6 PLAYING WITH NUMBERS

Q1. State an example to prove that each of the following statements is False:

a. Any pair of prime numbers are called twin primes, e.g.: (13, 19).

Example of twin primes: _____

b. Two consecutive numbers can be co–primes only if both are primes, e.g.: (2, 3).

Example of two consecutive co–primes where both numbers are not primes: _____

c. A set of any three prime numbers is called a prime triplet, e.g.: (2, 5, 13).

Example of a prime triplet: _____

d. In a pair of co–prime numbers, at least one number should be prime, e.g.: (3, 8).

Example of co–primes where none of the numbers is prime: _____

Q2. Find the smallest and the greatest 4-digit number which is divisible by both 2 and 3.

Smallest Number: _____

Greatest Number: _____

Q3. Find the digit which should replace * in 89*910 to make it divisible by 11.

Answer: _____

Q4. Find the prime factors of 3675 and fill in the boxes with the correct numbers:

$3675 = 2^{\square} \times 3^{\square} \times 5^{\square} \times 7^{\square} \times 11^{\square} \times 12^{\square}$

Q5. Fill in the blanks with divisible or not divisible to make the following statements always True:

a. If a number x = 2y, then x is _____ by each factor of y.

b. If a number x is divisible by two co–prime numbers a and b, then x is _____ by ab.

c. If two numbers p and q are completely divisible by z, then (p + q) is _____ by z.

d. If a number a is divisible by two co-prime numbers b and c, then a is _____ by (b + c) and (b – c).

Q6. Find whether the following statement is True or not:

All even multiples of 3 are multiples of 2 and 6.

Give reasons in support of your answer.

Answer: _____

Q7. Find whether the following numbers are multiples of 2, 3, 4, 5, 6, 7, 8, 9 and 11. Write Yes in the table if each of the given number is a multiple:

Number	Divisible by 2	Divisible by 3	Divisible by 4	Divisible by 5	Divisible by 6	Divisible by 7	Divisible by 8	Divisible by 9	Divisible by 11
4752									
11000									
1785									

Q8. Find the smallest number, which should be added to 56917, to make it divisible by 4 and 5.

Answer: _____

Q9. A number *n* is divisible by 2x and 2x+1. Find the smallest value of x, if *n* is divisible by 6 as well.

x = ____

Q10. Write the smallest number with 2, 3, 4, 5 and 6 digits, which is divisible by 11.

a. Smallest number with 2 digits divisible by 11 : _____

b. Smallest number with 3 digits divisible by 11 : _____

c. Smallest number with 4 digits divisible by 11 : _____

d. Smallest number with 5 digits divisible by 11 : _____

e. Smallest number with 6 digits divisible by 11 : _____

Answers

1. a. (3, 5); b. (12, 13); c. (3, 5, 7); d. (8, 27)
2. Smallest Number: 1002; Greatest Number: 9996
3. 9
4. $3675 = 2^0 \times 3^1 \times 5^2 \times 7^2 \times 11^0 \times 13^0$
5. a. divisible; b. divisible; divisible; not divisible
6. True. All even numbers are multiples of 2. So, all even multiples of 3 will be multiples of 2 and 3 both. Since the numbers are divisible by 2 and 3, they will be divisible by 6 also.
7.

Number	Divisible by 2	Divisible by 3	Divisible by 4	Divisible by 5	Divisible by 6	Divisible by 7	Divisible by 8	Divisible by 9	Divisible by 11
4752	Yes	Yes	Yes	—	Yes	—	Yes	Yes	Yes
11000	Yes	—	Yes	Yes	—	—	Yes	—	Yes
1785	—	Yes	—	Yes	—	Yes	—	—	—

8. 3
9. x = 1
10. a. 11; b. 110; c. 1001; d. 10010; e. 100001