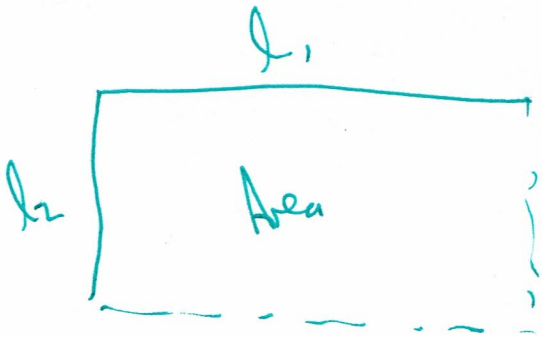
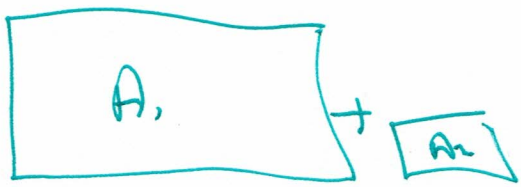
$l_1 + l_2 = \text{length}$

$l_1 - l_2 = \text{length}$

$l_1 + l_1 + l_1 = 3l_1 = \text{length}$

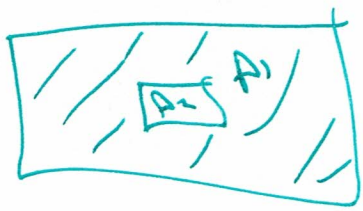


$l \times l = l^2 = \text{Area}$

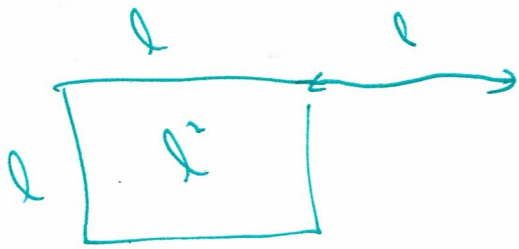


$= \text{Area}$

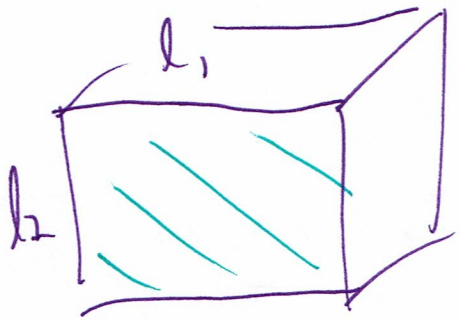
l^2



$A_1 - A_2 = \text{Area}$

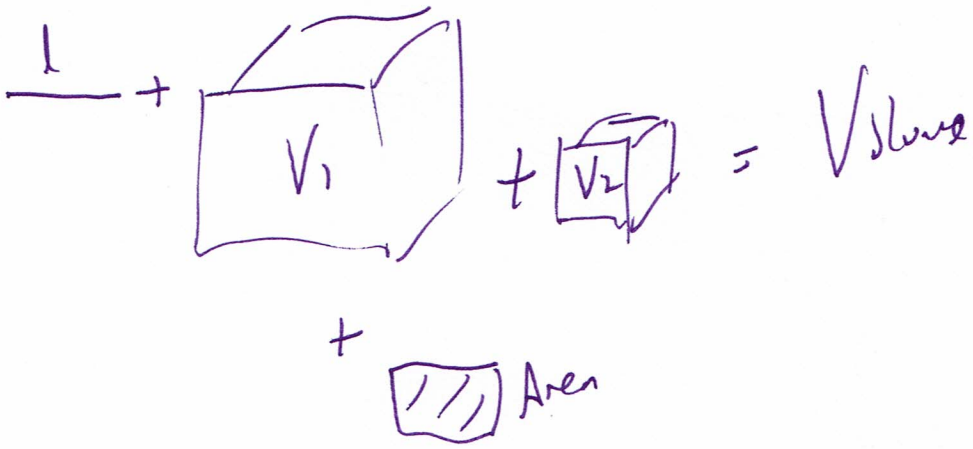


$l^2 + l$ not a formula



$l \times l \times l = l^3 = V_{solid}$

$l^2 \times l = l^3 = V$



+ Area

Intermediate/Higher Tier – Dimensions of Formulae PPQs

11. Each of the following quantities has a particular number of dimensions. Give the number of dimensions of each quantity. The first one has been done for you.

