education

Department of Education
FREE STATE PROVINCE

PRACTICAL TASK
PRAKTIESE TAAK

GRADE/*GRAAD* 11

PHYSICAL SCIENCES
FISIESE WETENSKAPPE

MEMORANDUM

JUNE/*JUNIE* 2017

TIME/*TYD*: 1 HOUR/UUR

MARKS/*PUNTE:* 40

This memorandum consists of FIVE pages.
Hierdie memorandum bestaan uit VYF bladsye.

QUESTION 1/*VRAAG 1*

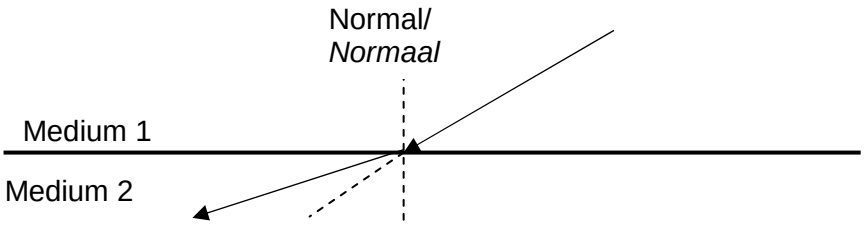
1.1

E	**D**	**B**	**F**	**A**	**C**

CRITERIA FOR MARKING / *KRITERIA VIR NASIEN*
• First 3 correct symbols (in order) ✓ *Eerste 3 korrekte simbole (in volgorde):* • Last 3 correct symbols (in order): ✓ *Laaste 3 korrekte simbole (in volgorde)*

(2)

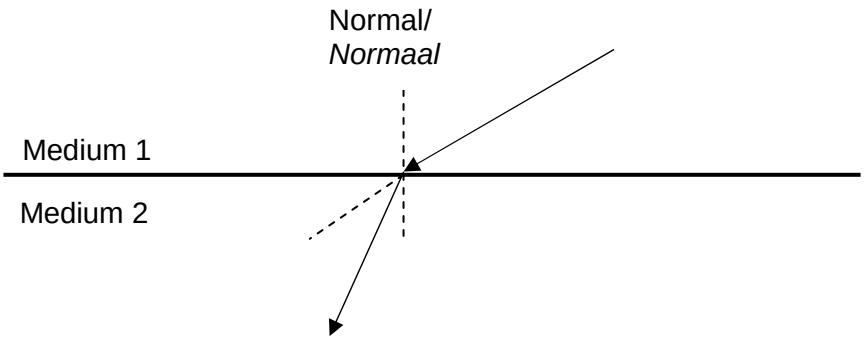
1.2.1



CRITERIA FOR MARKING / *KRITERIA VIR NASIEN*
• Refracted ray AWAY FROM normal ✓✓ (0 or 2 marks) • *Gebreekte straal WEG VANAF normaal* (0 of 2 punte)

(2)

1.2.2



CRITERIA FOR MARKING / *KRITERIA VIR NASIEN*
• Refracted ray TOWARDS normal: ✓✓ (0 or 2 marks) • *Gebreekte straal NA normaal* (0 of 2 punte)

(2)

[6]

QUESTION 2/*VRAAG 2*

2.1 $n_1 \sin\theta_1 = n_2 \sin\theta_2$ ✓
$n_1 \sin 20{,}28° = 1{,}33 \sin 35°$ ✓
$n_1 = 2{,}20$ ✓

The unknown medium is cubic zirconium. ✓
Die onbekende medium is kubiese sirkonium. (4)

2.2.1 90° ✓ (1)

2.2.2

Glass to water *Glas na water*	**X** ✓
Diamond to water *Diamant na water*	
Diamond to glass *Diamant na glas*	

(1)

2.3.1 Increases/*Toename* ✓ (1)

2.3.2 Remains the same/Bly dieselfde ✓ (1)

2.3.3 The angle of incidence and angle of refraction are both equal to 0° (✓✓)
OR Refraction/Bending of light/Change of direction of the light ray will not take place.

Die invalshoek en die brekingshoek is beide gelyk aan 0° (✓✓)
OF *Breking/Buig van lig/Verandering van die rigting van die ligstraal sal nie plaasvind nie.* (2)
[10]

QUESTION 3/*VRAAG 3*

3.1

3.1.1	Air/gas/glass tube ✓	Lug/gas/glasbuis ✓
3.1.2	Pressure gauge ✓	Drukmeter ✓
3.1.3	Tap/Stopcock ✓	Kraan/afsluitkraan ✓
3.1.4	Air/gas ✓	Lug/gas ✓
3.1.5	Oil/Oil reservoir ✓	Olie/Oliereservoir ✓

(5)

