



For teachers only

Questions: (* questions can be used for evaluation)

- 1. Can you identify if the below numbers are in arithmetic progression? Write down the reason for your answer in each case
 - a) {1, 2, 3, 4, 5, 6, 7, 8}
 - b) {-1,1,3,5,7,9}
 - c) {1,5,8,1,5,8}

Answers:

a. The numbers {1, 2, 3, 4, 5, 6, 7, 8} are in arithmetic progression because they have a common difference of 1

$$2 - 1 = 1$$

$$3 - 2 = 1$$

$$4 - 3 = 1$$

$$4 - 5 = 1$$

$$6 - 5 = 1$$

$$7 - 6 = 1$$

$$8 - 7 = 1$$

b. The numbers {-1,1,3,5,7,9} are in arithmetic progression because they have a common difference of 2

$$1 - (-1) = 2$$

$$3 - 1 = 2$$

$$5 - 3 = 2$$

$$7 - 5 = 2$$

$$9 - 7 = 2$$

c. The numbers {1,5,8,1,5,8} are not in arithmetic progression because they don't have a common difference of 1

$$5 - 1 = 4$$

$$8 - 5 = 3$$

$$1 - 8 = -7$$





2. In your school can you identify some patterns that are repeating itself? Some examples

Each class has sections A, B, C, D this pattern repeats itself from class 1 to class 8 Each day is divided into 6 periods with 2 breaks. They repeat every day from Monday to Friday

- 3. With your knowledge on modulo arithmetic can you solve the following?
 - a. * 24 Mod 12 =
 - b. * 15 Mod 30 =
 - c. Can you identify a relationship between the first and second problem?
 - d. * 10 Mod 2 =
 - e. * 2 Mod 2 =
 - f. If 10 Mod x = 1 can you find one value of x
 - g. If 20 Mod x = 3 then find x
 - h. If $X \mod 5 = 3$ can you find one value of x
 - i. If $x \mod 7 = 2$ can you find one value of x
- a) To calculate 24 Mod 12, first we should divide 24 by 12 and see the remainder

Therefore 24 Mod 12 = 0 or we can say 0 Mod 12 is congruent to 24 Mod 12

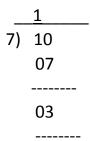
b) To calculate 15 Mod 30, first we should divide 15 by 30 and see the remainder

Therefore 15 Mod 30 = 0 or we can say 0 Mod 30 is congruent to 15 Mod 30





- c) Can you identify the relationship between the first and second problem?
 We see that the remainder for both the questions is 0 so we can say
 24 Mod 12 is congruent to 15 Mod 30
- d) * 10 Mod 7



Therefore 10 Mod 7 = 3

e) * 23 Mod 2

12) 23

12

----11

Therefore 23 Mod 12 = 11

f) If 10 Mod x = 1 can you find one value of x

Also we see

Name:

Class:

Div:

Roll. No:





So we can write 10 Mod 9 = 1 or 10 Mod 3 = 1 or 10 Mod 9 is congruent to 10 Mod 3 10 Mod 9 \equiv 10 Mod 3

- g) If 20 Mod x = 3 then find x
 - 3 17) 20 17 -----03
- h) If $X \mod 5 = 3$

In this example, we should find a number that can be divided by 5 leaving a remainder 3

13Mod 5 = 3 or 23 Mod 5 = 3 We can also write 13Mod 5 is congruent to 23 Mod 5 13Mod5 \equiv 23 Mod 5

i. If x mod 5 = 3 find the value of xThink of a number that when divided by 5 will give a remainder 3





If we take any number say 'a' and multiply it with 5 and add 3 to it we will get the required answer

Lets, try it out Let x = 3*5+3 = 18

18 mod 5 = ?

3 5) 18 15 -----

So the answer would be any number multiplied by 5 plus 3

j. If $x \mod 7 = 2$ find x

Think of a number that when divided by 7 will give a remainder 2 If we take any number say 'a' and multiply it with 7 and add 2 to it we will ge the required answer

Lets, try it out Let x = 3*7+2 = 2323 mod 7 = ?

So the answer would be any number multiplied by 7 plus 2