

**EXERCISE 3.2**

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**1. What is the sum of any two (a) Odd numbers? (b) Even numbers?****Solutions:****(a)** The sum of any two odd numbers is even numbers.Examples:  $5 + 3 = 8$ 

$$15 + 13 = 28$$

**(b)** The sum of any two even numbers is even numbersExamples:  $2 + 8 = 10$ 

$$12 + 28 = 40$$

**2. State whether the following statements are True or False:****(a)** The sum of three odd numbers is even.**(b)** The sum of two odd numbers and one even number is even.**(c)** The product of three odd numbers is odd.**(d)** If an even number is divided by 2, the quotient is always odd.**(e)** All prime numbers are odd.**(f)** Prime numbers do not have any factors.**(g)** Sum of two prime numbers is always even.**(h)** 2 is the only even prime number.**(i)** All even numbers are composite numbers.**(j)** The product of two even numbers is always even.**Solutions:****(a)** True. The sum of two odd numbers is evenExample:  $7 + 9 = 16$  i.e even number**(b)** True. The sum of two odd numbers and one even numbers is even.Example:  $3 + 5 + 8 = 16$  i.e is even number.**(c)** True. The product of three odd numbers is odd.Example:  $3 \times 7 \times 9 = 189$  i.e is odd number.**(d)** False. If an even number is divided by 2, the quotient is even.Example:  $8 \div 2 = 4$ **(e)** False, All prime numbers are not odd.

Example: 2 is a prime number but it is also an even number.

**(f)** False. Since, 1 and the number itself are factors of the number**(g)** False. Sum of two prime numbers may also be odd numberExample:  $2 + 5 = 7$  i.e odd number.**(h)** True. 2 is the only even prime number.**(i)** False. Since, 2 is a prime number.**(j)** True. The product of two even numbers is always even.Example:  $2 \times 4 = 8$  i.e even number.**3. The numbers 13 and 31 are prime numbers. Both these numbers have same digits 1 and 3. Find such pairs of prime numbers upto 100.****Solutions:**

The prime numbers with same digits upto 100 are as follows:

17 and 71

37 and 73  
79 and 97

**4. Write down separately the prime and composite numbers less than 20.**

**Solutions:**

2, 3, 5, 7, 11, 13, 17 and 19 are the prime numbers less than 20

4, 6, 8, 9, 10, 12, 14, 15, 16 and 18 are the composite numbers less than 20

**5. What is the greatest prime number between 1 and 10?**

**Solutions:**

2, 3, 5 and 7 are the prime numbers between 1 and 10. 7 is the greatest prime number among them.

**6. Express the following as the sum of two odd primes.**

(a) 44

(b) 36

(c) 24

(d) 18

**Solutions:**

(a)  $3 + 41 = 44$

(b)  $5 + 31 = 36$

(c)  $5 + 19 = 24$

(d)  $5 + 13 = 18$

**7. Give three pairs of prime numbers whose difference is 2. [Remark: Two prime numbers whose difference is 2 are called twin primes].**

**Solutions:**

The three pairs of prime numbers whose difference is 2 are

3, 5

5, 7

11, 13

**8. Which of the following numbers are prime?**

(a) 23

(b) 51

(c) 37

(d) 26

**Solutions:**

(a) 23

$1 \times 23 = 23$

$23 \times 1 = 23$

Therefore 23 has only two factors 1 and 23. Hence, it is a prime number.

(b) 51

$1 \times 51 = 51$

$3 \times 17 = 51$

Therefore 51 has four factors 1, 3, 17 and 51. Hence, it is not a prime number, it is a composite number.

(c) 37

$$1 \times 37 = 37$$

$$37 \times 1 = 37$$

Therefore 37 has two factors 1 and 37. Hence, it is a prime number.

(d) 26

$$1 \times 26 = 26$$

$$2 \times 13 = 26$$

Therefore 26 has four factors 1, 2, 13 and 26. Hence, it is not a prime number, it is a composite number.

**9. Write seven consecutive composite numbers less than 100 so that there is no prime number between them.**

**Solutions:**

Seven composite numbers between 89 and 97 both which are prime numbers are 90, 91, 92, 93, 94, 95 and 96

Numbers	Factors
90	1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
91	1, 7, 13, 91
92	1, 2, 4, 23, 46, 92
93	1, 3, 31, 93
94	1, 2, 47, 94
95	1, 5, 19, 95
96	1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96

**10. Express each of the following numbers as the sum of three odd primes:**

(a) 21

(b) 31

(c) 53

(d) 61

**Solutions:**

(a)  $3 + 5 + 13 = 21$

(b)  $3 + 5 + 23 = 31$

(c)  $13 + 17 + 23 = 53$

(d)  $7 + 13 + 41 = 61$

**11. Write five pairs of prime numbers less than 20 whose sum is divisible by 5. (Hint:  $3 + 7 = 10$ )**

**Solutions:**

The five pairs of prime numbers less than 20 whose sum is divisible by 5 are

$$2 + 3 = 5$$

$$2 + 13 = 15$$

$$3 + 17 = 20$$

$$7 + 13 = 20$$

$$19 + 11 = 30$$

**12. Fill in the blanks:**

(a) A number which has only two factors is called a \_\_\_\_\_.

(b) A number which has more than two factors is called a \_\_\_\_\_.

(c) 1 is neither \_\_\_\_\_ nor \_\_\_\_\_.

- (d) The smallest prime number is \_\_\_\_\_.
- (e) The smallest composite number is \_\_\_\_\_.
- (f) The smallest even number is \_\_\_\_\_.

**Solutions:**

- (a) A number which has only two factors is called a prime number.
- (b) A number which has more than two factors is called a composite number.
- (c) 1 is neither prime number nor composite number.
- (d) The smallest prime number is 2
- (e) The smallest composite number is 4
- (f) The smallest even number is 2.