3.2.1 Pressure/Druk ✓ (1)

3.2.2 Volume ✓ (1)

3.3 **ANY TWO OF/ENIGE TWEE VAN** ✓✓ (2)

After changing the pressure of the trapped air, wait a minute or two before reading the pressure or volume to allow the temperature to stabilise.	Na die verandering van die druk op die ingeslote lug, wag 'n minuut of twee voordat die druk of volume gelees word om temperatuur kans te gee om te stabiliseer.
Avoid error of parallax.	Vermy parallaksfoute.
Make sure the tap functions properly and no gas can escape.	Maak seker die kraan funksioneer behoorlik en dat geen gas kan ontsnap nie.
When pressure is lowered, wait until the oil moves down in the tube.	Wanneer druk verminder word, wag tot die olie in die buis afbeweeg het.

3.4

Volume (cm^3)	**p (kPa)**	**1/p (kPa^{-1})**	**pV**
30	100	10×10^{-3}	3×10^3
35	85,5	$11,7 \times 10^{-3}$	3×10^3
42	71,5	14×10^{-3}	3×10^3
50	60	$16,7 \times 10^{-3}$	3×10^3

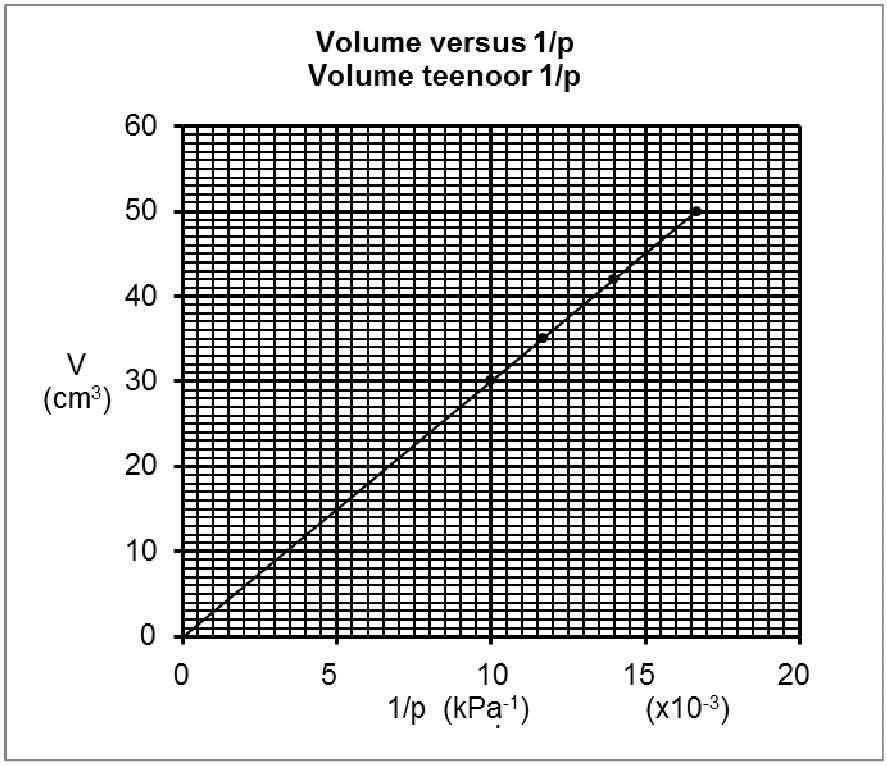
Number may be given in other formats.
Getalle mag in ander formate gegee word.

1/p (kPa^{-1})	Any (one) value correct	Enige (een) waarde korrek	✓
	All values correct	Alle waardes korrek	✓
pV	Any (one) value correct	Enige (een) waarde korrek	✓
	All values correct	Alle waardes korrek	✓

(4)

3.5 Energy/*Energie* ✓ (1)

3.6



(6)

Suitable heading	Geskikte opskrif	✓
Both axes correctly labelled and volume on y-axis.	Beide asse korrek gemerk en volume op y-as.	✓
Two points correctly plotted.	Twee punte korrek gestip.	✓
Two more points correctly plotted.	Twee verdere punte korrek gestip.	✓
Straight line of best fit drawn.	Reguit lyn van beste passing getrek.	✓
The straight line will intercept origin if extended.	Die reguit lyn sal oorsprong sny indien dit verleng word.	✓

3.7 ($p \alpha 1/V$) (✓✓) (2)

3.8 Volume of an enclosed gas is directly proportional to the inverse of pressure ✓ provided the temperature is kept constant. ✓

Volume van 'n ingeslote gas is direk eweredig aan die omgekeerde van druk ✓ op voorwaarde dat die temperatuur konstant bly. ✓ (2)

[24]

GRAND TOTAL / *GROOTTOTAAL*: 40