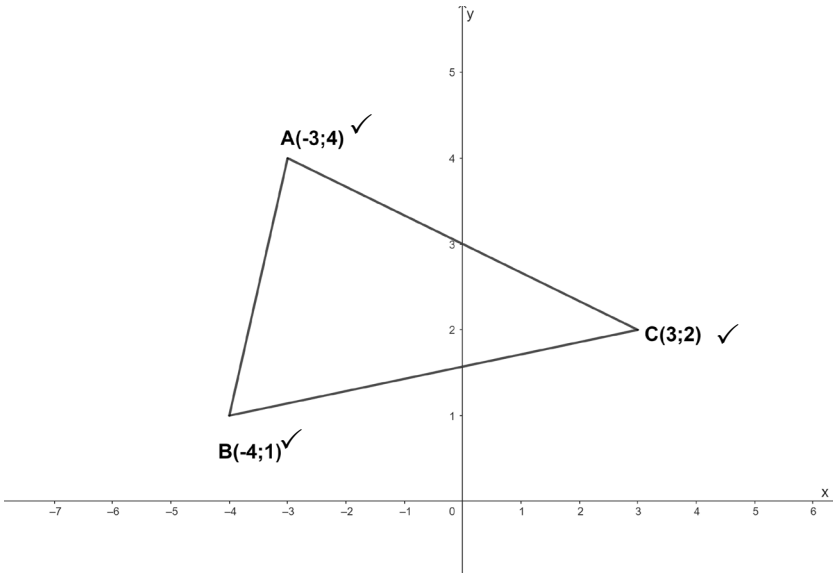
QUESTION 2

2.1 2.1.1 $Surface\ Area = 2\pi r^2 + 2\pi rh$ ✓
$= 2\pi(3)^2 + 2\pi(3)(12)$✓
$= 90\pi\ cm^2 \quad OR \quad 282{,}743\ cm^2$✓ (3)

2.1.2 $Volume = \pi r^2\ h$✓
$= \pi(3)^2\ (12)$✓
$= 108\pi\ cm^3 \quad OR \quad 339{,}292\ cm^3$ ✓ (3)

2.1.3 $Total\ Area = \pi r^2 + lb$✓
$= \pi(5)^2 + (4 \times 2)$✓✓
$= 86{,}540\ cm^2$✓ (4)

2.2 2.2.1



(3)

2.2.2 $D_{AC} = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

$= \sqrt{((-3) - 3)^2 + (4 - 2)^2}$ ✓

$= \sqrt{(-6)^2 + (2)^2}$ ✓

$= 2\sqrt{10}$ ✓ (3)

2.2.3 $M_{AC} = \frac{y_2 - y_1}{x_2 - x_1}$ ✓

$= \frac{2 - 4}{3 - (-3)}$ ✓

$= -\frac{1}{3}$ ✓ (3)

2.3 A (-3; 3)✓✓
B (-5; 6)✓✓
C (-7; 3)✓✓ (6)

2.4 Let the midpoint be M($X_m; Y_m$)

$X_m = \left(\frac{x_1 + x_2}{2}\right)$ $where\ x_1 = 6\ and\ x_2 = 3$

$= \frac{6 + 3}{2}$ ✓

$= 4{,}5$ ✓

$Y_m = \left(\frac{y_1 + y_2}{2}\right)$ $where\ y_1 = 8\ and\ y_2 = 1$

$= \frac{8 + 1}{2}$ ✓

$= 4{,}5$ ✓

$\therefore Midpoint_{AB} = (4{,}5; 4{,}5)$ ✓ (5)
[30]

QUESTION 3

3.1 3.1.1 $\theta = 180^o - R - Q$

$= 180^o - 60^o - 90^o$ ✓

$= 30^o$ ✓ (2)

3.1.2 $sin\ 60^o = \frac{PQ}{RP}$ ✓

$PQ = 7\ sin\ 60^o$ ✓

$PQ = 6{,}062\ \ cm$ ✓

$sin\theta = \frac{QR}{PR}$

$\therefore PRsin\theta = QR$ ✓

$\therefore QR = 7sin30^o$ ✓

$QR = 3{,}5cm$ ✓

$or\ x^2 + y^2 = r^2$

$\therefore x^2 = r^2 - y^2$

$\therefore QR = \sqrt{PR^2 - PQ^2}$ ✓

$= \sqrt{7^2 - (6{,}062)^2}$ ✓

$= 3{,}5cm$ ✓

(6)

3.2 $\sin\theta = \cos\theta$

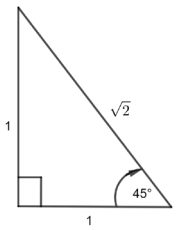
$\frac{\sin\theta}{\cos\theta} = \frac{\cos\theta}{\cos\theta}$ ✓

