Algebra and Geometry 1. Homework 3.

1. Can you say which of the following statements are true and which are false?
   a. If the natural number is divisible by 4 and 3, it's divisible by 12
      (if $a \vdots 3$ and $a \vdots 4 \Rightarrow a \vdots 12$)
   b. If the natural number is divisible by 12, it's divisible by 3 and 4.
      (if $a \vdots 12 \Rightarrow\ a \vdots 3$ and $a \vdots 4$)
   c. If $a \vdots 3$ then $a \vdots 9$.
   d. If $a \vdots 9$ then $a \vdots 3$
2. Even or odd number will be the sum
   $$1 + 2 + 3 + \ldots + 2020$$
3. Set A is the set of numbers
   A={372, 405, 700, 1075, 4399}
   Find subsets of the set A
   a. Multiples of 2
   b. Multiples of 3
   c. Multiples of 5
4. Evaluate:
   a. $\left(4\frac{1}{6} \cdot 3\right) : \left(7 \cdot \frac{5}{21}\right) - 1\frac{3}{4} \cdot 4 \quad \left(answer: \frac{1}{2}\right);$

   b. $\left(4\frac{2}{5} + 3\frac{4}{5}\right) - \left(12 - 8\frac{1}{5}\right) \qquad \left(answer: 4\frac{2}{5}\right)$

5. The youngest sister is by 5 years younger then the middle sister and 5 times younger then the oldest sister. How old they are if their total age is 19?

6. (* more difficult problem) x is a natural number.

   Among following statements 3 are true and 2 are false.

   $2 \cdot x$ is greater than 70

   x is less than 100

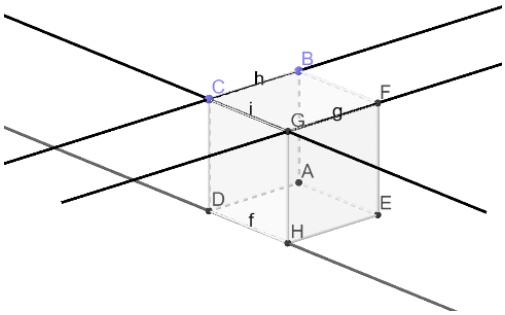
   $3 \cdot x$ is greater than 25

   x is not less than 10

   x is greater than 5

   What is x ?

7. Which vertices of the cube belong to the lines h, I, g, f?



8. Into how many parts three lines divide a plane? Find all possible solutions.

9.

   a. Michel drew three lines, no two of which are parallel, and marked 2 points on each of the three lines. He marked 3 points altogether. How can this be?

   b. Michel drew three lines, no two of which are parallel, and marked 2 points on each of three lines. He marked 4 points altogether. How can this be?