**Substitution into Mathematical Formulae**

**Year 10 Work**

This is a step up from last week

Remember: ab means a x b in algebra

 BIDMAS Brackets first, then powers, then multiplication and division, then addition and subtraction.

This time the letter you have to find the value of is inside the formula!!

There are 12 formulas to work out. Green is the easiest set and Red is the hardest and the formulas get harder as you go along. Try to do at least 6 and challenge yourself as much as you can. Don’t be afraid to get the wrong answer. Good luck and be safe

**Substitution into Mathematical Formulae NON-CALCULATOR**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **green** | **amber** | **red** |
| **1** | Area of a rectangle is given by: | $$A=bh$$ | A = 72 h = 9Find b.  | A = 25 h = 10Find b. | A = 124 h = 20Find b. |
| **2** | Area of a triangle is given by: | $$A=\frac{bh}{2}$$ | A = 8 h = 2Find b. | A = 4.5 b = 3Find h. | A = 5.6 h = 10Find b. |
| **3** | Area of a trapezium is given by: | $$A=\frac{\left(a+b\right)h}{2}$$ | A = 20 b = 7 h = 4 Find a. | A = 15 b = 14 h = 6 Find a. | A = 48 b = 6.3 h = 8 Find a. |
| **4** | Perimeter of a rectangle is given by: | $$P=2(l+w)$$ | P = 22 w = 9Find $l$. | P = 17 w = 5.3Find $l$. | P = 15.6 w = 6.2Find $l$. |
| **5** | Surface area of a cuboid is given by: | $$S=2(lw+lh+wh)$$ | S = 20 w = 3h = 4Find *l* | S = 30 w = 3h = 8Find *l* | S = 40 w = 5h = 3.5Find *l* |
| **6** | Surface area of a cube is given by: | $$SA=6x^{2}$$ | *SA* = 600Find *x* | *SA* = 150Find *x* | *SA* = 96Find *x*  |
| **7** | Volume of a cuboid is given by: | $$V=lwh$$ | V = 36w = 3h = 4Find *l* | V = 60w = 3h = 8Find *l* | V = 27w = 8h = 2.5Find *l* |
| **8** | Speed is given by: | $$S=\frac{D}{T}$$ | S = 8 T = 5Find D | D = 36 S = 4Find T | D = 8.7 S = 3Find T |
| **9** | Density is given by: | $$D=\frac{M}{V}$$ | D = 12 V = 6Find M | D = 7.2 V = 3Find M | M = 81 D = 4.5Find V |
| **10** | Velocity of an object is given by: | $$v=u+at$$ | v = 35a = 10t = 3Find u | v = 15a = 2u = 10Find t | v = 13.7u = 5.2t = 0.5Find a |
| **11.** | Distance travelled by an object is given by: | $$s=ut+\frac{1}{2}at^{2}$$ | s = 40t = 2a = 5Find u | s = 64t = 4a = 5Find u  | s = 72t = 6u = 3Find a |
| **12.** | The formula linking initial and final velocity | $$v^{2}=2as+u^{2}$$ | s = 8u = 3a = 1Find v | s = 3v = 12a = 4Find u | s = 8u = 6v = 10Find a |