

μ ϵ M E^x η

μ ϵ M E^x

η

° e m E 3 3 n

h E ,

ā h ψ t

E γ ∥ ψ
G S

° е м 'Е ˆˆˆ ˆ ˆ

Ů		
⦿ ʏ ɥ ɨ ɹ ʒ ~ ɤ		
⋮		
κ ˆ ˜		
ˆˆ		

'Е ê'Е Ů ɮ 'Е ɥ 'Е ˜ Ì ɥ ˜ γ ĭ
ê'Е Ů ɮ 'Е ɥ 'Е ˜ ĭ ɹ ↓ e ч

ˆ ˆ

Ġ Š Ъ

'Е Ъ ê'Е Ů ɮ 'Е ɥ 'Е ˜ Ì ɥ ä ↓ e
ч Â

ɥ ä κ ĭ ɥ κ '

ä κ _ ɸ ɸ κ ĭ ɥ κ '

ɣ β'

κ	
	κ ˆ ˜
ɥ κ '	
κ κ °	ˆ ˜
Đ M M	

'Е

κ

ˆ

ˆ

°

'Е

ˆ

ˆ

ˆ ˆ "ɥ ɹ ρ
ˆ ˆ ˆ P˜ ˆ

ˆ

⦿ 48 11,



$$e^- + M \rightarrow E^{\sim} + \eta$$



$\bar{w}$ $\bar{a}$ h t $\bar{a}$ t $\bar{u}$ i $'$ i $\wedge$

Ś Ġ ь

$$\bar{a}^{\prime} \quad \Delta \quad v \quad h \quad \dot{p} \quad \bar{y} \quad \int$$
$$\ddot{a} \quad \Delta \quad \psi \quad \sim \quad h \quad \dot{\rho} \quad \int \quad \Omega \quad \psi \quad ,$$
$$\ddot{a} \quad u \quad \Delta \quad v \quad \sim \quad h \quad \dot{\rho} \quad u \quad v \quad ,$$
$$\tilde{a} \quad \tilde{i} \quad \tilde{r} \quad \Delta \quad \nu \quad \tilde{h} \quad \tau \quad \gamma \quad \tilde{i}^{\nu} \quad \mathcal{U} \quad \tau$$
$$\frac{7}{8} \quad \bar{G} \quad 4 \quad \ddot{I} \quad \tau \quad ,$$

ă Δ ʋ ˘ h ʏ ū ' ˆ

⌘ e m Ẽ ⌘ ⌘

W : H ⌘ ,
⌘ z_{top} Ĩ : H ⌘ 'Y ⌘ "HĨ ⌘ "H'
⌘ : H ⌘ 'Y ⌘ "HĨ ⌘ "HÂ

H		X
⌘ G a n η Ẽ n h r l S E		G r t Ĩ ^ ~⊙ H
⌘ G a n ð ~ n E		G r t Ĩ ^ ~⊙ H
⌘ G a n ŷ ⌘ E		G r t Ĩ ^ ~⊙ H
⌘ G η Ẽ F z E ũ Ẽ v t T ψ 'Y E		G r t Ĩ ^ ~⊙ H
⌘ G Ẽ z w : ð E ~ o		G r t Ĩ ^ ~⊙ H
⌘ G η Ẽ T Ĩ 'Y E		G r t Ĩ ^ ~⊙ H

