S.M.ART School **Homework for MCB3 due 05-24-2022**

I1 Solve inequality $2 / (4*x - 1) > 4$

I2 Solve inequality $4 / (3*x + 1) < 2$

I3 Solve inequality $x / (x + 8) < 0$

I4 Solve a system if two inequalities

$(2*x - 1) / (x + 3) > 0$ AND $2*x - 1 > 0$

I5 $0 > x^2 - 2*x + 5$

Are these two inequalities equivalent to each other

I6 $12*x + 1/(x-2) > 36 + 1/(x-2)$

AND $x > 3$

Q1 When clock shows 7:03 pm, what is an angle between the long and short hands?

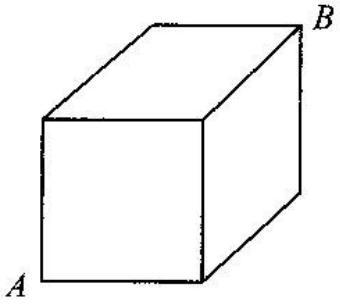
Q2

If m is an integer and m, $m + 1$, and $m + 2$ are the lengths of the sides of a triangle, which of the following could be the value of m?

I. 1
II. 10
III. 100

(A) I only
(B) II only
(C) III only
(D) II and III only
(E) I, II, and III

Q3



The figure above represents a cube whose edges are 3. What is the distance from vertex A to vertex B?

(A) 3

(B) $3\sqrt{2}$

(C) $3\sqrt{3}$

(D) 6

(E) 9

Q4

In a certain sequence the difference between any two consecutive terms is 5. If the 20th term is 63, what is the 2nd term?

(A) –32

(B) –27

(C) –22

(D) 32

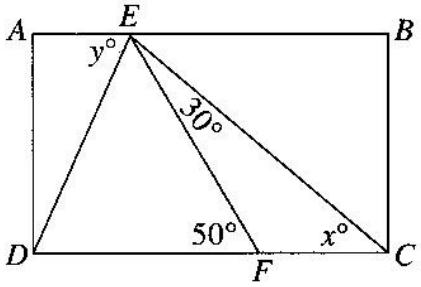
(E) 37

Q5

10% more than 10% less than x is what percent of $10x$?

(A) 9%
(B) 9.9%
(C) 10%
(D) 99%
(E) 100%

Q6



Note: Figure not drawn to scale

In the figure above, rectangle $ABCD$ has been partitioned into four triangles. If $DF = EF$, what is the value of $x + y$?

(A) 60
(B) 75
(C) 85
(D) 90
(E) 105

Q7

Megan wrote down all of the three-digit numbers that can be written using each of the numerals 1, 2 and 3 exactly once. What is the average (arithmetic mean) of the numbers that Megan wrote?

(A) 213
(B) 222
(C) 231
(D) 233
(E) 333

Q8

If $f(x) = x^2 - 1$ and $g(x) = 1 - x^2$, then for which of the following values of a does $f(2a) - 7 = g(2a) + 7$?

(A) 0
(B) 1
(C) $\sqrt{2}$
(D) $\sqrt{7}$
(E) 7