

PREPARE FOR AMO 2018 - GRADE 9

Week 1

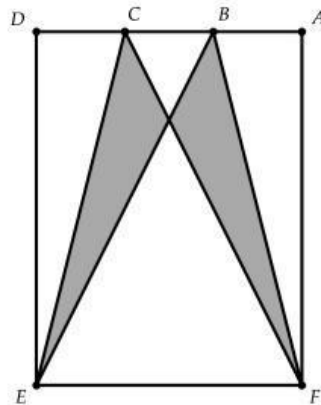
INSTRUCTION This problems set is to help students get used to the problems appearing in AMO Test. Students should finish this set in 30 minutes.

Exercise 1. Suppose that $a * b$ means $3a - b$. What is the value of x if $2 * (5 * x) = 1$?

- A. $\frac{1}{10}$
 C. $\frac{10}{3}$
 E. 14

- B. 2
 D. 10

Exercise 2. Rectangle $DEFA$ below is 3×4 rectangle with $DC = CB = BA$. What is the area of the bat wings? (shaded area)



- A. 2
 C. 3
 E. 4

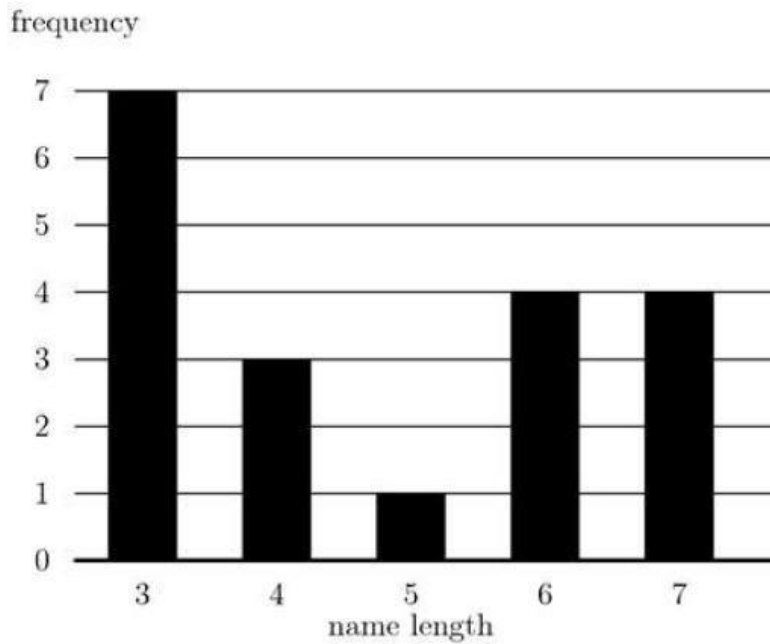
- B. $2\frac{1}{2}$
 D. $3\frac{1}{2}$

Exercise 3. The following bar graph represents the length (in letters) of the name of 19 people. What is the median length of these name?

Register at <https://docs.google.com/forms/d/e/1FAIpQLSfgGOYjGEHcCSCiYVcxRffzqHZ-82qgP9dzUNEJAqh96aBtA/viewform>



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- A. 3
C. 5
E. 7
- B. 4
D. 6

Exercise 4. The number N is a two-digit number.

- When N is divided by 9, the remainder is 1.
- When N is divided by 10, the remainder is 3.

What is the remainder when N is divided by 11?

- A. 0
C. 4
E. 7
- B. 2
D. 5

Exercise 5. The difference between two natural numbers is 63. If the larger number is divided by the smaller one, then the quotient is 6 and the remainder is 8. Find the larger number.

Exercise 6. Centre High school is competing against Northern High school in a backgammon match. Each school has three players, and the contest rules require that each player play two games against each other of the school's players. The match takes place in six rounds, with three game played simultaneously in each round. In how many different ways can the match be scheduled?

Exercise 7. How many subsets of $\{2; 3; 4; 5; 6; 7; 8; 9\}$ contain at least one number?

Exercise 8. How many ways are there to write 2016 as the sum of twos or threes, ignoring order? For example $1008 \times 2 + 0 \times 3$ and $402 \times 2 + 404 \times 3$ are such two ways.

Exercise 9. An ATM password at Fred's Bank is composed of four digits from 0 – 9, with repeating digit allowable. If no password begins with the sequence 9, 1, 1, then how many passwords are possible?

Exercise 10. Annie and Bonnie are running laps around a 400-meter oval track. They started together, but Annie has pulled ahead because she runs 25% faster than Bonnie. How many laps will Annie have when she first passes Bonnie?