M ⌘

G S b

T E : M ⌘

G S b

⌘ à Ẽ L à k à ⌘ à γ Ĩ Ẽ ⌘ ρ
H

G S b

Ẽ b Ẽ L à k à ⌘ à γ Ĩ Ẽ ⌘ ρ H
Â

à ⌘

à t ⌘

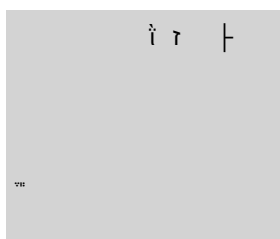
S G b

γ β' "H

⌘ e M Ẽ ⌘ ⌘

ρ ⌘ ẼH
M E V

ρ ⌘ ẼH
η E V



° e m Ẽ ̂̂̂̂ η

ü
ŵ
ï ı ŵ
ï ı í
ï ı ¨ °

° e m Ē ̂̂̂̂ η

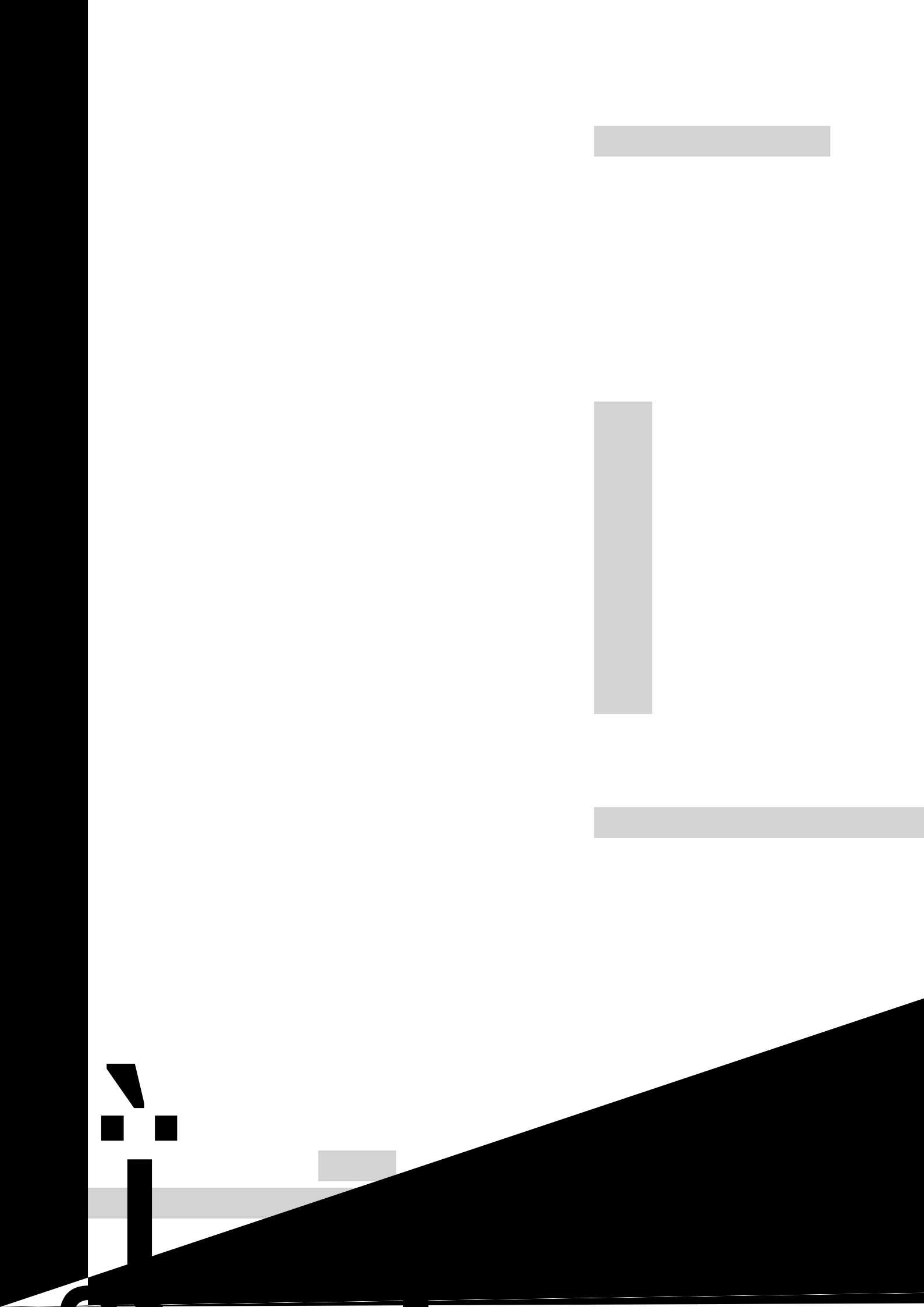
η y ʏ
η
υ
˙
ı ı υ
ı ı' υ ≠
υ ≠
υ ı f
υ N₂ Ğ
ũ
̄w ̇p ˘ ỹ
ı ı ˘ ỹ
˘ ỹ _{VB}
˘ ỹ'
Ğ _{VB} ‰
Ş
υ ỹ
ı ı' n ǫ̇

