ALBERTA MATH 30-2 · UNIT 1 · 10 QUESTIONS

Set Theory and Logic — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **The inverse of the statement If a student studies, then the student will pass is**

- **A** If a student does not study, then the student will not pass
- **B** If a student will pass, then the student studies
- **C** If a student will not pass, then the student did not study
- **D** If a student studies, then the student will not pass

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2 **In a Venn diagram for sets A and B, the shaded region covers only the part of B that does not overlap A. This region is described by**

Question 2

In a Venn diagram for sets A and B, the shaded region covers only the part of B that does not overlap A.

This region is described by

A) $A \cap B$

B) A'

C) $A \cup B$

D) $B \cap A'$

A A ∩ B

B A′

C A ∪ B

D B ∩ A′

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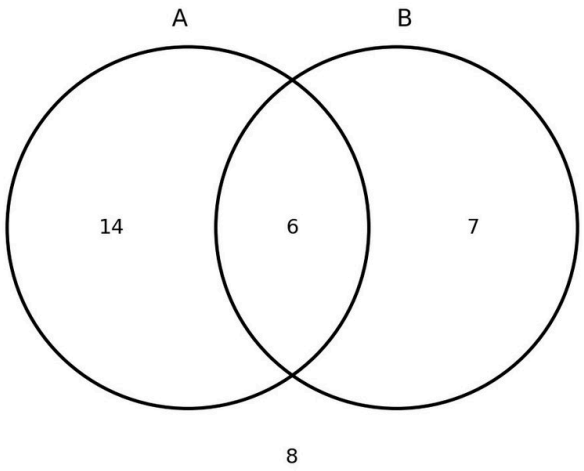
3 **The Venn diagram below shows set A for soccer players and set B for hockey players. The number of students who play neither sport is _____ Record your answer as a whole number.**



Question 3

The Venn diagram below shows set *A* for soccer players and set *B* for hockey players. The number of students who play neither sport is ____ Record your answer as a whole number.

ANSWER

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4 **Which statement is a biconditional statement?**

- **A** If a number is even, then it is divisible by 2
- **B** A number is divisible by 5 if and only if it ends in 0 or 5
- **C** If a number ends in 0, then it is divisible by 5
- **D** A number is odd or it is even

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5 **Which of the following statements is false?**

- **A** If a number is divisible by 10, then it is divisible by 5
- **B** If a triangle has three equal sides, then it is equilateral
- **C** If a number is divisible by 3, then it is divisible by 9
- **D** If $x = 5$, then $x^2 = 25$

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6 **An element that lies in the region described by $A \cap B \cap C'$ is an element that is**

- A in A and in B, but not in C
- B in A, B, and C
- C in C only
- D in A or B, but not in C

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7 **A survey asked 60 students about three activities: 25 do art, 22 do music, and 18 do drama. 9 do art and music, 7 do art and drama, 6 do music and drama, and 3 do all three. The pairwise counts include the students who do more than one activity. The number of students who do at least one of the activities is ____ Record your answer as a whole number.**

ANSWER _____

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8 Which of the following arguments is valid?

Question 8

Which of the following arguments is valid?

A) All squares are rectangles. This figure is a rectangle, so it must be a square

B) If it rains, the picnic is cancelled. The picnic is cancelled, so it must have rained

C) All fish live in water. A salmon lives in water, so a salmon must be a fish

D) If a number ends in 0, then it is divisible by 2. The number 40 ends in 0, so 40 is divisible by 2

A All squares are rectangles. This figure is a rectangle, so it must be a square

B If it rains, the picnic is cancelled. The picnic is cancelled, so it must have rained

C All fish live in water. A salmon lives in water, so a salmon must be a fish

D If a number ends in 0, then it is divisible by 2. The number 40 ends in 0, so 40 is divisible by 2

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9 **The number of subsets of {a, b, c, d, e} that contain the element a is**

- A 32
- B 16
- C 8
- D 10

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10 **In a Venn diagram of two sets, n(A ∪ B) = 52, n(A) = 34, and n(B) = 29. The number of elements in the overlapping region of the diagram is _____ Record your answer as a whole number.**

Question 10

In a Venn diagram of two sets, $n(A \cup B) = 52$, $n(A) = 34$, and $n(B) = 29$. The number of elements in the overlapping region of the diagram is ____ Record your answer as a whole number.

ANSWER _____

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ANSWER KEY

1. A
2. D
3. 8
4. B
5. C
6. A
7. 46
8. D
9. B
10. 11

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