

ESS 102 Math Assessment

AVE Score: 62.0 Std Dev: 25

This is for helping me and my TAs understand where everyone is coming from. NO CALCULATORS. No name needed.

Your High School: _____ City and State of you High School: _____

Intended Major: _____ Date and name of last math class: _____

1. Arithmetic

- a. $\frac{10}{0.1} = \frac{10}{0.1} \left(\frac{10}{10} \right) = \frac{100}{1} = 100$ [77%]
- b. $2^3 = 2 \times 2 \times 2 = 8$ [98%]
- c. $64^{1/2} = \sqrt{64} = 8$ (since $8 \times 8 = 64$) [65%]
- d. $2^{-2} = \frac{1}{2^2} = \frac{1}{4}$ or 0.25 (either is fine) [50%]
- e. $\frac{25 \times 10^3}{5 \times 10^{-5}} = \frac{25}{5} \times \frac{10^3}{10^{-5}} = 5 \times 10^{3-(-5)} = 5 \times 10^8$ [32%]
- f. $\frac{231}{7} =$ (No Calculator. to tenths place) 33.0 [76%]

2. Express in Scientific Notation:

- a. $0.00012 = 1.2 \times 10^{-4}$ (moving the decimal four spaces to the right means we have to multiply by 0.0001 or 10^{-4}) [74%]
- b. $300,000 = 3 \times 10^5$ (moving the decimal point five space to the left means we have to multiply by 100,000 or 10^5) [81%]

3. Geometry

- a. What is the formula for the circumference of a circle? [59%]
$$C = 2\pi r = \pi d$$
- b. What is the formula for the volume of a sphere? [25%]
$$V = \frac{4}{3}\pi r^3$$

4. Algebra

- a. $PV = NkT$ (Solve for T in terms of P, V, N, and k) [84%]

Divide both sides by Nk

$$\frac{PV}{Nk} = \frac{NkT}{Nk}$$
$$\frac{PV}{Nk} = T$$

b. $y = \frac{x}{x-1}$ (Solve for x)

[16%]

Multiply both sides by x-1

$$y(x-1) = x$$

Distribute the y

$$yx - y = x$$

Bring all x terms to one side of the equation by subtracting yx from both sides

$$-y = x - yx$$

Factor out the x from the right hand side

$$-y = x(1 - y)$$

Divide both sides by (1-y)

$$x = \frac{-y}{(1 - y)}$$

Optional last step: multiply top and bottom by -1

$$x = \frac{y}{(y - 1)}$$

c. $\frac{a}{x} = \frac{b}{c}$ (Solve for x in terms of a, b, and c)

[71%]

Multiply both sides by x

$$a = \frac{xb}{c}$$

Multiply both sides by c

$$ac = bx$$

Divide both sides by b

$$x = \frac{ac}{b}$$

Course Makeup:

Freshmen:	50%	Humanities:	10.8%
Sophomores:	22.5%	Sciences:	23.5%
Juniors:	15.4%	Engineering:	18%
Seniors:	10.7%	Social Sciences:	28%
Other:	1.4%	Business:	7.6%
		Undeclared:	12.1%