⦿ e M Ẽ ⦿ ⦿ η

Ẽ
⋮ '
İ ı ⦿
F Ũ'
φ Ẽ
W̄ % ₀₀
N ₀ ≠
G Ẽ ⦿
κ



G



° e m E ¨ ¨ n

ä ≠

γ β ' "H

				Ü			☀	Ü
w	ä	3	~					
ï	ı'	3	~					

$\overset{\circ}{\circ}$
 e
 m
 $\text{E}^{\sim}$
 $\overset{\sim}{\sim}$
 n

	Γ	$\circ$	$\wedge$	γ
Γ'	$\text{L}^{\sim}$	$\downarrow \sim$		
	$\text{E}^{\sim}$	$\text{H} \text{E}$	$\vee \text{I}^{\sim}$	$\wedge$
Γ'	$\text{L}^{\sim}$	$\downarrow \sim$		γ
$\sim$	$\downarrow \sim$	H	$\vdots \vee$	$\wedge$
				$\gamma \Gamma \text{L}$
$\sim$	$\downarrow \sim$	$\overset{\circ}{\circ}$	$\vdots \vee$	$\wedge$
				$\gamma \Gamma \text{L}$
$\sim$	$\downarrow \sim$	$\overset{\circ}{\circ}$	$\wedge$	$\gamma \Gamma \text{L}$
$\overset{\sim}{\sim}$	ä	$\text{z} \neq$	$\wedge \text{U}$	$\gamma \Gamma' \text{L}^{\sim}$
				$\downarrow \sim$

^{op} e M E^α

μ e m E^α γ_α n



$\overset{\circ}{e}$
 m
 $\overset{\circ}{E}$
 $\overset{\circ}{\Delta}$
 η

$\eta \tilde{a} \dot{\tau}$		
$\wedge \bar{w} \tilde{b} \quad N_0 \quad \dot{\tau}$		
τ		
$\frac{7}{8} \dot{\tau}$		
$\dot{\tau} \quad \tau$		
$\overset{\circ}{H} E \vee \dot{\tau}$		
$\circ \mathfrak{z} \quad H \quad \overset{\circ}{E}$		
$\dot{\tau} \quad \tau$		
$\wedge \quad H \tilde{w} \quad N_0 \quad \dot{\tau} \quad \tau$		
$\dot{\tau} \quad \tau$		
$\dot{\tau} \quad \tau \quad \tilde{v} \quad \overset{\circ}{E} \overset{\circ}{H} E$		
$\vee \dot{\tau}$		
$\overset{\circ}{\Delta} \quad N_0 \quad \sim$		
$\dot{\tau} \quad \tau$		
$\dot{\tau} \quad \tau \quad \tilde{v} \quad H \quad \vdots$		
$\vee \%$		
$\tilde{U}$		
$\vdash$		
$\dot{\tau} \quad \tau$		
$\overset{\circ}{E} \tilde{a}$		
$\neq \tilde{a} \quad \tau$		
$\wedge \quad \bar{w} \tilde{w}$		
$\wedge \quad H \tilde{w}$		

$\tilde{a}_m \quad \Delta \mid \quad \neq$

$\gamma \beta' \quad \overset{\circ}{H}$

	$\tilde{U}$	$\odot \quad \tilde{U}$
$\bar{w} \tilde{a} \quad \mathfrak{z} \quad \sim$		
$\dot{\tau} \quad \tau' \quad \mathfrak{z} \quad \sim$		

° e m Ẽ ̂̂̂ η

≠	~
G̃	
ĩ	ƒ ~
h ã 3	
ı ı'	

$$e^{-\frac{m}{E}} \approx 1 - \frac{m}{E}$$

$$\begin{aligned} & \neq \sim \\ & \psi' \quad \dot{\gamma} \quad \gamma \\ & \sim \quad \downarrow \sim \\ & \quad \dot{\gamma} \quad \gamma' \quad \circ \quad \gamma \quad \gamma' \\ & \circ \quad \gamma \end{aligned}$$

$\overset{\circ}{e}$
 m
 $\overset{\circ}{E}$
 $\overset{\circ}{\eta}$

$\overset{\circ}{i} \tau$		
$\overset{\circ}{H} E \vee \overset{\circ}{I}$		
$\overset{\circ}{H} E \vee \overset{\circ}{I}$		
$\overset{\circ}{i} \tau$		
$\overset{\circ}{H} \sim \text{No} \overset{\circ}{i} \tau$		
$\overset{\circ}{i} \tau$		
$\overset{\circ}{i} \tau \tilde{v} \overset{\circ}{E} H E$		
$\overset{\circ}{i} \tau$		
$\overset{\circ}{i} \tau \tilde{v} H \vdots$		
$\overset{\circ}{i} \tau$		
$\overset{\circ}{i} \tau$		
$\overset{\circ}{E} \tilde{a}$		
$\neq \tilde{a}$		
$\overset{\circ}{H} \tilde{w}$		
$\overset{\circ}{H} \tilde{w}$		

