Think Academy

AMC8 Workshop 6

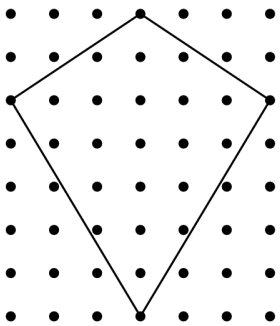
Self-Round

1 （1分）Granny Smith has $63. Elberta has $2 more than Anjou and Anjou has one-third as much as Granny Smith. How many dollars does Elberta have? （　）.

A. 17　　B. 18　　C. 19　　D. 21　　E. 23

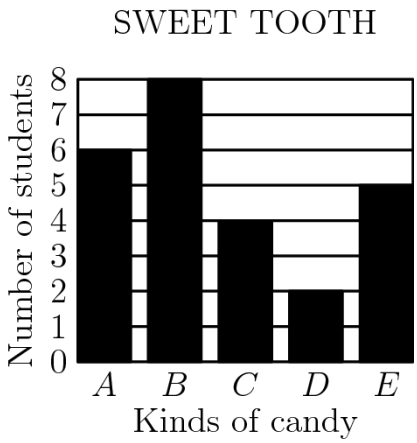
2 （1分）To promote her school's annual Kite Olympics, Genevieve makes a small kite and a large kite for a bulletin board display. The kites look like the one in the diagram below. For her small kite Genevieve draws the kite on a one-inch grid. For the large kite she triples both the height and width of the entire grid.

Genevieve puts bracing on her large kite in the form of a cross connecting opposite corners of the kite. How many inches of bracing material does she need? （　）.



A. 30　　B. 32　　C. 35　　D. 38　　E. 39

3 （1分）The students in Mrs. Sawyer's class were asked to do a taste test of five kinds of candy. Each student chose one kind of candy. A bar graph of their preferences is shown. What percent of her class chose candy E? （　）.



A. 5　　B. 12　　C. 15　　D. 16　　E. 20

4 （1分）For his birthday， Bert gets a box that holds 125 jellybeans when filled to capacity. A few weeks later， Carrie gets a larger box full of jellybeans. Her box is twice as high， twice as wide and twice as long as Bert's. Approximately， how many jellybeans did Carrie get? （　）.

A. 250　　B. 500　　C. 625　　D. 750　　E. 1000

5 （1分）Blake and Jenny each took four 100-point tests. Blake averaged 78 on the four tests. Jenny scored 10 points higher than Blake on the first test， 10points lower than him on the second test， and 20 points higher on both the third and fourth tests. What is the difference between Jenny's average and Blake's average on these four tests? （　）.

A. 10　　B. 15　　C. 20　　D. 25　　E. 40

6 （1分）A whole number larger than 2 leaves a remainder of 2 when divided by each of the numbers $3,4,5$ and 6. The smallest such number lies between which two numbers？（　）.

A. 40 and 49　　B. 60 and 79　　C. 100 and 129　　D. 210 and 249　　E. 320 and 369

7 （1分）Suppose d is a digit. For how many values of d is $2.00d5 > 2.005$？（　）.

A. 0　　B. 4　　C. 5　　D. 6　　E. 10

8 （1分）Bill walks $\frac{1}{2}$ mile south, then $\frac{3}{4}$ mile east, and finally $\frac{1}{2}$ mile south. How many miles is he, in a direct line, from his starting point？（　）.

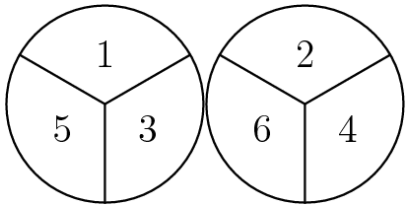
A. 1　　B. $1\frac{1}{4}$　　C. $1\frac{1}{2}$　　D. $1\frac{3}{4}$　　E. 2

In-Class

9 （1分）If $\frac{3}{5}=\frac{M}{45}=\frac{60}{N}$, what is $M+N$? （　　）.

A. 27　　B. 29　　C. 45　　D. 105　　E. 127

10 （1分）The two spinners shown are spun once and each lands on one of the numbered sectors. What is the probability that the sum of the numbers in the two sectors is prime? （　　）.



A. $\frac{1}{2}$　　B. $\frac{2}{3}$　　C. $\frac{3}{4}$　　D. $\frac{7}{9}$　　E. $\frac{5}{6}$

11 （1分）A three-digit integer contains one of each of the digits 1, 3, and 5. What is the probability that the integer is divisible by 5? （　　）.

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

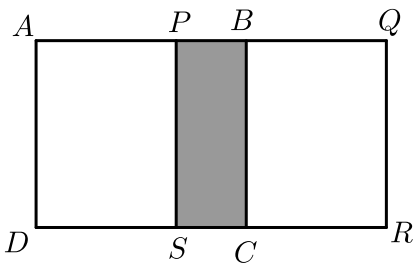
12 （1分）The positive integers x and y are the two smallest positive integers for which the product of 360 and x is a square and the product of 360 and y is a cube. What is the sum of x and y? （　）.

