

# Mathematics

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(Chapter – 14) (Mathematical Reasoning)

(Class – XI)

## Exercise 14.1

### Question 1:

Which of the following sentences are statements? Give reasons for your answer.

- (i) There are 35 days in a month.
- (ii) Mathematics is difficult.
- (iii) The sum of 5 and 7 is greater than 10.
- (iv) The square of a number is an even number.
- (v) The sides of a quadrilateral have equal length.
- (vi) Answer this question.
- (vii) The product of  $(-1)$  and 8 is 8.
- (viii) The sum of all interior angles of a triangle is  $180^\circ$ .
- (ix) Today is a windy day.
- (x) All real numbers are complex numbers.

### Answer 1:

- (i) This sentence is incorrect because the maximum number of days in a month is 31. Hence, it is a statement.
- (ii) This sentence is subjective in the sense that for some people, mathematics can be easy and for some others, it can be difficult. Hence, it is not a statement.
- (iii) The sum of 5 and 7 is 12, which is greater than 10. Therefore, this sentence is always correct. Hence, it is a statement.
- (iv) This sentence is sometimes correct and sometimes incorrect. For example, the square of 2 is an even number. However, the square of 3 is an odd number. Hence, it is not a statement.
- (v) This sentence is sometimes correct and sometimes incorrect. For example, squares and rhombus have sides of equal lengths. However, trapezium and rectangles have sides of unequal lengths. Hence, it is not a statement.
- (vi) It is an order. Therefore, it is not a statement.



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- (vii) The product of  $(-1)$  and  $8$  is  $(-8)$ . Therefore, the given sentence is incorrect. Hence, it is a statement.
- (viii) This sentence is correct and hence, it is a statement.
- (ix) The day that is being referred to is not evident from the sentence. Hence, it is not a statement.
- (x) All real numbers can be written as  $a \times 1 + 0 \times i$ . Therefore, the given sentence is always correct. Hence, it is a statement.

## Question 2:

Give three examples of sentences which are not statements. Give reasons for the answers.

## Answer 2:

The three examples of sentences, which are not statements, are as follows.

(i) He is a doctor.

It is not evident from the sentence as to whom 'he' is referred to. Therefore, it is not a statement.

(ii) Geometry is difficult.

This is not a statement because for some people, geometry can be easy and for some others, it can be difficult.

(iii) Where is she going?

This is a question, which also contains 'she', and it is not evident as to who 'she' is. Hence, it is not a statement.

