Think Academy

Summer AMC 8- Workshop 1

This material is designed for use in the classroom to simulate a Mock Exam.

To ensure accurate evaluation results, please DO NOT allow children to preview or complete the corresponding exercises in advance.

We will upload the classnotes (as the answers and solutions) after the class (exam).

Self-Round

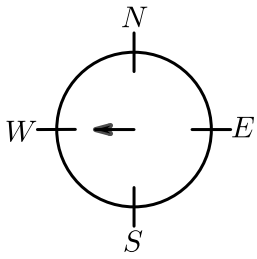
1 I'm thinking of two whole numbers. Their product is 24 and their sum is 11. What is the larger number? ( ) .

A. 3 B. 4 C. 6 D. 8 E. 12

2 Which of the following numbers has the smallest prime factor? ( ) .

A. 55 B. 57 C. 58 D. 59 E. 61

3 Initially, a spinner points west. Chenille moves it clockwise $2\frac{1}{4}$ revolutions and then counterclockwise $3\frac{3}{4}$ revolutions. In what direction does the spinner point after the two moves? ( ) .



A. north B. east C. south D. west E. northwest

4 Ms. Hamilton's eighth-grade class wants to participate in the annual three-person-team basketball tournament. Lance, Sally, Joy, and Fred are chosen for the team. In how many ways can the three starters be chosen? ( ) .

A. 2 B. 4 C. 6 D. 8 E. 10

5 Which of the following numbers is not a perfect square? ( ) .

A. 1^{2016} B. 2^{2017} C. 3^{2018} D. 4^{2019} E. 5^{2020}

6 Ms. Hamilton's eighth-grade class wants to participate in the annual three-person-team basketball tournament. The losin g team of each game is eliminated from the tournament. If sixteen teams compete, how many games will be played to determine the winner? ( ) .

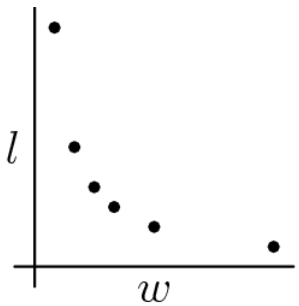
A. 4 B. 7 C. 8 D. 15 E. 16

7 Soda is sold in packs of 6, 12 and 24 cans. What is the minimum number of packs needed to buy exactly 90 cans of soda? ( ) .

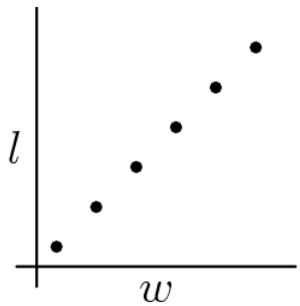
A. 4 B. 5 C. 6 D. 8 E. 15

8 Jorge's teacher asks him to plot all the ordered pairs (w, l) of positive integers for which w is the width and is the length of a rectangle with area 12. What should his graph look like? ( ) .

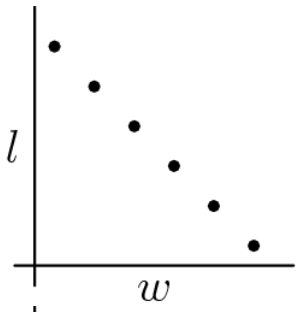
A.



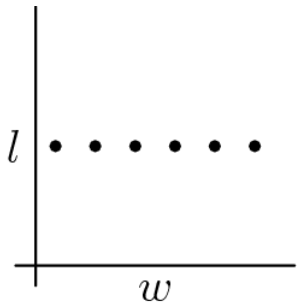
B.



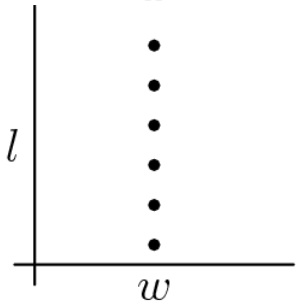
C.



D.

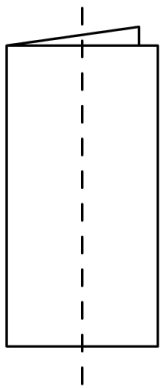


E.



In-Class

1 A square piece of paper, 4 inches on a side, is folded in half vertically. Both layers are then cut in half parallel to the fold. Three new rectangles are formed, a large one and two small ones. What is the ratio of the perimeter of one of the small rectangles to the perimeter of the large rectangle? ( ) .



A. $\frac{1}{3}$ B. $\frac{1}{2}$ C. $\frac{3}{4}$ D. $\frac{4}{5}$ E. $\frac{5}{6}$

2 Three friends have a total of 6 identical pencils, and each one has at least one pencil. In how many ways can this happen? ( ) .

