Student, Jaimie . **Section 1**

Sample CAPA Questions *Set 1*

nsc121s9 Due Sat, Jan 1, 2000 at 16:00 CAPA_ID 2318

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1. [1pt] The following are possible ways to express the quantity 0.513 (Give ALL correct answers, i.e., B, AC, BCD...) Note: 3.45E-8 is a way you can enter the number 3.45×10^{-8} in most computers.

A) 5.13E-1

B) 0.0513E+1

C) 0.000513E+4

D) 51.3×10^{-3}

E) 0.513E-2

F) 0.00513×10^{2}

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2. [1pt] Calculate the perimeter of a rectangle with a length of 19.5 cm and a width of 40 mm. Enter units.

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3. [1pt] Calculate, in cm, the perimeter of a rectangle with a length of 13.5 cm and a width of 37 mm.

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4. [1pt] Calculate the perimeter of a rectangle with a length of 22.50 cm and a width of 48.0 mm.

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5. [1pt] Test your calculator skills by checking that $(4.50)^2$ equals 20.25 and that $(4.50)^3$ equals 91.13. Now, find the value of $(4.50)^{2.27}$.

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6. [1pt] Reduce the fraction **90/60** to its lowest terms.
[If the result is 4/3, enter 4 (Answer1), and 3 (Answer2)]

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7. [1pt] Calculate the volume of a spherical balloon which has a surface area of 0.0373 m^2.

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8. [1pt] List the following in order of increasing lengths from shortest to longest. (If B is shortest, then A, then C, and D is longest, enter BACD)

A) 40 mm

B) 1.00 $in.$

C) 0.060 m

D) 0.10 ft

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9. [2pt] Match each person with the most appropriate description. (If the first corresponds to B, and the next 6 to C, enter BCCCCCC)

1) Leonardo DaVinci	A. Philosopher
2) Alfred P. Sloan	B. Politician
3) Socrates	C. Philanthropist
4) Percy Shelly	D. Poet
5) Richard M. Nixon	E. Painter
6) Edgar Allen Poe	
7) Emanuel Kant	

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10. [1pt] The sequences for each of three fragments of DNA are shown below:
fragment 1 = TTTAAGGAAGAGGCC
fragment 2 = GAGGCCAATTCG
fragment 3 = CTGGCCACTTTTAAG
Assume that the target DNA sequence has 30 bases and reconstruct that DNA sequence.

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11. [1pt] The nine elements of a 3x3 matrix are shown below.

$$\begin{array}{rrr} 3 & 2 & -2 \\ 3 & -3 & 3 \\ -7 & -1 & 3 \end{array}$$

Evaluate the determinant of that matrix.

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12. [2pt] In order to practice for a hammering-speed contest, a person purchases the following items:

– Item –	Number	$ ea.
Hammer	1	16.77
Nails	72	0.08
Wood Blocks	5	4.25
Band Aids	36	0.14

Calculate the total cost, including a sales-tax of 6.40%. (in $)

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13. [1pt] A block is at rest on an inclined plane whose elevation can be varied. The angle of elevation θ is increased slowly from the horizontal, and when it reaches 36.7 degrees, the block begins to slide. Calculate the coefficient of static friction.

14. [1pt] The block reaches a speed of 3.19 m/s in a time of 1.23 s. Calculate the coefficient of kinetic friction.

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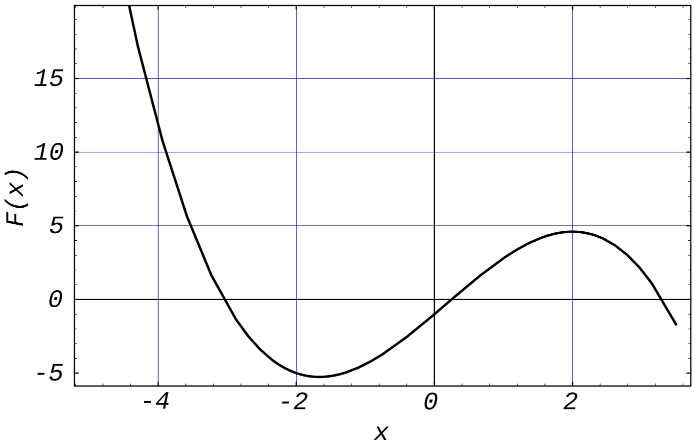
15. [1pt] Using graphical methods, determine at x = -3.6 the value of the derivative of function $F(x)$ plotted in the graph below.



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16. [3pt] A fisherman and his young daughter are in a boat on a small pond. Both are wearing life jackets. The daughter is holding a large floating helium filled balloon by a string. Consider each action below independently, and indicate whether the level of the water in the pond R-Rises, F-Falls, S-Stays the Same, C-Can't tell. (If in the first the level Rises, and in the second it Falls, and for the rest one Cannot tell, enter RFC-CCC)

A) The fisherman lowers himself in the water and floats.

B) The fisherman fills a glass with water from the pond and drinks it.

C) The fisherman lowers the anchor and it hangs vertically, one foot above the bottom of the pond.

D) The fisherman knocks the tackle box overboard and it sinks to the bottom.

E) The daughter pops the balloon.

F) The daughter gets in the water, looses her grip on the string, letting the balloon escape upwards.

(Over)