N3CS Practice Set 13

Instructions: Answer each question on loose leaf, quad-ruled (graph paper), headed properly and written in lead-graphite. Remember to fold paper along the center, work exercises in order top to bottom, left column then right column. Staple multiple pages

1. Determine the Potential Energy of a body with the given mass and at a given height using the formula $PE = m \bullet g \bullet h$, where $'m'$ is its mass (kg), $'g'$ is the gravitational acceleration $\left(9.8\frac{m}{s^2}\right)$, and $'h'$ is its height in meters (m). Include your units in the solution.

a) $m = 81.6kg$, $h = 8m$ b) $m = 1kg$, $h = 1m$ c) $m = 40.8kg$, $h = 8m$ d) $m = 163.2kg$, $h = 4m$

2. Rationalize the Denominators of these expressions; simplify the fractions where possible.

a) $\frac{8}{\sqrt{2}}$ b) $\frac{\sqrt{8}}{\sqrt{2}}$ c) $\frac{6}{\sqrt{8}}$ d) $\frac{\sqrt{12}}{\sqrt{6}}$

3. Estimate these expressions to the nearest integer.

a) $3\sqrt{8}$ b) $\sqrt{12}+\sqrt{20}$ c) $2 \bullet \sqrt[3]{200}$ d) $3 \bullet \sqrt{60} - 3$

4. Determine the Kinetic Energy of a body with the given mass and speed using the formula $KE = \frac{1}{2} \bullet m \bullet v^2$, where $'m'$ is the mass (kg), and $'v'$ is the speed $\left(\frac{m}{s}\right)$. Include units in your solution.

a) $m = 81.6kg$, $v = 9\frac{m}{s}$ b) $m = 81.6kg$, $v = 18\frac{m}{s}$ c) $m = 163.2kg$, $v = 9\frac{m}{s}$ d) $m = 40.8kg$, $v = 18\frac{m}{s}$

5) Simplify.

a) $\sqrt{3^2+4^2}$ b) $\sqrt{5^2+12^2}$ c) $\sqrt{8^2+15^2}$ d) $\sqrt{6^2+8^2}$

6) Simplify; write exponents as positive.

a) $\left(2x^{-5}y^3\right)^3$ b) $\left(4x^2y^{-4}\right)^2$ c) $\left(\frac{3}{4}x^{-4}y^{-3}\right)^3$ d) $\left(3^{-2}y^{-3}x^{-2}\right)^{-2}$

7) Name all the families of Real Numbers that the number of pages in the book 'The Hate U Give' belong to. Justify your response.

8) Name all the families of Real Numbers that the length in hours of the movie 'The Hate U Give' belongs to.