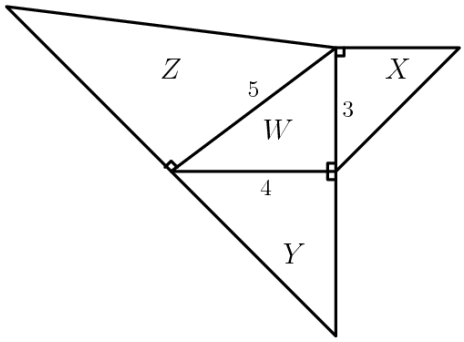
A. 1 B. 3 C. 6 D. 10 E. 12

3

Two dice are thrown . What is the probability that the product of the two numbers is a multiple of 5? ( ) .

A. $\frac{1}{36}$ B. $\frac{1}{18}$ C. $\frac{1}{6}$ D. $\frac{11}{36}$ E. $\frac{1}{3}$

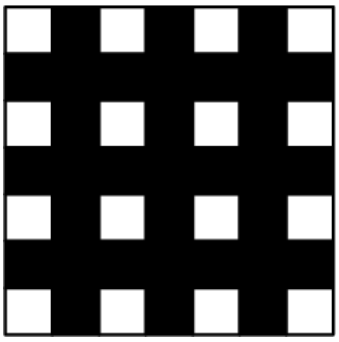
4 Right isosceles triangles are constructed on the sides of a $3-4-5$ right triangle , as shown. A capital letter represents the area of each triangle. Which one of the following is true? ( ) .



A. $X+Z=W+Y$ B. $W+X=Z$ C. $3X+4Y=5Z$ D. $X+W=\frac{1}{2}(Y+Z)$

E. $X+Y=Z$

5 The diagram represents a 7-foot-by-7-foot floor that is tiled with 1-square-foot black tiles and white tiles. Notice that the corners have white tiles. If a 15-foot-by-15-foot floor is to be tiled in the same manner, how many white tiles will be needed? ( ) .

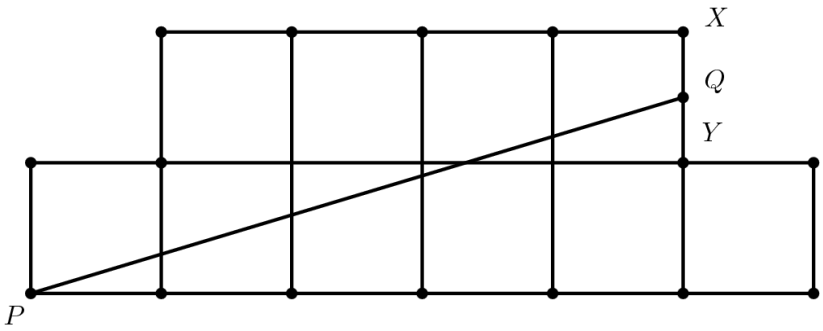


A. 49 B. 57 C. 64 D. 96 E. 126

6 Two-thirds of the people in a room are seated in three-fourths of the chairs. The rest of the people are stan ding. If there are 6 empty chairs, how many people are in the room? ( ) .

A. 12 B. 18 C. 24 D. 27 E. 36

7 The diagram shows an octagon consisting of 10 unit squares. The portion below $\overline{PQ}$ is a unit square and a triangle with base 5. If $\overline{PQ}$ bisects the area of the octagon, what is the ratio $\frac{XQ}{QY}$? ( ) .



A. $\frac{2}{5}$ B. $\frac{1}{2}$ C. $\frac{3}{5}$ D. $\frac{2}{3}$ E. $\frac{3}{4}$

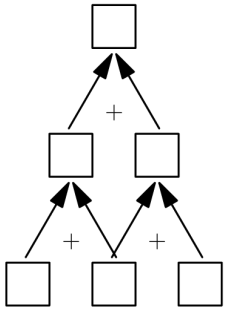
8 The least common multiple of a and b is 12, and the least common multiple of b and c is 15. What is the least possible value of the least common multiple of a and c? ( ) .

A. 20 B. 30 C. 60 D. 120 E. 180

9 For any positive integer M, the notation M denotes the product of the integers 1 through M. What is the largest integer n for which 5^n is a factor of the sum $98! + 99! + 100!$? ( ) .

A. 23 B. 24 C. 25 D. 26 E. 27

10 Three different one-digit positive integers are placed in the bottom row of cells. Numbers in adjacent cells are added and the sum is placed in the cell above them. In the second row, continue the same process to obtain a number in the top cell. What is the difference between the largest and smallest numbers possible in the top cell? ( ) .



A. 16 B. 24 C. 25 D. 26 E. 35