

DO NOT TURN TO THE NEXT PAGE until your proctor tells you.

Please read the directions carefully.

- ▶ You have 100 minutes for 32 Problems.
- ▶ Mark your answers on your Answer Form with a pencil.
- ▶ Extra scratch paper is neither given nor allowed. You may use blank pages/spaces in the booklet as scratch paper.
- ▶ There are no penalties for incorrect answers. Answer as many problems as you can; go back and check your work and also go to questions you skip, before the time is over.
- ▶ Use of calculators is prohibited. Cell phones must be turned off completely and placed out of sight. MathCON problems are ALL done without a calculator.
- ▶ The problems are divided into three categories by the difficulty levels:
3 Points (Questions 1-8)
5 Points (Questions 9-24)
7 Points (Questions 25-32)
- ▶ Problems 29-32, the last four problems are constructed-response problems. Enter your numerical answer in the grid on your answer sheet as shown on the right.

1. Although not required, it is suggested that you write your answer from left to right in the boxes at the top of the columns to help you fill in the circles accurately. You will receive credit only if the circles are filled in correctly.

2. Mark no more than one circle in any column.
3. You may start your answers in any column, space permitting. Leave unused columns blank, and there should be no blank columns between columns that are not blank. For example, if your answer is 201, then either arrangement of filled-in circles shown below is acceptable.

For example: Answer: 201 – either position is correct.

	2	0	1
Ⓐ	Ⓐ	●	Ⓐ
Ⓑ	Ⓑ	Ⓑ	●
Ⓒ	●	Ⓒ	Ⓒ
Ⓓ	Ⓓ	Ⓓ	Ⓓ

2	0	1	
Ⓐ	●	Ⓐ	Ⓐ
Ⓑ	Ⓑ	●	Ⓑ
●	Ⓒ	Ⓒ	Ⓒ
Ⓓ	Ⓓ	Ⓓ	Ⓓ

4. No problem has a negative answer.
- ▶ Notations in Geometry Problems:
- A : Point A
- $\overleftrightarrow{AB}$: Line through points A and B
- $\overline{AB}$: Line segment joining A and B
- AB : Length of the line segment AB
- $\angle ABC$: Angle with the vertex point at B
- $m\angle ABC$: Measure of angle ABC
- $\perp$: Perpendicular
- // : Parallel

1. [Algebra, 3 Points]

What is the value of this expression in decimal form?

$$\frac{65}{13} + \frac{130}{65} + \frac{65}{1300}$$

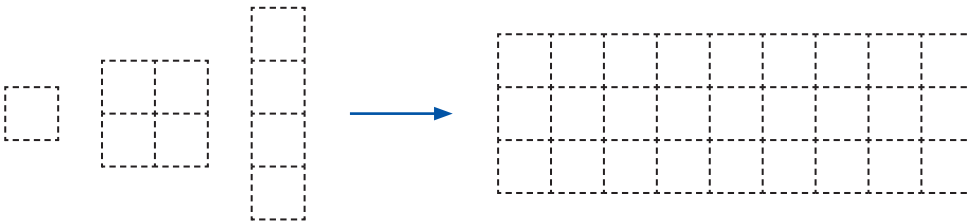
- A) 7.65 B) 7.5 C) 7.35 D) 7.15 E) 7.05

2. [Geometry, 3 Points]

A 3×9 rectangle is covered without overlap by 3 shapes of tiles:

2×2 , 1×4 , and 1×1

shown below.



What is the **minimum** possible number of 1×1 tiles used?

- A) 0 B) 1 C) 2 D) 3 E) 4

4. [Combinatorics, 3 Points]

Idil is trying to guess Dennis' age. She knows that Dennis' age is a composite odd number between 18 and 36. **At most**, how many different guesses does Idil need to make before she guesses out his age correctly?

- A) 5 B) 6 C) 7 D) 8 E) 9

5. [Algebra, 3 Points]

Which of the following fractions is closest to $\frac{2}{3}$?

A) $\frac{3}{5}$

B) $\frac{5}{9}$

C) $\frac{1}{2}$

D) $\frac{4}{5}$

E) $\frac{3}{4}$

6. [Geometry, 3 Points]

For what value of b will the line passing through the points $(4, 2b + 1)$ and $(8, 4b - 5)$ be parallel to the x -axis?

A) -4

B) $-\frac{1}{2}$

C) $\frac{5}{4}$

D) 2

E) 3

9. [Algebra, 5 Points]

In a candy dish, the ratio of yellow to blue candies is $4 : 7$. The ratio of yellow to blue candies becomes $1 : 2$ when two blue candies are added. How many yellow and blue candies there were in total at the beginning?

A) 28

B) 26

C) 24

D) 22

E) 20

