**Worded Direct Proportion Problems**

The weight of a piece of wire is directly proportional to its length.A piece of wire is 25 cm long and has a weight of 6 grams. Another piece of the same wire is 30 cm long. Calculate the weight of the 30 cm piece of wire.

In a spring, the tension, $T$Newtons, is directly proportional to its extension, $x$cm. When the tension is 300 Newtons, the extension is 12 cm.

(a) Find a formula for *T* in terms of *x*.

(b) Calculate the tension, in Newtons, when the extension is 15 cm.

The time, $T$seconds, it takes a kettle to boil some water is directly proportional to the mass of water, $m$kg, in the kettle. When $m=250$, $T=300$. Find $T$ when $m=400$.

In a factory, chemical reactions are carried out in cylindrical containers.

The time, $T $minutes, the chemical reaction takes is directly proportional to the square of the radius, $R$ cm, of the cylindrical container. When $R=12, T=72.$ Find the value of $T$ when $R=15$.

The amount of clay used to make a statue is directly proportional to the cube of the height of the statue. A statue which is 10 cm tall requires 500 cm3 of clay. How much clay is required for a similar statue which is twice as tall?

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