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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Proportion**  |
| 1. Direct Proportion | If two quantities are in direct proportion, **as one increases**, the **other increases** by the **same percentage**.If $y$ is directly proportional to $x$, this can be written as $y ∝ x$An equation of the form $y=kx $represents direct proportion, where $k$ **is the constant of proportionality**. |  |
| 2. Inverse Proportion | If two quantities are inversely proportional, **as one increases**, the **other decreases** by the **same percentage**.If $y$ is inversely proportional to $x$, this can be written as $y ∝\frac{1}{x}$An equation of the form $y=\frac{k}{x}$ represents inverse proportion. |  |
| 3. Using proportionality formulae | **Direct**: **y = kx** or **y**$ ∝ $**x****Inverse**: **y =** $\frac{k}{x}$ or **y** $∝$$\frac{1}{x}$1. **Solve to find k** using the pair of values in the question.2. **Rewrite the equation** using the k you have just found.3. **Substitute the other given value** from the question in to the equation to **find the missing value**. | p is directly proportional to q.When p = 12, q = 4. Find p when q = 20.1. p = kq12 = k x 4so k = 32. p = 3q3. p = 3 x 20 = 60, so p = 60 |
| 4. Direct Proportion with powers | Graphs showing **direct proportion** can be written in the form $y=kx^{n}$Direct proportion graphs will always start at the origin. |  |
| 5. Inverse Proportion with powers | Graphs showing **inverse proportion** can be written in the form $y=\frac{k}{x^{n}}$Inverse proportion graphs will never start at the origin. |  |

**Knowledge Organiser**