

## Math 5b, homework 11.

1. Students who participated in math competition had to solve 2 problems, one in algebra and another in geometry. Among 100 students 65 solved algebra problem, 45 solved geometry problem, 20 students solved both problems. How many students didn't solve any problem at all?
2. John took cards with numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 from his sister (one card each, 10 in total). He laid them out in pairs on the table and suddenly noticed that the two-digit numbers he made were in the ratio of 1:2:3:4:5. When he wanted to show this cool result to his dad later that evening, he realized the card with the number 0 was missing! But after thinking about it, he made five new numbers using the remaining cards, and they were also in the ratio of 1:2:3:4:5. How did he arrange the cards the first and second time?
3. It is known that the number  $a$  is 5 times larger than the number  $b$ .  
Find the numbers  $a$  and  $b$ , given that:
  - a.  $GCD(a, b) = 3$ ;
  - b.  $GCD(a, b) = 5$ ;
  - c.  $GCD(a, b) = 15$ ;
  - d.  $GCD(a, b) = 20$ .
4. It is known that the numbers  $a$  and  $b$  are negative, with  $a > b$ , and the numbers  $m$  and  $n$  are positive, with  $m < n$ .  
Compare the following:
  - a.  $a + n$  and  $b + n$ ;
  - b.  $a + n$  and  $b + m$ ;
  - c.  $a - m$  and  $b - n$ .
5. Evaluate (hint  $|5|$  is absolute value of 5):
  - a.  $|5.29| + |-4.71|$ ;
  - b.  $|12.91| + |-2.601|$ ;
  - c.  $|-3.3| \cdot \left|1\frac{9}{11}\right|$ ;
6. Evaluate. (Try not to use paper to do your calculations, do mental math and write only the resulting answers for each step). Answer is 10.

$$(12 - 8.4): 0.09 \cdot 0.7 - 0.3 \cdot (0.6 + 3.12): (14.18 - 7.98): 0.01$$