$\tilde{a}$
 Δ

$\gamma \beta' H$

	$\tilde{u}$	$\odot \tilde{u}$
$\bar{w} \tilde{a}$		
$\tilde{a} \vdots \vdots \vdots$		
ν		
$\tau \S \vdots \nu$		
ν		

1 Ġ _{vi} Ġ ũ		
'P Ġ 3 1		
Ġ Ū ĩ v		
ũ ≠ ã ĩ f		
~ v		
3 1 v		
7 ŷ 4 1		
ï ɾ ɓ ɹ ʔ		
ɹ ~		
ȳ ã ĩ ' 1 ʊ		
ĩ v		
ʔ 3 v		
ʊ 1 Ġ _{vi} ʊ		
ʔ v		
ʊ ≠ ã ĩ f		
ʊ Ġ 1 ≠		
ʊ γ ĩ 4 ʊ		
ʊ ʔ		
ʊ ï ɾ ɓ ɹ ʔ		
ɹ ʔ		
ɹ ^{oo}		
h ã ɹ ^{oo} ɹ		
ũ		
ɾ ^{oo} ã ^{oo} ĩ ^{oo} ɾ ^{oo}		



° e m E 3 3 n

	E i i r 3 1 β
[	Γ
	[i r t - τ
	- ~
r ° u	° ä ° i
	u
	Γ v
ü E i i r 3 1 β	
u	Γ
	u i r t - τ
H	
-	Æ



° e m E 33 n

E ã ĩ E φ		

ã E Δ f

γ β' "H

	ü	☼ ü
w ã °		
ã ° ' ' ' f		
f		
f ï r b °		
° ~		
ȳ ã ĩ ' ' ' u		
u γ ĩ ʏ u		
u ʏ		
u ï r b °		
° ʒ		
° f		
h ã °		
f		
ü f		
° ã ° ĩ		
° f		
E ĩ ĩ r ʒ ʏ β		
f f		
f ï r b °		
° ~		
° ã ° ĩ		
° u		
u		

$$q, e, M, E^{\sim}$$

၇

6

₣

99

99

6

 $\bar{G}$
$$N_0 \bar{G}$$
$$N_0 \bar{G}_{\frac{1}{2}} \quad \%$$

ì 7

i T'

 $\neq$ $\neq$
$$\bar{y} \sim$$

९२

99

ۛۛ

99

 $\bar{w}$ $\dot{\rho} \int$

2

99

 $\dot{I} \quad \tau$

2

99

7

Q:

— 99 —

 $\bar{U}$ $\tilde{V}$ $\dot{I} \quad \tau \quad \tilde{V}$ $\dot{I} \quad \tau$

i

 $\dot{t} \quad \tau$

7

99

९९

^{ap} e m E^α _α^α η

^{ap}	^{ap}
^{ap}	
a	^{ap}
	^{ap}

° e m E 3 3 n

$\bar{w}$ $\dot{p}$ $\int$ $\bar{v}$
$\dot{i}$ $\dot{r}$ $\bar{v}$
$\bar{v}_{re}$ $\bar{v}'$
$\bar{G}_{re}$ $\%$
$\$$ $u \bar{v} \mid$
$\dot{i}$ $\dot{r}'$ $n \dot{q}$ $\bar{v}$
$\bar{v}$
u
u
$\bar{v}$
$\bar{v}$
$\dot{i}$ $\dot{r}$ $\bar{v}$
$\bar{v}_{re}$

$\overset{ap}{e}$ m $\tilde{E}$ $\overset{\sim}{\eta}$ η

$\tilde{V}$			

,

$\tilde{E}$ $\overset{ap}{\sim}$ $\tilde{V}$

γ β' $\tilde{H}$

$\overset{\sim}{\eta}$ $\overset{ap}{\eta}$ $\overset{\sim}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{ap}{\eta}$			
$\overset{ap}{\eta}$			
$\overset{\sim}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\neq$			
$\neq$			
$\overset{ap}{\eta}$			
$\overset{ap}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\overset{ap}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{ap}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{ap}{\eta}$ $\overset{\sim}{\eta}$			
$\tilde{V}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\tilde{V}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$			
$\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\overset{\sim}{\eta}$ $\overset{ap}{\eta}$			
$\overset{ap}{\eta}$			
$\overset{ap}{\eta}$			

° e m E n

ā

Ġ

Š

E

Ġ

Ā

° e m E

ġ ' _____