$\tan\theta = 1$ ✓

$\theta = \tan^{-1}(1)$ ✓

$= 45^o$ ✓ (4)

3.3 $\cos\theta + (\sin\theta)^2$



$x^2 = r^2 - y^2$

$x = \sqrt{\left(\sqrt{2}\right)^2 - (1)^2}$ ✓

$= 1$ ✓

$\therefore cos\theta + (sin\theta)^2 = \left(\frac{1}{\sqrt{2}}\right) + \left(\frac{1}{\sqrt{2}}\right)^2$ ✓

$= \frac{1}{\sqrt{2}} + \frac{1}{2}$

$= \frac{2+\sqrt{2}}{2\sqrt{2}}$ ✓ (4)

3.4 ΔABC:

$\tan 33^o = \frac{AB}{BC}$

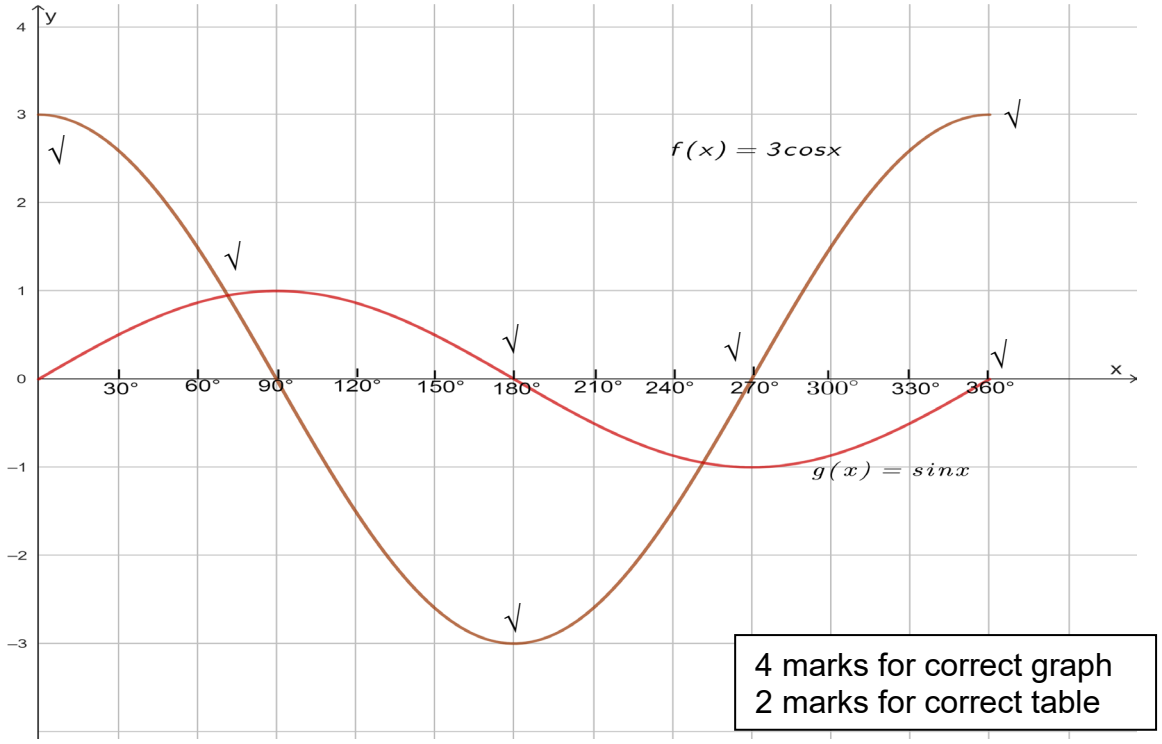
$\therefore \tan 33^o = \frac{AB}{43}$ ✓

$\therefore AB = 43 \times \tan 33^o$ ✓

=27,925 m ✓ (3)

3.5 3.5.1

x	0º	30º	60º	90º	120º	150º	180º	210º	240º	270º	300º	330º	360º
f(x) ✓	3	2,6	1,5	0	-1,5	-2,6	-3	-2,6	-1,5	0	1,5	2,6	3
g(x) ✓	0	0,5	0,9	1	0,9	0,5	0	-0,5	-0,9	-1	-0,9	-0,5	0



4 marks for correct graph
2 marks for correct table

(6)

3.5.2 Range of $f(x)$: $-3 \leq y \leq 3$ ✓ or Range is $[-3; 3]$ ✓

Domain of $f(x)$: $0^o \leq x \leq 360^o$ ✓ or Domain is $[0^o; 360^o]$ ✓ (2)

3.5.3 period of $g(x) = 360^o$ ✓ (1)

3.5.4 Amplitude of $f(x) = 3$ ✓ ✓ (2)

[30]

TOTAL: 100

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