ExamPath

CLASS 9 MATHEMATICS · FBISE · UNIT 3

Unit 3: Sets and Relations — Beginner Practice

15 multiple-choice questions Suggested time: **15 minutes** 1 mark each

Name: Date: Score: / 15

Circle one answer for each question. The answer key with explanations is on the last pages, so try every question before you check. These are practice questions, not official FBISE papers.

1. In the ordered pair (a, b), a is called the:

(A) first element
(B) complement
(C) second element
(D) range

2. Which is the set builder form of the set of all integers?

(A) $\{x \mid x \in Q'\}$
(B) $\{x \mid x \in Z\}$
(C) $\{x \mid x \in W\}$
(D) $\{x \mid x \in N\}$

3. Two sets A and B are disjoint when:

(A) $A \cup B = \varphi$
(B) $A = B$
(C) $A \subset B$
(D) $A \cap B = \varphi$

4. Which statement about A − B is correct?

(A) It has the common elements of A and B
(B) It has the elements of A that are not in B
(C) It has the elements of B that are not in A
(D) It has all elements of A and B

5. Why is the set {2, 3, 3, 4} written as {2, 3, 4}?

(A) Because a set must have three elements
(B) Because repetition is not allowed in a set
(C) Because 4 is even
(D) Because 3 is a prime number

6. If U = {1, 2, 3, 4, 5, 6, 7} and A = {2, 4, 6}, find A′.

(A) {1, 3, 5, 7}
(B) {5, 6, 7}
(C) {2, 4, 6}
(D) {1, 2, 3, 4}

7. Which collection is a well-defined set?

(A) Tasty fruits
(B) Stones weighing less than 1 kg
(C) Lighter stones
(D) Beautiful flowers in a garden

8. If A = {1, 2, 3, 4, 5} and B = {3, 4, 6, 7, 8}, find A − B.

(A) {1, 2, 3, 4, 5}
(B) {3, 4}
(C) {1, 2, 5}
(D) {6, 7, 8}

9. If A ⊂ U, which elements belong to the complement A′?

(A) Elements that are in both A and U
(B) Elements of A only
(C) Elements of U that are not in A
(D) Elements of A that are not in U

10. If A = {0, 1, 2} and B = {3, 4}, how many ordered pairs are in A × B?

(A) 3
(B) 5
(C) 8
(D) 6

11. A set with no elements is called the:

(A) empty (null) set
(B) overlapping set
(C) singleton set
(D) universal set

12. If A = {1, 2, 3, 4, 5} and B = {3, 4, 1, 7, 6}, which elements are in A ∩ B?

(A) 2, 5
(B) 1, 2, 3, 4, 5, 6, 7
(C) 6, 7
(D) 1, 3, 4

13. Which symbol is used for the union of two sets?

(A) ′
(B) −
(C) ∪
(D) ∩

14. What does it mean to say that (2, 5) and (5, 2) are different ordered pairs?

(A) The order of the numbers matters
(B) The numbers are different
(C) They are the same point
(D) Both are sets

15. A set is a well-defined collection of:

(A) only letters
(B) only numbers
(C) distinct objects
(D) repeated objects

Answer key

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1 A	**2** B	**3** D	**4** B	**5** B
6 A	**7** B	**8** C	**9** C	**10** D
11 A	**12** D	**13** C	**14** A	**15** C

Explanations

1. A. first element
The first position holds the first element. The second position holds the second element.

2. B. {x | x ∈ Z}
Z is the set of integers. {x | x ∈ Z} reads “the set of all x such that x belongs to Z”.

3. D. A ∩ B = φ
Disjoint sets have no common element, so their intersection is empty.

4. B. It has the elements of A that are not in B
A − B = {x | x ∈ A and x ∉ B}.

5. B. Because repetition is not allowed in a set
Repeated elements are taken once only, since repetition is not allowed in a set.

6. A. {1, 3, 5, 7}
A′ = U − A. The elements of U not in A are 1, 3, 5 and 7.

7. B. Stones weighing less than 1 kg
We can always check whether a stone weighs less than 1 kg. Words like beautiful, tasty and lighter have no fixed rule.

8. C. {1, 2, 5}
Remove from A the elements that are also in B (3 and 4). What remains is {1, 2, 5}.

9. C. Elements of U that are not in A
A′ = U − A. It holds everything in the universal set that is outside A.

10. D. 6
n(A × B) = n(A) × n(B) = 3 × 2 = 6.

11. A. empty (null) set
The set with no elements is the empty or null set, written { } or φ.

12. D. 1, 3, 4
A ∩ B contains the elements that belong to both sets: 1, 3 and 4.

13. C. ∪
A ∪ B is the union. The symbol ∩ means intersection.

14. A. The order of the numbers matters
An ordered pair changes when its elements are swapped. They are two different points.

15. C. distinct objects
A set is a well-defined collection of distinct objects. Repeated elements are written once.

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