A. 80　　B. 85　　C. 115　　D. 165　　E. 610

13 （1分）Alice needs to replace a light bulb located 10 centimeters below the ceiling in her kitchen. The ceiling is 2.4 meters above the floor. Alice is 1.5 meters tall and can reach 46 centimeters above the top of her head. Standing on a stool, she can just reach the light bulb. What is the height of the stool, in centimeters? （　）.

A. 32　　B. 34　　C. 36　　D. 38　　E. 40

14 （1分）Two congruent squares, $ABCD$ and $PQRS$, have side length 15. They overlap to form the 15 by 25 rectangle $AQRD$ shown. What percent of the area of rectangle $AQRD$ is shaded? （　）.



A. 15　　B. 18　　C. 20　　D. 24　　E. 25

15 （1分）A fair 6-sided die is rolled twice. What is the probability that the first number that comes up is greater than or equal to the second number? （　）.

A. $\frac{1}{6}$　B. $\frac{5}{12}$　C. $\frac{1}{2}$　D. $\frac{7}{12}$　E. $\frac{5}{6}$

16 （1分）Let R be a set of nine distinct integers. Six of the elements are 2, 3, 4, 6, 9, and 14. What is the number of possible values of the median of R? （　）.

A. 4　B. 5　C. 6　D. 7　E. 8

17 （1分）When Clara totaled her scores, she inadvertently reversed the units digit and the tens digit of one score. By which of the following might her incorrect sum have differed from the correct one? （　）.

A. 45　B. 46　C. 47　D. 48　E. 49

18 （1分）A top hat contains 3 red chips and 2 green chips. Chips are drawn randomly, one at a time without replacement, until all 3 of the reds are drawn or until both green chips are drawn. What is the probability that the 3 reds are drawn? （　）.

A. $\frac{3}{10}$　B. $\frac{2}{5}$　C. $\frac{1}{2}$　D. $\frac{3}{5}$　E. $\frac{7}{10}$

19 （1分）The digits 1, 2, 3, 4, and 5 are each used once to write a five-digit number $PQRST$. The three-digit number PQR is divisible by 4, the three-digit number QRS is divisible by 5, and the three-digit number RST is divisible by 3. What is P? （　）.

A. 1　B. 2　C. 3　D. 4　E. 5

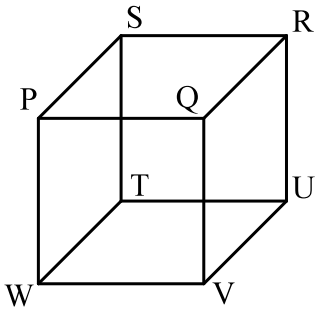
20 （1分）Fifteen integers a_1, a_2, a_3, $\cdots$, a_{15} are arranged in order on a number line. The integers are equally spaced and have the property that

$1 \le a_1 \le 10$, $13 \le a_2 \le 20$, $241 \le a_{15} \le 250$

What is the sum of digits of a_{14}?

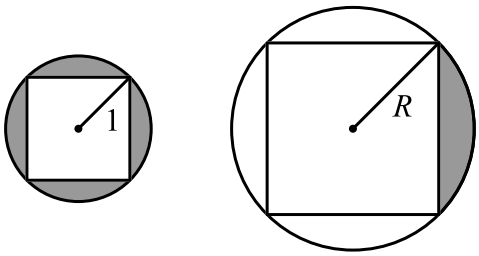
A. 8　B. 9　C. 10　D. 11　E. 12

21 （1分）Any three vertices of the cube $PQRSTUVW$, shown in the figure below, can be connected to form a triangle. (For example, vertices P, Q, and R can be connected to form isosceles $\triangle PQR$.) How many of these triangles are equilateral and contain P as a vertex?



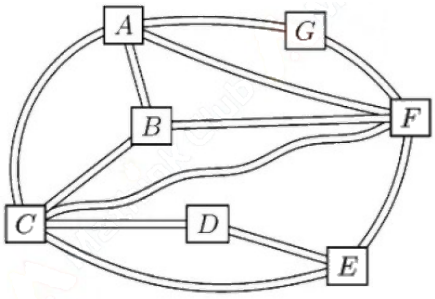
A. 0　　B. 1　　C. 2　　D. 3　　E. 6

22 （1分）The circle shown below on the left has a radius of 1 unit. The region between the circle and the inscribed square is shaded. In the circle shown on the right, one quarter of the region between the circle and the inscribed square is shaded. The shaded regions in the two circles have the same area. What is the radius R, in units, of the circle on the right?



A. $\sqrt{2}$　　B. 2　　C. $2\sqrt{2}$　　D. 4　　E. $4\sqrt{2}$

23 （1分）The Konigsberg School has assigned grades 1 through 7 to pods A through G, one grade per pod. Some of the pods are connected by walkways, as shown in the figure below. The school noticed that each pair of connected pods has been assigned grades differing by 2 or more grade levels. (For example, grades 1 and 2 will not be in pods directly connected by a walkway.) What is the sum of the grade levels assigned to pods C, E, and F?



A. 12　　B. 13　　C. 14　　D. 15　　E. 16