

# Mathematics

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(Chapter – 3) (Playing With Numbers)  
(Class – VI)

## Exercise 3.5

### Question 1:

Which of the following statements are true:

- (a) If a number is divisible by 3, it must be divisible by 9.
- (b) If a number is divisible by 9, it must be divisible by 3.
- (c) If a number is divisible by 18, it must be divisible by both 3 and 6.
- (d) If a number is divisible by 9 and 10 both, then it must be divisible by 90.
- (e) If two numbers are co-primes, at least one of them must be prime.
- (f) All numbers which are divisible by 4 must also be divisible by 8.
- (g) All numbers which are divisible by 8 must also be divisible by 4.
- (h) If a number exactly divides two numbers separately, it must exactly divide their sum.
- (i) If a number exactly divides the sum of two numbers, it must exactly divide the two numbers separately.



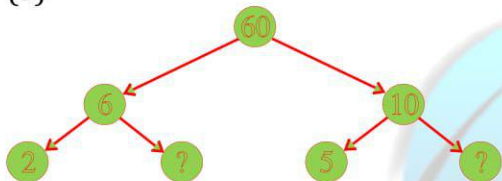
### Answer 1:

Statements (b), (c), (d), (g) and (h) are true.

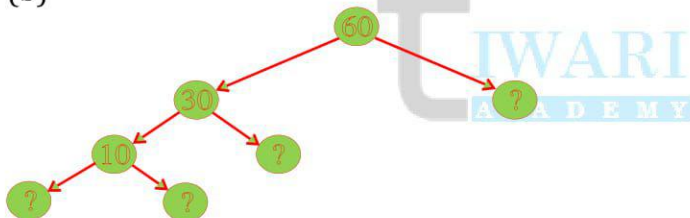
### Question 2:

Here are two different factor trees for 60. Write the missing numbers.

(a)

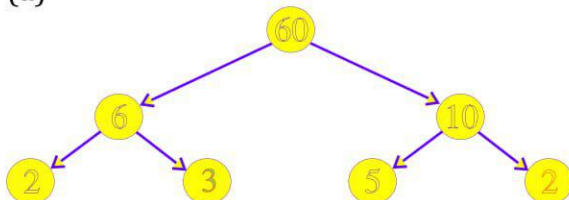


(b)

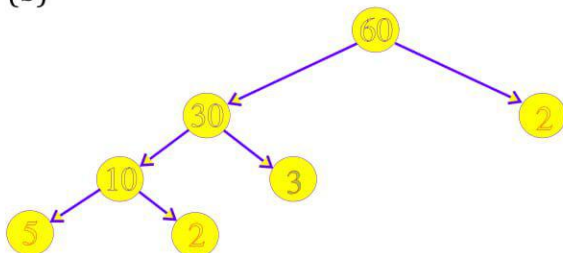


### Answer 2:

(a)



(b)



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## Question 3:

Which factors are not included in the prime factorization of a composite number?

**Answer 3:**

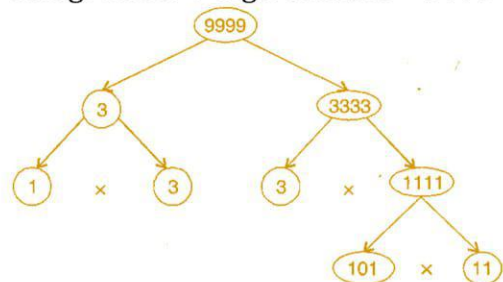
1 is the factor which is not included in the prime factorization of a composite number.

## Question 4:

Write the greatest 4-digit number and express it in terms of its prime factors.

**Answer 4:**

The greatest 4-digit number = 9999



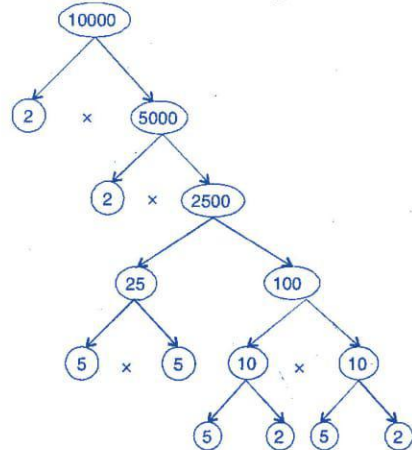
The prime factors of 9999 are  $3 \times 3 \times 11 \times 101$ .

## Question 5:

Write the smallest 5-digit number and express it in terms of its prime factors.

**Answer 5:**

The smallest five digit number is 10000.



The prime factors of 10000 are  $2 \times 2 \times 2 \times 2 \times 5 \times 5 \times 5 \times 5$ .

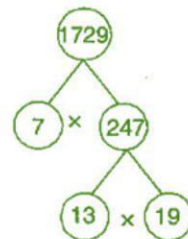
## Question 6:

Find all the prime factors of 1729 and arrange them in ascending order. Now state the relation, if any, between, two consecutive prime numbers.

**Answer 6:**

Prime factors of 1729 are  $7 \times 13 \times 19$ .

The difference of two consecutive prime factors is 6.



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## Question 7:

The product of three consecutive numbers is always divisible by 6. Verify this statement with the help of some examples.

### Answer 7:

Among the three consecutive numbers, there must be one even number and one multiple of 3. Thus, the product must be multiple of 6.

Example: (i)  $2 \times 3 \times 4 = 24$  (ii)  $4 \times 5 \times 6 = 120$

## Question 8:

The sum of two consecutive odd numbers is always divisible by 4. Verify this statement with the help of some examples.

### Answer 8:

$3 + 5 = 8$  and 8 is divisible by 4.  $5 + 7 = 12$  and 12 is divisible by 4.  
 $7 + 9 = 16$  and 16 is divisible by 4.  $9 + 11 = 20$  and 20 is divisible by 4.

## Question 9:

In which of the following expressions, prime factorization has been done:

- (a)  $24 = 2 \times 3 \times 4$
- (b)  $56 = 7 \times 2 \times 2 \times 2$
- (c)  $70 = 2 \times 5 \times 7$
- (d)  $54 = 2 \times 3 \times 9$

### Answer 9:

In expressions (b) and (c), prime factorization has been done.

## Question 10:

Determine if 25110 is divisible by 45.

[Hint: 5 and 9 are co-prime numbers. Test the divisibility of the number by 5 and 9.]

### Answer 10:

The prime factorization of  $45 = 5 \times 9$   
25110 is divisible by 5 as '0' is at its unit place.  
25110 is divisible by 9 as sum of digits is divisible by 9.  
Therefore, the number must be divisible by  $5 \times 9 = 45$

## Question 11:

18 is divisible by both 2 and 3. It is also divisible by  $2 \times 3 = 6$ . Similarly, a number is divisible by 4 and 6. Can we say that the number must be divisible by  $4 \times 6 = 24$ ? If not, give an example to justify your answer.

### Answer 11:

No. Number 12 is divisible by both 6 and 4 but 12 is not divisible by 24.

## Question 12:

I am the smallest number, having four different prime factors. Can you find me?

### Answer 12:

The smallest four prime numbers are 2, 3, 5 and 7.  
Hence, the required number is  $2 \times 3 \times 5 \times 7 = 210$