| a) <br> A is proportional to the $B$ is increased by $20 \%$. Work out the percentage |  |
| :---: | :---: |
| What equation can be formed for A in terms of B? | $\begin{gathered} A \propto B^{2} \\ A=k B^{2} \end{gathered}$ |
| What multiplier increases B by 20\%? | $\begin{aligned} & 20 \% \text { increase }=120 \% \\ & 120 \% \text { as a decimal }=1.2 \end{aligned}$ |
| What does the equation look like after applying this increase? | $A=k(1.2 B)^{2}$ |
| Can this be simplified? | $\begin{gathered} A=k \times 1.2 B \times 1.2 B \\ A=k \times 1.2 \times 1.2 \times B \times B \\ A=1.44 k B^{2} \end{gathered}$ |
| What does this multiplier represent? | $\begin{gathered} 1.44=144 \% \\ 144 \%=44 \% \text { increase } \end{gathered}$ |

b)
$A$ is proportional to the square of $B$.
$B$ is increased by $50 \%$.
Work out the percentage increase in A .

| What equation can be <br> formed for A in terms <br> of B? | $A \propto B^{2}$ |
| :---: | :---: |
| What multiplier <br> increases B by $50 \%$ ? | $A=k B^{2}$ |
| What does the <br> equation look like <br> after applying this <br> increase? | $A 0 \%$ increase $=150 \%$ |
| Can this be simplified? | $A=k(1.5 B)^{2}$ |
| What does this as decimal $=1.5$ |  |
| multiplier represent? |  |


| c) <br> $A$ is proportional to the cube of $B$. <br> B is increased by $10 \%$. <br> Work out the percentage increase in A . |  |
| :---: | :---: |
| What equation can be formed for A in terms of B? | $\begin{aligned} & A \propto B^{3} \\ & A=k B^{3} \end{aligned}$ |
| What multiplier increases B by 10\%? |  |
| What does the equation look like after applying this increase? |  |
| Can this be simplified? |  |
| What does this multiplier represent? |  |

d)
$A$ is proportional to the cube of $B$.
$B$ is decreased by $20 \%$.
Work out the percentage decrease in A .

