GRADE 10 and 11 ESSENTIAL
UNIT A – PROBLEM SOLVING
USE A FORMULA

Name:_____
Date: _____

What Does a Bone Specialist Need to Get His Practice Started?

Evaluate ('plug-in') each formula below for the given values of the variables. Find each answer at the left and cross out the letter next to it. ***When you finish***, the answer to the title question will remain.

Problem solving often involves using a known scientific formula and '*plugging in*' numbers. Below are some simple evaluations, no algebra to juggle values about to solve for another value!

E	49
K	145
C	120
A	1,160
I	150
D	490
E	172
O	1,080
R	520
L	68
~~X~~	256
B	74
A	924
T	164
S	864

1. **d = r*t**

$d = 32 \cdot 8$
$d = 256$

where ***d*** is the distance traveled in metres by an object moving at speed ***r*** in time ***t.*** Determine the distance, ***d,*** if:

r = 32 m/sec; **t** = 8 sec

2. **E = IR**

where **E** is the voltage in an electric circuit with current **I** and resistance ***R.*** Find ***E*** if:

I = 2.5 amps; **R** = 60 ohms [Ω].

3. **v = 9.8t**

where **v** is the velocity in meters per second of a freefalling object after ***t*** seconds. Determine **v** if:

t = 5 sec.

4. **S = (n – 2)*180**

where **S** is the sum of the measures of the interior angles of a polygon with **n** sides. Find **S** if:

n = 8

5. **$A = 6e^2$** where ***A*** is the surface area of a cube of with edge length **e.** Determine ***A*** if:

e = 12 cm

6. **$V = hw^2$** where ***V*** is the volume of a prism with a square base of side **w** and with height ***h.*** Find **V** if:

h = 10 cm; **w** = 7 cm

7. **$L = s^2/30$** where ***L*** is the approximate length of a skid in feet for a car traveling at a speed of **s** miles per hour. Find length ***L*** if:

s = 60 mi/hr

8. $F = \frac{9}{5}C + 32$ where **F** is the Fahrenheit temperature equivalent to Celsius temperature **C.** Determine **F** if:

C = 20° Approximate Room temperature

9. $B = \frac{4 * (220 - y)}{5}$ where **B** is the recommended maximum heart rate, in beats per minute, during exercise for a person ***y*** years old. Determine ***B*** if:

y = 15

All of these questions involved simple 'plugging in' of values and calculating directly. A simple '***evaluation***'.
Be aware that often the formulae may require some juggling! For example:

If **S = (n – 2)*180**; then if you know the value of **S** but want to solve for an unknown value for **n** then the formula would be juggled using algebra as:

$$n = \frac{S}{180} + 2$$

So if you knew instead the sum of angles is 900, then how many sides?

Try it and see, then check.