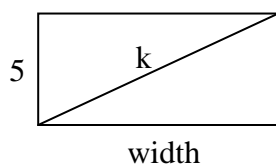


Round 3

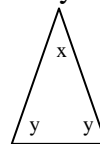
1. Find the arithmetic mean (average) of the following set of numbers. Write the answer in space number 1 on the official answer sheet.

12, 12, 12, 16

2. Let k be the answer in space 1 on the answer sheet. If the diagonal of a rectangular picture is k inches long and the height is 5 inches, what is the picture's width? Write your answer, without any units, in space number 2 on the official answer sheet.
(Diagram is not drawn to scale.)



3. Let x be the answer in space 2 on the answer sheet. The measure of one angle in the following isosceles triangle is x° . Find the value of y . Write your answer, without any units, in space number 3 on the official answer sheet.
(Diagram is not drawn to scale.)



4. Let k be the answer in space 3 on the answer sheet. If a bug is flying at a rate of x inches per second, how fast is it going if measured in feet per minute? Write the answer, without any units, in space number 4 on the official answer sheet.
5. Let k be the answer in space 4 on the answer sheet. If the total measure of four of the angles in a pentagon is k° . Find the measure of the remaining angle. Write your answer, without any units, in space number 5 on the official answer sheet.
6. Let x be the answer in space 5 on the answer sheet. Evaluate the following expression. Write the answer in space number 6 of the official answer sheet.

$$\frac{(x^2 - 7x + 10)(x^2 - 5x - 6)}{(x - 2)(x^2 - 4x - 5)}$$

13

12

84

420

120

114

Round 1

1. Which fraction is larger, **a) $12/25$ or b) $16,232/30,000$** ? If fraction (a) is larger, then write the number 4 in space number 1 on the official answer sheet. If fraction (b) is larger, then write 5 in space 1 on the official answer sheet.

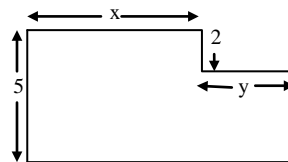
2. Let x be the number in space 1 on the answer sheet. Find the median of the numbers 8, x , 6, 15. Write your answer in space number 2 on the official answer sheet.

3. Let k be the number in space 2 on the answer sheet. A shirt originally sold for \$9.35. It was then marked up $k\%$. A month later it was again marked up, but this time by 10%. What is the final price of the shirt? Write your answer, without any units in space number 3 on the official answer sheet.

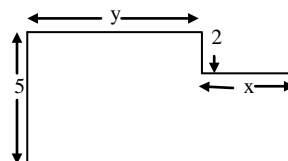
4. Let x be the number in space 3 on the answer sheet. Solve the following equation for y . Write that number in space number 4 on the official answer sheet.

$$5[4 - 2(x - 3)] = [-12 - 3(2y - 10)]$$

5. Let y be the number in space 4 on the answer sheet. If the perimeter of the picture shown is 70 units long and all corners in the diagram are right angles, find the value of x . Write that number in space number 5 on the official answer sheet.
(Diagram not drawn to scale.)



6. Let x be the number in space 5 on the answer sheet. If all corners in the diagram are right angles and the total area of the shape is 146 square units, find the value of y . Write that number in space 6 on the official answer sheet. (Diagram not drawn to scale.)



Practice Round

1. Two prime numbers, all greater than 7, are multiplied together. If their product is an even number, then write 5 in space number 1 on the official answer sheet. If their product is an odd number, then write 3 in space number 1 on the official answer sheet

2. Let k be the answer in space 1 on the answer sheet. The prime factorization of a number is $2^2 \cdot 3^1 \cdot 5^k$. Write that number in space number 2 on the official answer sheet.

3. Let k be the answer in space 2 on the answer sheet. Find the prime factorization of k . What is the exponent on the factor 5? Write your answer in space number 3 on the official answer sheet.

4. Let k be the answer in space 3 on the answer sheet. What is the largest prime factor of $(204)(k)$? Write your answer in space number 4 on the official answer sheet.

5. Let k be the answer in space 4 on the answer sheet. What is the greatest common prime factor of k and 646? Write the answer in space number 5 of the official answer sheet.

6. Let k be the answer in space 5 on the answer sheet. How many unique prime factors does the number $3795k$ have? Write your answer in space number 6 of the official answer sheet.

Round 2

1. If 6,100,305 is evenly divisible by 15 then write 1 in space number 1 on the official answer sheet. If it is not evenly divisible by 15, then write 18 in space number 1 on the official answer sheet.

2. Let k be the number listed in space number 1. If you roll a pair of fair dice, what is the probability that the total for the roll turns out to be k ? Write that number in space number 2 on the official answer sheet.

3. Let k be the number listed in space number 2. If the slope of the line that connects the points $(m, -5)$ and $(2, k)$ is 5, find the value of m and write that number in space number 3 of the official answer sheet.

4. Let m be the number listed in space number 3. Simplify the expression

$$-3[(-3)^2 - (-2)^4]^{3m}$$

and write that number in space number 4 on the official answer sheet.

5. Let k be the number listed in space number 4. The ratio of girls to boys at Longmeadow Elementary is 7 to 8 and there are k students at the school. How many girls attend Longmeadow Elementary? Write that letter in space number 5 on the official answer sheet.

6. Let k be the number listed in space number 5. How many blocks would it take to make the figure in diagram number k ? Write your in space number 6 of the official answer sheet.



Fig. 1

1

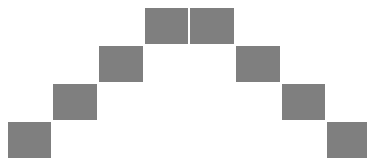


Fig. 2

0

1

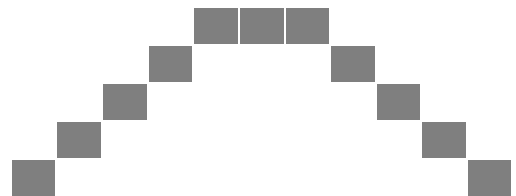


Fig. 3

375

175

527