Grade 11

Problem №1.

Albert has 75 white tokens and 75 black tokens. There is a booth where he can give two white tokens and receive in return a silver token and a black token, and another booth where he can give three black tokens and receive in return a silver token and a white token. Albert continues to exchange tokens until no more exchanges are possible. How many silver tokens will he have at the end?

A) 140 B) 88 C) 100 D) 103 E) 120

Problem №2.

Carly wrote six different numbers, one on each side of three identical cards. The numbers on the front of the cards are shown: 32, 30, and 59.

32	30	59

As she created the cards, she made sure of the following:

1. the sums of the two numbers on each of the three cards are the same, and
2. the three numbers on the back of the cards are all prime numbers.

What is the **sum** of the three numbers on the back of the cards?

A) 60 B) 62 C) 65 D) 68 E) 70

Problem №3.

Carrie has a number of gold bars, all of different weights. She gives the 24 lightest bars, which weigh 45% of the total weight, to Barbara. She gives the 13 heaviest bars, which weigh 26% of the total weight, to Monica. She gives the rest of the bars to Becky. How many bars did Becky receive?

A) 13 B) 15 C) 14 D) 18 E) 16

Problem №4.

A farmer bought 749 sheep. He sold 700 of them for the price paid for the 749 sheep. The remaining 49 sheep were sold at the same price per head as the other 700. Based on the cost, what is the percent of gain on the entire transaction?

(Write your answer as a value between 0 and 100. Do not include the % symbol.)

A) 6 B) 8 C) 7 D) 9 E) 10

Problem №5.

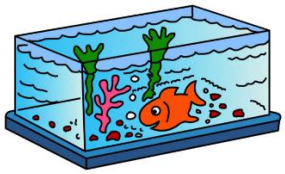
The amount of money in the hands of three card players, Arno, Barbara, and Carlos was in the ratio of 7:6:5, respectively, at the beginning of the game. At the end of the game, however, the ratio of money in Arno's, Barbara's, and Carlos' hands turned into the ratio of 6:5:4, respectively.

If Arno won the game and ended up 120 dollars richer, how much money did the three players had combined, at the start of the game?

A) 81000 B) 11800 C) 80100 D) 10800 E) 10080

Problem №6.

After purchasing a fish tank with internal dimensions were 60 cm (length), 30 cm (width), and 40 cm (depth), Pete filled it up to 80% of its capacity. While the tank was filling up, he timed that a 300-milliliter cup needed **at least** 5 seconds to fill up.



At least how many *minutes* did it take to fill up to fish tank (to its 80% capacity)?

A) 16 B) 20 C) 24 D) 30 E) 35

Problem №7.

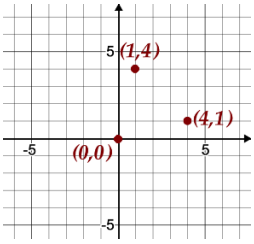
A right-angled triangle has sides of length 6, 8, and 10 units. A circle is drawn so that the area inside the circle but outside this triangle equals the area inside the triangle but outside the circle.

What is the radius of the circle? Use $\pi=3.14$ and round your answer to two decimal places.

A) 7.26 B) 2.76 C) 6.72 D) 2.67 E) 7.62

Problem №8.

The coordinates of three vertices of a parallelogram are (0,0), (1,4), and (4,1). The coordinates of the fourth vertex of the parallelogram is unknown.

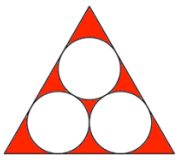


What is the **area** of the parallelogram, expressed in unit squares?

A) 35 B) 30 C) 25 D) 20 E) 15

Problem №9.

Each of the three circles shown is tangent to the other two and to the triangle that contains it. If they are identical and each has a radius of 2 units, what is the area of the shaded region shown? Use $\pi=3.14$ in your calculations and round your answer to two decimal places.



A) 31.04 B) 40.13 C) 13.04 D) 14.03 E) 30.41

Problem №10.

Adam gives Brad as many cents as Brad has and Craig as many cents as Craig has. Similarly, Brad then gives Adam and Craig as many cents as each then has. If each finally has 16 cents, with how many cents does Adam start with?

A) 26 B) 28 C) 30 D) 32 E) 34

Problem №11.

Two sealed containers contain the same number of balls, and every ball is either red or blue. In Box 1, the ratio of red balls to blue balls is 9:1. In Box 2, the

ratio of red balls to blue balls is 8:1. In the two boxes combined, there are 95 blue balls in total.

How many more red balls are in Box 1 than in Box 2?

A) 5 B) 10 C) 15 D) 20 E) 25

Problem №12.

Using each of the digits 1, 2, 3, and 4 exactly once, there are several four-digit numbers we can create, such as 1234, 4321, and alike.

What is the **sum** of all possible such four-digit numbers?

A) 55550 B) 66660 C) 65560 D) 56650 E) 66055

Problem №13.

Two positive integers have a greatest common factor (also called greatest common divisor or GCD) of 25, a least common multiple (LCM) of 825, and a sum of 350.

What is the **larger** of these two numbers?

A) 275 B) 280 C) 260 D) 285 E) 290

Problem №14.

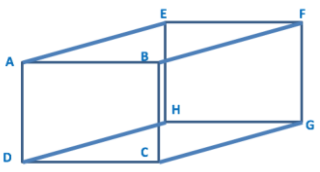
Two candles have different lengths and different thicknesses. The shorter one would last eleven hours, the longer one would last for seven hours. Both candles are lit at the same time, and after three hours, both have the same length remaining.

What is the **ratio** of the length of the shorter candle to the length of the longer candle?

A) 14:12 B) 16:14 C) 12:16 D) 11:14 E) 14:11

Problem №15.

A spider is in the inside corner A of a closed 4m by 2m by 3m box. If it wishes to travel to the corner G of the box opposite to corner A, and the spider travels at a rate of 3 centimeters per second, what is the shortest possible time before the spider reaches its destination? Write your answer in seconds. Round your answer to the nearest hundredths.



A) 123.44 B) 412.34 C) 213.44 D) 132.44 E) 441.32