Math4 Homework 2

September 22 2019

Topics discussed today:

Quotient and remainder: given a whole number d, we can always divide any number A into d and write it in the form

$$\mathbf{A = (quotient) \times d + (remainder)}$$

$\mathbf{17 = 5 \times 3 + 2}$, so remainder upon division of 17 into 3 is 2.

If

$$\mathbf{remainder = 0}$$

$$\mathbf{A = (quotient) \times d}$$

A is divisible by d, **A is multiple of d**.

d is a divisor of A

- Divisibilty tests:
  - A number is even (i.e., **divisible by 2**) exactly when the **last digit is even**.
  - A number is **divisible by 5** exactly when **last digit is 0 or 5**
  - A number is **divisible by 3** exactly when **the sum of digits is divisible by 3**
  - A number is **divisible by 9** exactly when **the sum of digits is divisible by 9**

(However, this last test only works for 3 and 9, not for any other numbers!)

- If two numbers are divisible by d, then the sum and difference of these two numbers are also divisible by d. For example, sum and difference of two even numbers is even.

Turn page over for the problems.

Homework problems:

- Home work is to be written on the separate sheet of paper.
- Keep HW for your records
- Do not give up easily if you are having difficulties.
- You can solve problems in any order.

1. Solve equations:

$5x = 20$ $4x = 20$ $3x = 20$ $2x = 20$ $20x = 1$

2. S16 is set of multiples of 16 less than 100. S12 is a set of multiples of 12 less than 100.Write set definitions using curly brackets {}, Draw Venn diagram for S12 and S16.

3. Four friends, Pichu, Pikachu, Tepig, and Oshawott went trick or treating. Oshawott collected 50 more candies than Pichu, Pikachu 50 less, and Tepig got 2 times more candies than Pichu. When they got together and put all candies in one jar, the number was 250. How many candies each one collected.

Write the answer in the form Pichu= Pikacu= Tepig= Oshawott = or

Pichu: Pikacu: Tepig: Oshawott :

4. If it is 7am now, what time of the day will it be in (a) 27 hours?
   (b) 127 hours?
   (c) 11043 hours?
5. Compute with remainder:

$(a) 825 \div 9$ $(b) 3761 \div 13$ $(d) 111{,}111{,}111 \div 111$

6. (*)If we take the usual chessboard and remove two diagonally opposite corner squares, is it possible to cut it into 2 _ 1 rectangles? [Hint: watch the colors – some squares are black, some are white...]