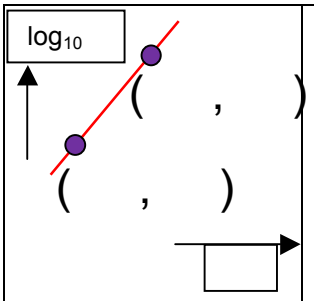
EXPONENTIAL LAW WORKSHEET

Example 1

t	1	1.5	2.2	2.5	3
V	6	8.5	13.8	16.9	24

t	1				
$\log_{10} V$					1.38



Find gradient.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

= _____

= _____ =

Equation of Straight Line

$Y = mX + c$

$\log_{10}$ = + c

Find y intercept

(1 ,) lies on the line.

= x +c

= c

c =

$\log_{10}$ V = t +

Equation of Exponential Function

$\log_{10} V = 0.3\,t + 0.48$

$\log_{10}$ (?) =	$\log_{10}$ (?) =
(?) =	(?) =

$\log_{10} V = \log_{10}(\quad)\,t + \log_{10}(\quad)$

$\log_{10} V = \log_{10}(\quad)\,t + \log_{10}(\quad)$

$\log_{10} V = t \log_{10}(\quad) + \log_{10}(\quad)$

$\log_{10} V = \log_{10}(\quad)^t + \log_{10}(\quad)$

$\log_{10} V = \log_{10}((\quad)^t \times \quad)$

$V = (\quad)^t$

Examples 2 to 7

For each example:

(i) show that the formula connecting y and x is of the form $y = a.b^x$ (on page 2 of handheld).

(ii) find the value of a and b, and state the formula that connects x and y.

Check the equation of the straight line (page 3) and the exponential function (page 4) on the handheld.

2).

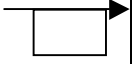
x	1	2	3	4	5
y	12	48	192	768	3072

x		Assume first and last point lie on line of best fit.	
$\log_{10} y$			

$\log_{10}$

(,)

(,)



Find gradient.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

= _____

= _____ =

Equation of Straight Line

$Y = mX + c$

$\log_{10}$ = x + c

Find y intercept

(1 ,) lies on the line.

= x 1 + c

= c

c =

$\log_{10} y$ = x

Equation of Exponential Function

$\log_{10} y = 0.60 x + 0.48$

$\log_{10}$ (?) =	$\log_{10}$ (?) =
(?) =	(?) =

$\log_{10} y = \log_{10}$ ( ) x + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ ( ) x + $\log_{10}$ ( )

$\log_{10} y = x \log_{10}$ ( ) + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ ( )^x + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ (( )^x x)

$y =$ ( )^x

3).

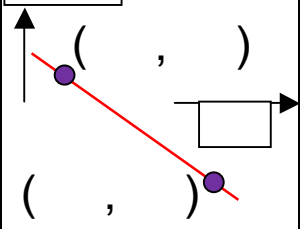
x	0.5	1.2	3.8	4.1
y	1.79	1.53	0.86	0.80

x		Assume first and last point lie on line of best fit.	
$\log_{10} y$			

$\log_{10}$

(,)

(,)



Find gradient.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

= _____

= _____ =

Equation of Straight Line

$Y = mX + c$

$\log_{10}$ = x + c

Find y intercept

(,) lies on the line.

= x + c

= c

c =

$\log_{10} y$ = x +

Equation of Exponential Function

$\log_{10} y = -0.10 x + 0.30$

$\log_{10}$ (?) =	$\log_{10}$ (?) =
(?) =	(?) =

$\log_{10} y = \log_{10}$ ( ) x + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ ( ) x + $\log_{10}$ ( )

$\log_{10} y = x \log_{10}$ ( ) + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ ( )$^{x.}$ + $\log_{10}$ ( )

$\log_{10} y = \log_{10}$ (( )^x x)

$y =$ ( )^x

4).

x	2.3	3.2	4.6	5.0
y	23.97	52.70	179.52	254.80

x		Assume first and last point lie on line of best fit.	
$\log_{10} y$			

	Equation of Straight Line	Equation of Exponential Function
Find gradient. $m = \frac{y_2 - y_1}{x_2 - x_1}$	Find y intercept	

5).

x	1.1	2.3	3.0	4.2	5.1
y	1.87	3.05	4.05	6.59	9.49

x		Assume first and last point lie on line of best fit.	
$\log_{10} y$			

	Equation of Straight Line	Equation of Exponential Function
Find gradient. $m = \frac{y_2 - y_1}{x_2 - x_1}$	Find y intercept	

6).

x	0.8	1.3	2.6	3.7
y	0.84	1.15	2.65	5.37

x		Assume first and last point lie on line of best fit	
$\log_{10} y$			

	Equation of Straight Line	Equation of Exponential Function
Find gradient. $m = \frac{y_2 - y_1}{x_2 - x_1}$	Find y intercept	

7).

x	2.0	3.1	3.8	4.4	5.1
y	0.53	0.24	0.15	0.10	0.06

x		Assume first and last point lie on line of best fit.	
$\log_{10} y$			

	Equation of Straight Line	Equation of Exponential Function
Find gradient. $m = \frac{y_2 - y_1}{x_2 - x_1}$	Find y intercept	