CHANGING THE SUBJECT - MAKING SENSE OF EASY ALGEBRA

The formulas below have been rearranged, some are correct and others are wrong. Decide which are right and which are wrong and be prepared to explain why.
The first one has been done for you.

1. Distance time formula: $\boldsymbol{s = ut + \frac{1}{2}at^2}$
   (s = distance, u = initial velocity, a = acceleration, t =time).

(A) $\boldsymbol{u = \frac{s}{t} - \frac{1}{2}at}$ ✓ (B) $\boldsymbol{a = \frac{(s-ut)}{t^2}}$ X

2. Velocity time formula: $\boldsymbol{v = u + at}$
   (v = velocity at time t, u = initial velocity, a = acceleration, t = time)

(A) $\boldsymbol{u = v - at}$ (B) $\boldsymbol{t = a(v + u)}$ (C) $\boldsymbol{a = \frac{v-u}{t}}$

3. Ohm's Law: $\boldsymbol{V = IR}$
   (V= voltage, I = current, R = resistance)

(A) $\boldsymbol{I = VR}$ (B) $\boldsymbol{R = \frac{V}{I}}$

4. Boyle's Law: $\boldsymbol{PV = C}$ where C is constant. At constant temperature, the volume of a fixed amount of a gas is inversely proportional to its pressure.

(A) $\boldsymbol{V = \frac{P}{C}}$ (B) $\boldsymbol{P = VC}$

5. Newton's 2nd law of motion: $\boldsymbol{F = ma}$ (F = Force, m = mass, a = acceleration).

(A) $\boldsymbol{a = Fm}$ (B) $\boldsymbol{m = \frac{F}{a}}$

6. Einstein's Law: $\boldsymbol{E = mc^2}$ (E = energy, m = mass, c = the speed of light).

The equation revealed that mass and energy are different forms of the same thing.

(A) $\boldsymbol{c = \frac{E}{m}}$ (B) $\boldsymbol{c = \sqrt{\frac{E}{m}}}$ (C) $\boldsymbol{m = Ec^2}$

HELP

Remember the Golden Rules.

Golden Rule 1 What is on either side of an equals sign will still be equal if you do the same to both sides like weighing with old fashioned scales.

Golden Rule 2 For all numbers, the operations of adding and subtracting reverse each other e.g. 7 + 5 – 5 = 7, multiplying and dividing reverse each other e.g $\mathbf{7 \times 3 \div 3 = \frac{7 \times 3}{3} = 7}$ and squaring and taking square roots reverse each other $\sqrt{3^2} = 3$ and $(\sqrt{3})^2 = 3$. **These are pairs of inverse operations**.

NEXT

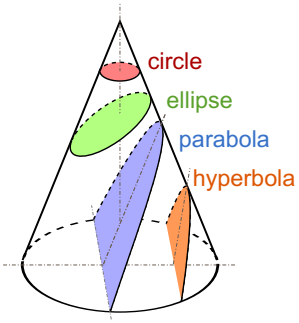
Make up your own similar questions based on these 4 formulas:

Parabola: $y^2 = cx$ for constant c.

Rectangular hyperbola: $xy = c$ for constant c.

Circle (radius r): $x^2 + y^2 = r^2$

Ellipse: $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$



Some Diagnostic Quiz Questions

Rearrange the following to make k the subject p = 4k + 3

A $k = \frac{p-3}{4}$

C $k = \frac{p-4}{3}$

B $k = \frac{p+3}{4}$

D $k = \frac{p-3}{4k}$