Quantity	Number of dimensions
The distance travelled in two laps of a circuit.	1
The volume of a cuboid.	3
The area of the curved surface of a cylinder.	2
The perimeter of a rectangle.	1
The area of a circle.	2

[2]

8. Each of the following quantities has a particular number of dimensions. Give the number of dimensions of each quantity. The first one has been done for you.

Quantity	Number of dimensions
The capacity of a bucket	3
The area of a rectangle	2
The volume of a cone	3
The distance between Wrexham and Pembroke	1
The circumference of a circle	1

[2]

9. In each of the following formulae, every letter stands for the measurement of a length. By considering the dimensions implied by the formulae, write down, for each case, whether the formula could be for a length, an area, a volume or none of these.

The first one has been done for you.

	Formula could be for
$2ab + c^2$	area
$\alpha a + \beta b - c$	$l + l - l$ = length
βab^2	$l \times l^2 = l^3$ = volume
$ab + c^3$	$l \times l + l^3 = l^2 + l^3$ = Area + Volume = NONE
$(a + 2b)c$	$(l + l) \times l = l \times l = l^2$ = Area

[2]

13. In each of the following formulae, every letter stands for the measurement of a length. By considering the dimensions implied by the formulae, write down, for each case, whether the formula could be for a length, an area, a volume or none of these.
The first one has been done for you.

	Formula could be for
$d^2 + hr$	area
$4d + 3r + 5h$	$l+l+l = l$ (length)
$3rh + 3h^2r$	$l^2 + l^3$ = Area + Vol (none)
$(d^2 + dh)r$	$(l^2+l^2)\times l = l^2 \times l = l^3$ (Volume)
$3rh + 4r^2 - 3rd$	$l^2+l^2-l^2 =$ (Area)

[2]

5. In each of the following formulae, every letter stands for the measurement of a length. By considering the dimensions implied by each formula, write down, for each case, whether the formula could be for a length, an area, a volume or none of these.

The first one has been done for you.

	Formula could be for
$hw + 2r^2$	area
$(hr - w^2)r$	$(l^2+l^2)\times l = l^2 \times l = l^3$ Volume
$4(h + w + r)$	$l+l+l = l$ length
$h(hw + r)$	$l\times(l^2+l)$ NONE
$w(h + r)$	$l\times(l+l) = l\times l = l^2$ Area

[2]

14. In each of the following formulae, every letter stands for the measurement of a length. By considering the dimensions implied by the formulae, write down, for each case, whether the formulae could be for a length, an area, a volume or none of these.
The first one has been done for you.

	Formula could be for	
$r^2 + dh$	area	
$r^2(2d - h)$	$l^2 \times (l - l) = l^2 \times l = l^3$	Volume
$3d + 3h - r$	$l + l - l = l$	length
$5r + 6dr + 2d$	$l + l^2 + l =$ NONE	

[1]

9. In each of the following formulae, every letter stands for the measurement of a length. By considering the dimensions implied by the formulae, write down, for each case, whether the formulae could be for a length, an area, a volume or none of these.
The first one has been done for you.

	Formula could be for	
$d^2 - hd$	area	
$(d - 3r)r^2$	$(l - l) \times l^2 = l \times l^2 = l^3$	Volume
$4d + 5h + 2r$	$l + l + l =$	length
$4rh - 3r^2 + dh$	$l^2 - l^2 + l^2 =$	Area
$3rh + 2rd - h$	$l^2 + l^2 - l =$ NONE	

[2]